



Journal of Knowledge Management

Understanding counterproductive knowledge behavior: antecedents and consequences of intra-organizational knowledge hiding

Alexander Serenko Nick Bontis

Article information:

To cite this document:

Alexander Serenko Nick Bontis , (2016), "Understanding counterproductive knowledge behavior: antecedents and consequences of intra-organizational knowledge hiding", Journal of Knowledge Management, Vol. 20 Iss 6 pp. 1199 - 1224

Permanent link to this document:

<http://dx.doi.org/10.1108/JKM-05-2016-0203>

Downloaded on: 10 November 2016, At: 21:26 (PT)

References: this document contains references to 139 other documents.

To copy this document: permissions@emeraldinsight.com

The fulltext of this document has been downloaded 377 times since 2016*

Users who downloaded this article also downloaded:

(2016), "Knowledge management and business performance: global experts' views on future research needs", Journal of Knowledge Management, Vol. 20 Iss 6 pp. 1169-1198 <http://dx.doi.org/10.1108/JKM-12-2015-0521>

(2016), "What factors influence knowledge sharing in organizations? A social dilemma perspective of social media communication", Journal of Knowledge Management, Vol. 20 Iss 6 pp. 1225-1246 <http://dx.doi.org/10.1108/JKM-03-2016-0112>

Access to this document was granted through an Emerald subscription provided by emerald-srm:563821 []

For Authors

If you would like to write for this, or any other Emerald publication, then please use our Emerald for Authors service information about how to choose which publication to write for and submission guidelines are available for all. Please visit www.emeraldinsight.com/authors for more information.

About Emerald www.emeraldinsight.com

Emerald is a global publisher linking research and practice to the benefit of society. The company manages a portfolio of more than 290 journals and over 2,350 books and book series volumes, as well as providing an extensive range of online products and additional customer resources and services.

Emerald is both COUNTER 4 and TRANSFER compliant. The organization is a partner of the Committee on Publication Ethics (COPE) and also works with Portico and the LOCKSS initiative for digital archive preservation.

*Related content and download information correct at time of download.

Understanding counterproductive knowledge behavior: antecedents and consequences of intra-organizational knowledge hiding

Alexander Serenko and Nick Bontis



Alexander Serenko is based at the Faculty of Business Administration, Lakehead University, Thunder Bay, Canada. Nick Bontis is based at the DeGroote School of Business, McMaster University, Hamilton, Canada.

Abstract

Purpose – This paper aims to explore antecedents and consequences of intra-organizational knowledge hiding.

Design/methodology/approach – A model was developed and tested with data collected from 691 knowledge workers from 15 North American credit unions.

Findings – Knowledge hiding and knowledge sharing belong to unique yet possibly overlapping constructs. Individual employees believe that they engage in knowledge hiding to a lesser degree than their co-workers. The availability of knowledge management systems and knowledge policies has no impact on intra-organizational knowledge hiding. The existence of a positive organizational knowledge culture has a negative effect on intra-organizational knowledge hiding. In contrast, job insecurity motivates knowledge hiding. Employees may reciprocate negative knowledge behavior, and knowledge hiding promotes voluntary turnover.

Practical implications – Managers should realize the uniqueness of counterproductive knowledge behavior and develop proactive measures to reduce or eliminate it.

Originality/value – Counterproductive knowledge behavior is dramatically under-represented in knowledge management research, and this study attempts to fill that void.

Keywords Organizational culture, Reciprocation, Knowledge sharing, Employee turnover, Facilitating conditions, Knowledge hiding

Paper type Research paper

1. Introduction

Intra-organizational knowledge sharing takes place when employees voluntarily share their tacit (i.e. expertise, know-how, know-where and skills) and explicit (i.e. documents, videos, reports and templates) knowledge with their co-workers (Nonaka, 1994; Bock *et al.*, 2005). The process through which individuals share their knowledge with one another has become one of the most important knowledge management (KM) topics. It has also attracted the attention of contemporary scholars. For example, 50 per cent of all articles published in the *Journal of Knowledge Management* in 2015 explicitly focused on the various aspects of knowledge sharing [1]. However, whereas the volume of knowledge sharing research has been continuously growing, counterproductive knowledge behavior has received less attention. Particularly, knowledge hiding, defined as an “intentional attempt by an individual to withhold or conceal knowledge that has been requested by another person” (Connelly *et al.*, 2012, p. 65), has been dramatically underrepresented in KM research.

The concept of knowledge hiding is as old as the field of KM itself (Davenport, 1997; Davenport and Prusak, 1998). Researchers, however, mostly focused on the promotion of desirable organizational activities, especially knowledge sharing (Manhart and

Received 18 May 2016
Revised 8 July 2016
Accepted 11 July 2016

The authors are grateful to Filene Research Institute and Credit Union Central of Canada for their assistance with this study.

“Disengagement from knowledge sharing occurs when people do not actively communicate their knowledge, despite their lack of motivation to protect it.”

Thalmann, 2015), at the expense of studying counterproductive work behavior, including knowledge hiding. However, knowledge hiding is frequently observed in contemporary organizations (Connelly *et al.*, 2012), and its consequences may sometimes be devastating. First, the interruption of intra-organizational knowledge flows increases the duplication of knowledge when employees have to spend countless hours acquiring knowledge that is already possessed by other organizational members who have deliberately chosen not to share it. Second, when employees observe knowledge hiding behavior of their fellow co-workers, they reduce their level of organizational commitment. Third, when important knowledge remains with individuals instead of being embedded in organizational processes, the quality of organizational output may not achieve an optimal level, which affects not only the organization but also other stakeholders, including its customers. Fourth, the impediment of internal knowledge flows may reduce the level of organizational competitiveness, innovativeness and profitability. Fifth, when employees leave their organization, their knowledge vanishes unless it was previously shared with others.

A number of previous studies have identified several antecedents and consequences of intra-organizational knowledge sharing (Witherspoon *et al.*, 2013; Qureshi and Evans, 2015). At the same time, it is unknown whether the factors that facilitate knowledge sharing may also reduce knowledge hiding. On the one hand, it is reasonable to assume that the factors that foster productive knowledge behavior should also reduce unproductive knowledge behavior. On the other hand, evidence suggests that knowledge sharing and knowledge hiding are two distinct phenomena, which are motivated by different sources (Connelly *et al.*, 2012; Tsay *et al.*, 2014; Connelly and Zweig, 2015). As such, the knowledge sharing and knowledge hiding constructs may not represent the opposite sides of the same continuum; instead, they exist in two different (yet possibly overlapping) dimensions. As a result, the antecedents of knowledge sharing may not necessarily apply to those of knowledge hiding. In addition, little empirical evidence on the outcomes of knowledge hiding is available.

To address the issues above, this study explores antecedents and consequences of intra-organizational knowledge hiding. Intra-organizational knowledge hiding refers to the actions of employees when they intentionally conceal all or some of their knowledge from their fellow colleagues when this knowledge was requested. This study explores whether three types of facilitating conditions (organizational KM systems, policies and culture) and job insecurity (measured through compensation per full-time equivalent (FTE) and involuntary turnover) have an effect on intra-organizational knowledge hiding. In addition, this study hypothesizes and empirically tests two important outcomes of intra-organizational knowledge hiding – reciprocal knowledge hiding and voluntarily turnover. These constructs have been frequently studied as antecedents and consequences of knowledge sharing; however, to the best of the knowledge of the authors, they have not been explored within the context of intra-organizational knowledge hiding.

The rest of this paper is structured as follows. The next section presents the theoretical background, the hypotheses and the model. Sections 3 and 4 describe this study's methodology and results, respectively. Section 5 discusses the key implications of this study, and Section 6 offers concluding remarks.

2. Theoretical background

2.1 What is knowledge hiding?

Knowledge sharing has always existed in all areas of human activities (Serenko and Bontis, 2013). In the past decade of the twentieth century, organizations started to experience an exponentially growing pressure to increase their effectiveness and efficiency. As a result, the concept of KM has been formally introduced and recognized as an important managerial activity (Wiig, 1997; Prusak, 2001). Within KM research and practice, intra-organizational knowledge sharing, when employees convey their tacit and explicit knowledge to their fellow co-workers, has quickly captured the attention of the scientific community because it may improve internal processes, innovativeness, competitiveness and overall performance (Andreeva and Kianto, 2012; Kianto *et al.*, 2013; Donate and Guadamillas, 2015; Lin, 2015; Yahyapour *et al.*, 2015).

Whereas knowledge sharing is considered productive knowledge behavior, there are many types of counterproductive knowledge behaviors impeding the progress of the organization toward its overall objective. *Knowledge hoarding* refers to the deliberate accumulation of knowledge and concealing the fact that the person possesses this knowledge (Hislop, 2003; Lee *et al.*, 2011; Evans *et al.*, 2015). *Knowledge sharing hostility* relates to the accumulation and concealment of personal knowledge as well as the rejection of external knowledge (Husted and Michailova, 2002; Hutchings and Michailova, 2004; Husted *et al.*, 2012). *Partial knowledge sharing* takes place when only some of the relevant knowledge is shared (i.e. there is no full knowledge disclosure) (Ford and Staples, 2010). *Knowledge withholding* is intentional concealment and unintentional hoarding of knowledge for personal gain or contributing less knowledge than is needed (Webster *et al.*, 2008; Lin and Huang, 2010; Tsay *et al.*, 2014; Wang *et al.*, 2014; Kang, 2016). *Information withholding* is intentional failure of employees to share vital information with colleagues, even though they realize its value to others (Haas and Park, 2010; Steinel *et al.*, 2010). *Knowledge sharing ignorance* is an “inability that prevents employees from effectively managing the knowledge possessed by organizations” (Israilidis *et al.*, 2015, p. 1113). It refers to the lack of employee awareness about the deficiency and availability of intellectual capital within the organization, which in turn impedes internal knowledge flows, decision-making processes and communication.

Disengagement from knowledge sharing occurs when people do not actively communicate their knowledge, despite their lack of motivation to protect it. They do not hide their knowledge nor do they proactively share it with others because of a low level of employee engagement (Ford *et al.*, 2015). *Information exchange delays* are negative workplace events when there is a gap between “the moment that a focal employee expects to obtain information until the moment that the focal employee (knowingly) receives the information or decides to stop waiting” (Guenter *et al.*, 2014, p. 284). *Knowledge sharing deterrents* (Qureshi and Evans, 2015) and *barriers* (Riege, 2005; Ardichvili *et al.*, 2006; Bundred, 2006; Paulin and Suneson, 2012) refer to organizational and individual factors inhibiting knowledge sharing processes. *Knowledge protection*, defined as a purposeful, intentional and desirable organizational activity to prevent intellectual capital from being transferred to the third (external) parties, including competitors, has also received attention, but it cannot be classified as counterproductive knowledge behavior because its objective is to protect the organization (Manhart and Thalmann, 2015).

“Whereas the volume of knowledge sharing research has been continuously growing, counterproductive knowledge behavior has received less attention.”

“Knowledge hiding represents a unique construct that may only partially overlap with knowledge sharing.”

The literature above identifies four important issues. First, despite the abundance of knowledge sharing studies, counterproductive knowledge behavior is dramatically underrepresented in KM research. In total, only a few empirical articles have been published on each type of a counterproductive knowledge behavior described in this section. On the one hand, scholars agree on the importance of counterproductive knowledge behavior. On the other hand, even though such discussions date back over 20 years (Attewell, 1992), the most relevant works were published only recently. Second, there is a dramatic overlap in the names and conceptual definitions of these counterproductive knowledge behaviors. For example, there are similarities between knowledge withholding and information withholding. Knowledge sharing hostility includes an element of knowledge hoarding. In some cases, there is a lack of a clear, uniform definition of the phenomenon of interest. Third, most of the definitions above do not emphasize the fact that the necessary knowledge was unambiguously requested by another organizational member. In other words, the knowledge owner must receive an unambiguous request to share his or her knowledge. Fourth, not all of the counterproductive knowledge behaviors discussed above are intentional. In some cases, individuals do not consciously attempt to withhold their knowledge from others. For example, disengagement from knowledge sharing may result from a lower level of employee morale when individuals become indifferent to the success of their organization rather than from a determined decision to accumulate and conceal knowledge for personal gain. Information exchange delays may happen for any reason, including technical problems. Partial knowledge sharing may occur because the knowledge recipient may not be ready to absorb all the knowledge. Knowledge sharing barriers may exist because individuals are afraid of criticism or accidentally misleading someone (Ardichvili *et al.*, 2003).

The concept of *knowledge hiding* addresses the issues of *request* and *intention* discussed above. In this study, intra-organizational knowledge hiding is defined as the deliberate attempts of employees to withhold or conceal their knowledge when it was requested by their fellow colleagues. This definition emphasizes the fact that the required knowledge was clearly requested by someone, but the knowledge holder made an intentional attempt not to share it (Connelly *et al.*, 2012; Černe *et al.*, 2014; Connelly and Zweig, 2015). Whereas knowledge hiding overlaps with the other types of counterproductive knowledge behaviors, it is different because it must include the components of request and intention. For example, in case of knowledge hoarding, people may accumulate knowledge, but it does not mean that they will consciously withhold it upon request from other organizational members. Individuals who are disengaged from knowledge sharing generally lack motivation to conceal their knowledge from others. In contrast, knowledge hidiers are driven by various factors that prevent them from knowledge sharing, and they do so intentionally.

As a type of counterproductive knowledge behavior, knowledge hiding represents a particular dimension of counterproductive work behavior, which is a more general, higher-level concept. Counterproductive work behavior, defined as “voluntary behavior that violates significant organizational norms and in so doing threatens the well-being of an organization, its members, or both” (Robinson and Bennett, 1995, p. 556), has captured the attention of human resource management scholars (Bennett and Robinson, 2000; Dalal, 2005) and has become a “major area of concern among researchers, managers, and the general public” (Spector *et al.*, 2006, p. 447). According to the Robinson and Bennett’s (1995) typology of deviant workplace behavior, counterproductive actions may be directed toward individual employees (e.g. harassing or making fun of co-workers) or the entire

organization (e.g. absenteeism). In a similar vein, employees may hide their knowledge from particular co-workers (e.g. due to personal dislike) or the organization (e.g. deciding to put the minimal effort because of unfair compensation). In addition, [Robinson and Bennett's \(1995\)](#) typology suggests that the seriousness of counterproductive work behavior ranges from minor (e.g. taking longer breaks, gossiping about the employer) to major (e.g. fraud, sabotaging the equipment). Knowledge hiding behavior may also range from minor (e.g. ignoring a trivial request) to major (deliberately withholding vital facts that may have strategic implications for the entire organization).

2.2 Facilitating conditions

According to the [Triandis' \(1977\)](#) model of interpersonal behavior, facilitating conditions influence people's behavior in various settings. Facilitating conditions "include the state of the actor and any environmental conditions that make the act easy" (p. 76), and they refer to the overall situation in which people find themselves when they intend to perform behavior. In terms of knowledge sharing, [Triandis' \(1977\)](#) relevant types of facilitating conditions include:

- the employee's *ability to engage* in knowledge sharing behavior;
- the employee's *knowledge how to engage* in knowledge sharing behavior; and
- the environmental factors that *encourage the employee to engage* in knowledge sharing behavior.

The ability to engage in intra-organizational knowledge sharing is dramatically increased when employees may access a KM system. The process of knowledge sharing may be guided by organizational policies; when an organization has effective and efficient knowledge sharing policies in place, employees may know how they should act to share their knowledge when requested to do so. Strong organizational knowledge culture encourages desirable knowledge behavior. Thus, the three types of facilitating conditions explored in the present study are organizational:

1. KM systems;
2. policies; and
3. culture, which is consistent with prior research ([Gamo-Sanchez and Cegarra-Navarro, 2015](#); [Rodríguez-Gómez and Gairín, 2015](#)).

On the one hand, the types of facilitating conditions above have been already shown to have an effect on knowledge sharing behaviors in several contexts ([Li, 2010](#); [Jeon et al., 2011](#); [Jang and Ko, 2014](#)). On the other hand, it is unknown whether they can also suppress counterproductive knowledge behavior, including knowledge hiding.

Since the birth of the KM discipline, information technology has been considered a critical (but not sufficient) enabler of knowledge processes ([Junnarkar and Brown, 1997](#)). Of particular interest have been the various types of KM systems because of their ability to facilitate knowledge sharing processes ([Offsey, 1997](#); [Alavi and Leidner, 2001](#); [Dehghani and Ramsin, 2015](#)). KM systems may range from basic single-function applications (e.g. shared hard-drives) to organizational IT backbones handling many processes of the

“The availability of organizational KM systems and policies does not reduce knowledge hiding; instead, it is the overall organizational knowledge culture that may curb undesirable knowledge behavior.”

knowledge-intensive organization (Smith, 2008). Generally, their key purpose is to “support and enhance KM practice into different processes, namely knowledge storage, sharing, retrieval, creation and application” (Matayong and Mahmood, 2013, p. 473). By facilitating knowledge flows throughout the entire organization, KM systems also enable knowledge sharing processes by making it easier for employees to request and transfer required knowledge, despite the boundaries of time and space. Thus, it seems reasonable to assume that the availability of KM systems may also reduce knowledge hiding behavior. When employees have access to KM systems, they may receive frequent knowledge requests from their colleagues. Occasionally, they may engage in knowledge sharing activities, especially, when the task is trivial and does not require a lot of effort. Research shows that the frequency of past behavior facilitates the development of a related habitual behavior (Verplanken and Aarts, 1999; Verplanken and Orbell, 2003; Orbell and Verplanken, 2010). Thus, as employees routinely engage in knowledge sharing by means of the system, their knowledge sharing habit becomes stronger. As a result, they may be less likely to hide their knowledge because sharing it has become a routine habitual behavior. The following hypothesis is proposed:

H1. The availability of an organizational KM system has a negative effect on intra-organizational knowledge hiding.

Policies are considered an important part of organizational structural capital. Structural capital is a critical construct within the intellectual capital literature (Bontis, 1998). Essentially, it consists of the non-human elements of intangible assets that help build the brainpower of an organization (Bontis, 1999). As such, policies represent a vital element of structural capital that have been empirically shown to help boost the processes necessary to enhance knowledge integration (Bontis and Fitz-enz, 2002).

Policies that facilitate and encourage knowledge sharing are an important characteristic of a successful learning organization (Serenko *et al.*, 2016). The purpose of knowledge policies is to “establish a general framework aimed at guiding individual learning processes and knowledge flows among members of the company” (Aramburu and Sáenz, 2007, p. 77). Research shows that knowledge creation is strongly influenced by the presence of internal policies (Romano *et al.*, 2014), and policies enable and influence the ability of organizations to successfully manage their knowledge (Kruger and Johnson, 2010). Generally, employees are expected to adhere to organizational policies because:

- it is fundamentally inherent in the employer–employee contract; and
- this may help their organization to better achieve its goals.

Thus, it may be also assumed that when a request for knowledge arrives, the knowledge owner is likely to follow the recommended organizational knowledge sharing procedures. Over time, as employees engage in knowledge sharing more frequently, as recommended by the organizational policies, they may stop hiding their knowledge from their co-workers and respond to their knowledge requests automatically, impulsively and routinely. In addition, policies may explicate the process that needs to be followed when a knowledge request arrives. For example, the knowledge sharing policy may explain how to handle the request, how to compile the response and what information may or may not be shared. This reduces cognitive load on the knowledge owner and makes the process easier to handle. People always try to minimize their cognitive load, conserve mental resources and prefer to engage in tasks that are easier to do (Fiske and Taylor, 1984; West, 2008). The easier the task is, the more likely people are to perform it (Davis, 1989; Davis *et al.*, 1989). Therefore, when appropriate knowledge policies are in place, employees may be less likely to hide their knowledge:

H2. The availability of organizational knowledge policies has a negative effect on intra-organizational knowledge hiding.

Organizational culture is one of the most frequently studied antecedents of knowledge sharing (Al-Alawi *et al.*, 2007; Suppiah and Sandhu, 2011). According to a meta-analysis by Witherspoon *et al.* (2013), attributes of organizational culture that have an impact on knowledge sharing include open communication processes, involvement in decision-making, subjective norms promoting knowledge sharing, social trust, social networks, high levels of organizational commitment and shared goals and values. This study hypothesizes that a positive knowledge culture may also reduce knowledge hiding behavior. There are two mechanisms that may explain this phenomenon.

First, knowledge hiding behavior may be explained through the lens of psychological knowledge ownership and territoriality. Psychological ownership is a cognitive-affective state “in which individuals feel as though the target of ownership or a piece of that target is ‘theirs’ (i.e. ‘It is mine!’)” (Pierce *et al.*, 2003, p. 86). It may be experienced toward physical and non-physical objects including knowledge (Peng, 2013; Li *et al.*, 2015). Generally, psychological ownership is considered a positive resource that influences employee performance (Avey *et al.*, 2009) because when employees psychologically experience ownership of their organization, they commit to their employer and engage in desirable behaviors, including knowledge sharing (Han *et al.*, 2010).

However, knowledge acquisition is an individual process which requires a substantial investment of mental energy and time. Employees usually possess relevant knowledge before joining their current employer as a result of previous work experience and education. After joining their current organization, they continue gaining knowledge from their colleagues, mentors, formal and informal training, self-education, etc. However, given the intimate nature of knowledge acquisition, individuals generally develop a sense of psychological ownership of their knowledge. Sharing it with colleagues is similar to transferring the ownership of this knowledge to someone else. As a result, employees who develop a strong sense of psychological knowledge ownership are more likely to hide knowledge from their colleagues (Peng, 2013; Li *et al.*, 2015). At the same time, positive, friendly and open organizational culture when all employees are strongly committed to their organization and are working collaboratively toward a common goal may reduce the need to develop a sense of psychological knowledge ownership. Instead, employees may believe that all organizational resources, including knowledge, are co-owned by all organizational members, and they do not need to mentally attach themselves to their knowledge and defend their knowledge territory (Peng, 2013; Li *et al.*, 2015). In other words, their perception of territoriality, which is “an individual’s behavioral expression of his or her feelings of ownership toward a physical or social object” (Brown *et al.*, 2005, p. 578) should be dramatically reduced which, in turn, decreases their knowledge hiding motivation and behavior.

Second, the impact of organizational culture on knowledge hiding may be explained from the perspective of business ethics. Research shows that knowledge fostering culture always emphasizes the importance of ethical principles embedded in routine organizational practices (Tseng and Fan, 2011). Ethical values, such as openness, fairness, justice, mutual trust and altruism, are supposed to inhibit counterproductive work behavior, including knowledge hiding because employees are expected to develop a sense of moral obligation toward their organization and fellow co-workers (Rechberg and Syed, 2013). In a highly ethical work environment, individuals may find it unacceptable to intentionally conceal knowledge from others, and knowledge hiding behavior may be considered highly inappropriate.

Therefore, it is argued that positive organizational knowledge culture should reduce counterproductive knowledge behavior such as intra-organizational knowledge hiding. The following hypothesis is suggested:

- H3.* The existence of a positive organizational knowledge culture has a negative effect on intra-organizational knowledge hiding.

2.3 Consequences of intra-organizational knowledge hiding

Social exchange theory is a popular frame of reference that explicates the behavior of individuals engaged in exchange processes within a social system (Homans, 1958; Blau, 1964; Homans, 1974). It suggests that the members of the social system possess something that is valued by the other participants and also require something valuable from the others. Interactions among the participants within the social system represent two-way reciprocal exchanges and are based on expectations of potential rewards from others (Emerson, 1976; Molm, 2006; Molm *et al.*, 2007). Social exchange theory assumes that people are driven by their individual self-interest. Every act of giving something of value should prompt the reciprocation on behalf of the receiver, which forms the foundation for a mutually rewarding exchange process.

Social exchange theory has been applied to understand various types of human behavior including knowledge sharing (Liu *et al.*, 2012; Lin and Lo, 2015; Serenko and Bontis, 2016). It posits that employees share knowledge with their co-workers because they expect to receive something of value in return, including the act of future knowledge reciprocation. In other words, employee *A* may share his or her knowledge with employee *B* upon request only after negotiating or assuming that *B* will also share his or her knowledge with *A* when needed. There are theoretically and empirically grounded arguments that reciprocation plays an important role with respect to knowledge sharing behavior (Liao, 2008; Hall *et al.*, 2010). However, individuals may reciprocate not only positive actions but also negative ones.

The broaden-and-build theory proposes that positive and negative emotions have different cognitive and behavioral effects (Fredrickson, 2001). Particularly, positive emotions, which may be triggered by desirable co-workers' actions (e.g. when they shared their knowledge), broaden the thought-action repertoires of knowledge recipients, build their cognitive resources and increase their knowledge reciprocation tendencies. In contrast, negative emotions, which may be caused by undesirable co-workers' actions (e.g. when they intentionally hid their knowledge), narrow the thought-action repertoires, force decisive action focusing on personal benefit and reduce the likelihood of knowledge reciprocation. It is for this reason, social exchange theory distinguishes between two types of reciprocity orientation: positive reciprocity, which "involves the tendency to return positive treatment for positive treatment", and negative reciprocity, which "involves the tendency to return negative treatment for negative treatment" (Cropanzano and Mitchell, 2005, p. 878). Thus, when an employee realizes that his or her colleagues intentionally conceal their knowledge, he or she reciprocates (i.e. retaliates) in the same manner by hiding his or her knowledge in return. In other words, when intra-organizational knowledge hiding takes place, an individual employee notices knowledge hiding actions of his or her colleagues and retaliates by also hiding his or her knowledge. Thus, the collective knowledge hiding actions of all employees also have an effect on knowledge hiding behavior of each individual member.

There are several phenomena that emphasize the importance and behavioral implications of negative reciprocity. First, "bad is stronger than good" (Baumeister *et al.*, 2001, p. 323) – negative emotions are triggered faster, are processed more thoroughly and are more resistant to change than positive ones. Second, the magnitude of negative reciprocation to a negative event exceeds that of positive reciprocation to a positive interaction (Offerman, 2002; Al-Ubaydli and Lee, 2009). Third, the effect of negative reciprocation also lasts for a very long period, possibly during the entire employment period (Kube *et al.*, 2013). Fourth, it is generally easier for individuals to engage in negative reciprocity (i.e. decrease their work effort and ignore knowledge requests) than in positive one (i.e. increase their work effort and engage in knowledge sharing) (Pereira *et al.*, 2006). The existence of negative reciprocity has been already documented with respect to information withholding (Haas and Park, 2010), and it is likely to apply to knowledge hiding. Therefore, it is argued that:

H4. Intra-organizational knowledge hiding has a positive effect on reciprocal knowledge hiding.

Voluntary turnover which occurs when employees choose to leave their organization on their own will may have devastating consequences for knowledge-intensive organizations (Stovel and Bontis, 2002). Tangible costs associated with voluntary turnover include hiring and training expenses, but intangible costs may be much higher because of the loss of human and relational capital that leaves the organization together with the departing employee. In addition, many former employees may eventually join the competitors and infuse human capital into their organizations. To combat the problem of intellectual capital loss, knowledge-intensive organizations use various *ad hoc*, reactive and proactive knowledge retention programs, such as formal exit interviews, succession planning, job shadowing, KM systems for knowledge codification, capturing lessons learned and best practices, social networks and structures facilitating inter-employee knowledge transfer, on-the-job cross-training, rotation programs, etc. (Levy, 2011; Durst and Wilhelm, 2012; Daghfous *et al.* 2013; Serenko *et al.*, 2016). However, one of the best approaches is to reduce employees' turnover intentions, which are a voluntary, conscious and deliberate willfulness to leave the current employer (Tett and Meyer, 1993) because turnover intentions are a reliable predictor of the actual (i.e. objectively measured) voluntary turnover (Zimmerman and Darnold, 2009).

Management researchers have been always interested in precursors of employee turnover (Mobley *et al.*, 1978). This study proposes that intra-organizational knowledge hiding increases employees' turnover intentions. Most people consider knowledge hiding environment generally unhealthy, unethical and harmful to both the organization and individual employees, who frequently need to rely on the knowledge and expertise of their fellow co-workers. When they directly experience or indirectly observe knowledge hiding episodes, they may reduce their degree of affective, continuance and normative organizational commitment which may increase their turnover intentions (Jaros, 1997).

Affective commitment refers to "the employee's emotional attachment to, identification with, and involvement in the organization" (Meyer and Allen, 1991, p. 67). The more frequently employees come across knowledge hiding situations, the less they wish to be part of and identify themselves with the network of colleagues who exhibit counterproductive knowledge behavior, ignore their peers and sabotage organizational goals. Continuance commitment is "an awareness of the costs associated with leaving the organization" (Meyer and Allen, 1991, p. 67). One of the objectives of a knowledge worker is intellectual and professional development that may be achieved through the acquisition of knowledge in work setting, especially when learning from mentors and peers. An opportunity for learning creates an incentive for knowledge-seeking individuals to stay with their current organization. In a knowledge-hiding environment, this incentive is dramatically reduced, and employees may thus exhibit higher turnover intentions. Normative commitment "reflects a feeling of obligation to continue employment" (Meyer and Allen, 1991, p. 67). Given that employees of knowledge-hiding organizations may be disappointed with their current place of employment and see little opportunity for intellectual growth, they may negatively reciprocate and feel they do not "own" anything to their current employer except for minimally fulfilling the regular job assignments. Thus, they believe they are not obligated to stay with their organization and thus develop turnover intentions. Based on the arguments above, it is suggested that in contrast to a knowledge-sharing environment that reduces turnover intentions (Jacobs and Roodt, 2007; Bontis and Serenko, 2009a), a knowledge-hiding environment increases turnover intentions. The following hypothesis is formulated:

H5. Intra-organizational knowledge hiding has a positive effect on turnover intentions.

2.4 Additional organizational-level factors

In addition to the constructs above that reflect the employees' perceptions of their current organization, this study includes two antecedents of intra-organizational knowledge hiding – compensation per FTE and involuntary turnover rate – which are both measured objectively through organizational data. These factors were selected because both of them serve as indicators of job security, which reflects the probability of an employee losing his or her job. From the perspective of employees, compensation per FTE (CFTE) is an indicator of present and future financial stability of an organization because people generally assume that financially stable organizations may afford higher rates of pay. Instead, lower salaries, which are often accompanied by across the board budget cuts, are a sign of financial trouble and, eventually, workforce reduction. Involuntary turnover refers to the termination of employment for reasons other than a personal decision of a terminated individual. Some reasons for involuntary turnover pertain to individual factors, for example, inadequate performance, workplace offences (e.g. conflicts with others), poor organizational fit, etc. (Barrick *et al.*, 1994). Other causes, however, which result from poor market conditions, strategic mistakes, the emergence of disruptive technologies, industry displacement, increasing competition, lack of investors' confidence, government regulations, globalization, etc., are beyond employees' control. These uncontrollable (from the perspective of individual employees) factors have an effect on job security perceptions which in turn influence employees' behavior.

In knowledge-intensive organizations, employees operate within a complex power/knowledge paradigm which shapes their actions, including whether, how and with whom they share their knowledge (Heizmann and Olsson, 2015). Knowledge, which resides with individuals, is a key source of power, success and status (Foucault, 1980; Townley, 1993). When employees feel uncertain about the future of their organization, which is manifested through lower pay and higher involuntary turnover, they may try to increase their value to the organization by building expert power, defined as the possession of relevant knowledge and the ability to communicate it to other employees (Hinkin and Schriesheim, 1989; Raven, 2008). Being preoccupied with thoughts about job security, employees have to “compete” with one another for a chance to keep their job by increasing their individual expert power to make themselves more valuable from their employer's perspective. Thus, they may engage in knowledge hiding instead of focusing on productive knowledge behavior. The following hypotheses are suggested:

- H6. Compensation per FTE has a negative effect on intra-organizational knowledge hiding.
- H7. Involuntary turnover rate has a positive effect on intra-organizational knowledge hiding.

Figure 1 explicates the causal relationships proposed in this study's hypotheses.

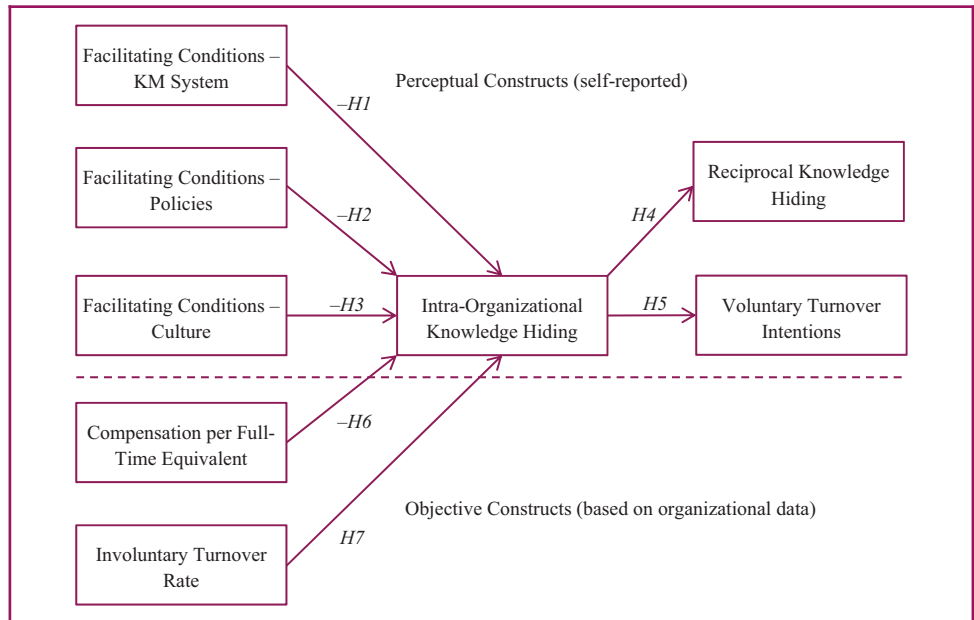
3. Methodology

Items pertaining to:

- facilitating conditions – KM system (FCS), policies (FCP) and culture (FCC);
- Intra-organizational knowledge hiding (IOKH); and
- reciprocal knowledge hiding (RKH) were developed within this study.

Voluntary turnover intentions (VTI) items were adapted from Bontis and Serenko (2009a, 2009b). Each construct was operationalized with multiple indicators that pertained to various aspects of a relevant concept measured on a seven-point Likert-type scale. The voluntary turnover intentions scale included one negatively worded item which served as a cognitive speed-bump to reduce common method variance (Hinkin, 1995; Podsakoff *et al.*, 2003). Social desirability bias (Crowne and Marlowe, 1960) was measured by including the Reynolds' (1982) 13-item scale. An exhaustive assessment of face validity of the research instrument was done by soliciting feedback from a group

Figure 1 The proposed model



of scholars with expertise in the domain of this study and from potential respondents. In each of three rounds of revisions, feedback from the review team was used to modify and improve the questions until full consensus was reached. After this, the instrument was pilot-tested on a group of 105 knowledge workers. Because an acceptable level of construct reliability and validity was observed, it was concluded that no further modifications were necessary.

The instrument (see [Appendix](#)) was administered to 691 employees of 15 North American credit unions (eight in Canada and seven in the USA). The executives of these organizations were contacted through their professionals' associations – Credit Union Central of Canada and Filene Research Institute in the USA. Credit unions are considered knowledge-intensive organizations and, therefore, fit well in the context of this study. Particularly, credit unions occupy a unique position among all forms of financial institutions. First, their members generate both supply of and demand on funds, and credit unions have to minimize the difference in rates between their internal lenders and borrowers to act in the best interest of their members ([Smith *et al.*, 1981](#); [Patin and McNeil, 1991](#)). Second, they operate in a highly competitive environment due to industry deregulation ([Barron *et al.*, 1998](#)), the appearance of virtual banks ([Dandapani and Lawrence, 2008](#)) and new digital currency transmitters (e.g. PayPal). KM activities may allow credit unions to improve their effectiveness and efficiency, increase competitiveness and better satisfy their members ([Bontis and Serenko, 2009a](#); [Seguí-Mas and Izquierdo, 2009](#)). In a series of conversations with the authors of this study, the executives of all credit unions attested to the importance of KM and engagement in at least basic KM practices.

A high-level manager at each participating organization forwarded a link to the online survey to a random group of employees at various levels. Participations was optional. To increase a response rate, the study description emphasized the importance of this survey and stated that the findings will be shared with their credit union.

Objective organizational-level data were obtained directly from the top executives of each credit union. Because the study was done in 2013, 2012 was the latest year for which data were available. The following data were collected:

- The number of FTE employees based on a standard work week (almost all credit unions confirmed that this value typically falls between 35 and 40 h) over the course of the fiscal year. All full-time, part-time and contractual employees, including overtime, were included in the total figure. Vacation and sick time were excluded.
- Compensation. This is the total cost of all salaries, wages, performance awards and bonuses, overtime and pay premiums, commissions, profit sharing, severance pay and all other cash incentives during the period. Stock options, reimbursement of business expenses and other long-term deferred payments were excluded.
- Involuntary separations defined as the total number of involuntary separations attributable to organizational restructuring, termination, etc.

Data were collected as part of a larger study. Compensation per FTE was calculated by dividing compensation by the number of FTE employees. Involuntary turnover (ITURN) was calculated by dividing the number of involuntary separations by the number of FTE employees. [Table I](#) presents organizational-level data statistics.

4. Results

Twenty-six per cent of all employees completed the survey, and 691 valid responses were obtained. Their average age was 42 years, ranging from 19 to 77 years old. On average, they had worked for five years at their present job and had been employed for ten years with their current credit union. Ninety-three per cent of them were employed full-time, and over 70 per cent had a diploma or degree from a post-secondary institution. In all, 48 per cent were employed in a branch, 45 per cent worked in a head office and 7 per cent were on other premises.

Partial least squares (PLS) was selected to test the proposed model with the use of SmartPLS v.2 software. PLS is a second generation structural equation modeling technique that fits well in the context of the present study because it is very suitable for exploratory research when new constructs and structural relationships are tested for the first time ([Chin, 1998](#); [Chin et al., 2003](#); [Vinzi et al., 2010](#)). The use of PLS is appropriate when the objective is to test a number of hypothesis instead of obtaining the best model fit ([Chin and Gopal, 1995](#)). Most importantly, PLS may be used when a construct is operationalized with only a single indicator.

The examination of the hypothesized model proceeded in two steps:

1. analysis of the measurement model; and
2. analysis of the structural model.

4.1 The measurement model

The assessment of the psychometric properties of the perceptual (self-reported) constructs was done in isolation from the objective (organizational-level) constructs. First, in PLS, the presence of objective constructs may affect the allocation of weights and loadings thereby confounding the true psychometric properties of indicators of self-reported constructs. Second, when assessing convergent and discriminant validity, self-reported constructs and their indicators should be measured against each other without the influence of factors that do not apply. Third, the objective constructs (compensation per FTE and involuntary turnover) were

	<i>Avg</i>	<i>SD</i>	<i>Max</i>	<i>Min</i>
FTE	281	259	1,076	49
CFTE	US\$54,073	US\$6,501	US\$69,321	US\$54,073
ITURN (%)	2.41	1.95	5.13	0.00

measured with only a single formative indicator, and thus a discussion of their psychometric properties is irrelevant.

Harman's (1967) one-factor test was done where all indicators were added to an un-rotated solution with the eigenvalues over one. As theoretically expected, six factors emerged, and the first factor explained only 26.7 per cent of total variance. Thus, common method variance was unlikely to exist. Table II presents correlations between social desirability bias (SDB) and self-reported constructs. It shows that, to appear socially desirable, some respondents tried to over-state the magnitude of facilitating conditions and to under-report knowledge hiding and voluntary turnover intentions. At the same time, this phenomenon is expected to exist when self-reported data are collected. Most importantly, the magnitude of correlations was small and consistent with those reported in prior studies (Ridgway *et al.*, 2008; Turel *et al.*, 2011).

Table III presents descriptive statistics and reliability assessment. On average, employees believed that they less frequently engaged in knowledge hiding activities than their

Table II Social desirability bias correlations

	<i>FCS</i>	<i>FCP</i>	<i>FCC</i>	<i>IOKH</i>	<i>RKH</i>	<i>VTI</i>
SDB	0.18	0.22	0.17	-0.18	-0.20	-0.20

Note: All values are significant at $p < 0.001$

Table III Descriptive statistics and reliability assessment (AVE—average variance extracted)

<i>Item</i>	<i>Mean</i>	<i>SD</i>	<i>Item-total correlation</i>	<i>Loading</i>	<i>Error</i>	<i>Cronbach's alpha</i>	<i>Composite reliability</i>	<i>AVE</i>
FCS1	5.63	1.28	0.73	0.823	0.097	0.96	0.965	0.752
FCS2	5.14	1.49	0.75	0.813	0.096			
FCS3	5.22	1.44	0.85	0.904	0.105			
FCS4	5.25	1.47	0.86	0.908	0.104			
FCS5	5.16	1.52	0.87	0.879	0.100			
FCS6	5.15	1.46	0.88	0.907	0.099			
FCS7	4.95	1.58	0.82	0.862	0.093			
FCS8	4.98	1.57	0.83	0.868	0.096			
FCS9	4.53	1.65	0.76	0.832	0.121			
FCP1	5.33	1.39	0.80	0.855	0.115			
FCP2	5.07	1.48	0.83	0.858	0.122			
FCP3	5.05	1.48	0.89	0.914	0.105			
FCP4	5.08	1.50	0.90	0.920	0.107			
FCP5	5.02	1.52	0.92	0.936	0.106			
FCP6	5.05	1.49	0.93	0.941	0.103			
FCP7	4.88	1.58	0.88	0.877	0.100			
FCP8	4.91	1.55	0.90	0.897	0.101			
FCP9	4.61	1.64	0.85	0.895	0.092			
FCP10	4.98	1.54	0.92	0.897	0.106			
FCC1	5.44	1.36	0.78	0.842	0.032	0.90	0.924	0.709
FCC2	5.23	1.46	0.81	0.854	0.030			
FCC3	5.56	1.36	0.75	0.848	0.028			
FCC4	5.64	1.27	0.76	0.866	0.031			
FCC5	5.56	1.57	0.63	0.799	0.041			
IOKH1	2.35	1.62	0.83	0.910	0.020	0.92	0.943	0.845
IOKH2	2.13	1.50	0.89	0.946	0.011			
IOKH3	1.90	1.37	0.81	0.902	0.022			
RKH1	1.66	1.25	0.70	0.857	0.032	0.85	0.895	0.740
RKH2	1.51	1.08	0.78	0.879	0.037			
RKH3	1.30	0.82	0.69	0.845	0.043			
VTI1	3.23	2.28	0.78	0.856	0.023	0.87	0.900	0.643
VTI2	3.14	1.98	0.60	0.784	0.037			
VTI3	3.49	2.36	0.68	0.761	0.043			
VTI4	2.05	1.76	0.72	0.814	0.039			
VTI5	2.02	1.72	0.70	0.792	0.044			

colleagues did ($t = 9.753, p < 0.001$). Overall, all items and constructs were very reliable. For all items, item-to-total correlations were above 0.5, loadings captured over 50 per cent of variance of their respective construct, and residual errors were low (Nunnally and Bernstein, 1994). For all constructs, Cronbach's alphas were over 0.8, and average variance extracted and composite reliability values exceeded the recommended thresholds of 0.5 and 0.7, respectively (Fornell and Larcker, 1981). Table IV (the matrix of loadings and cross-loadings) confirms discriminant validity of the items, and Table V (construct correlations) further establishes discriminant validity of the constructs (Gefen *et al.*, 2000; Gefen and Straub, 2005).

	<i>FCS</i>	<i>FCP</i>	<i>FCC</i>	<i>IOKH</i>	<i>RKH</i>	<i>VTI</i>
FCS1	0.823	0.573	0.416	-0.080	-0.080	-0.183
FCS2	0.813	0.610	0.421	-0.065	-0.041	-0.166
FCS3	0.904	0.675	0.440	-0.102	-0.079	-0.212
FCS4	0.908	0.657	0.420	-0.116	-0.124	-0.214
FCS5	0.879	0.663	0.429	-0.082	-0.063	-0.192
FCS6	0.907	0.712	0.459	-0.091	-0.065	-0.193
FCS7	0.862	0.700	0.477	-0.083	-0.039	-0.204
FCS8	0.868	0.681	0.485	-0.103	-0.073	-0.183
FCS9	0.832	0.683	0.417	-0.123	-0.032	-0.257
FCP1	0.685	0.855	0.499	-0.047	-0.033	-0.195
FCP2	0.670	0.858	0.471	-0.042	-0.022	-0.178
FCP3	0.681	0.914	0.532	-0.093	-0.057	-0.215
FCP4	0.700	0.920	0.515	-0.123	-0.066	-0.217
FCP5	0.718	0.936	0.503	-0.093	-0.050	-0.193
FCP6	0.707	0.941	0.524	-0.085	-0.051	-0.214
FCP7	0.681	0.877	0.484	-0.100	-0.058	-0.204
FCP8	0.692	0.897	0.503	-0.076	-0.054	-0.152
FCP9	0.702	0.895	0.516	-0.118	-0.034	-0.231
FCP10	0.668	0.897	0.494	-0.124	-0.072	-0.182
FCC1	0.459	0.537	0.842	-0.249	-0.134	-0.290
FCC2	0.474	0.533	0.854	-0.237	-0.127	-0.313
FCC3	0.395	0.462	0.848	-0.219	-0.062	-0.301
FCC4	0.455	0.489	0.866	-0.262	-0.077	-0.243
FCC5	0.363	0.368	0.799	-0.341	-0.188	-0.241
IOKH1	-0.075	-0.097	-0.296	0.910	0.541	0.243
IOKH2	-0.107	-0.095	-0.298	0.946	0.568	0.244
IOKH3	-0.127	-0.109	-0.289	0.902	0.526	0.254
RKH1	-0.065	-0.060	-0.140	0.515	0.857	0.207
RKH2	-0.077	-0.055	-0.140	0.530	0.879	0.168
RKH3	-0.059	-0.035	-0.097	0.484	0.845	0.186
VTI1	-0.202	-0.191	-0.275	0.196	0.145	0.856
VTI2	-0.196	-0.201	-0.277	0.273	0.204	0.784
VTI3	-0.161	-0.158	-0.215	0.147	0.105	0.761
VTI4	-0.188	-0.173	-0.307	0.218	0.168	0.814
VTI5	-0.184	-0.158	-0.215	0.204	0.217	0.792

	<i>FCS</i>	<i>FCP</i>	<i>FCC</i>	<i>IOKH</i>	<i>RKH</i>	<i>VTI</i>
FCS	0.867					
FCP	0.765	0.899				
FCC	0.507	0.561	0.842			
IOKH	-0.112	-0.109	-0.320	0.919		
RKH	-0.078	-0.059	-0.147	0.593	0.860	
VTI	-0.235	-0.223	-0.326	0.268	0.217	0.802

Note: The diagonal values represent the square root of AVE

4.2 The structural model

Two structural models were estimated separately. The first contained only perceptual (self-reported) constructs because the purpose was to establish which constructs have a statistically significant effect and retain them for further analysis. By removing non-significant constructs, it is easier to achieve statistical significance when testing a model with objective organizational-level factors because of a smaller sample size. Figure 2 presents the structural model based solely on perceptual measures. Bootstrapping was done to obtain *t*-values for the structural relationships. Two types of facilitating conditions – KM systems and policies – did not have an effect on intra-organizational knowledge hiding. At the same time, the cultural dimension of facilitating conditions had a medium negative effect on intra-organizational knowledge hiding ($\beta = -0.38$, $p < 0.01$). As expected, intra-organizational knowledge hiding had a strong positive effect on reciprocal knowledge hiding ($\beta = 0.59$, $p < 0.01$) and a medium positive effect on voluntary turnover intentions ($\beta = 0.27$, $p < 0.01$).

To test the second structural model, two facilitating conditions – KM systems and policies – were excluded because they did not have a statistically significant effect on their respective dependent variable. For each credit union, scores pertaining to each perceptual indicator were averaged to create an organizational-level measure. Next, the average of all indicators was calculated to produce a single measure reflecting the entire construct of interest. This was done for consistency purposes because the other organizational-level constructs (compensation per FTE and involuntary turnover) were measured by a single indicator.

Figure 3 presents the organizational-level model. As expected, compensation per FTE had a negative effect on intra-organizational knowledge hiding ($\beta = -0.22$, $p < 0.01$), and involuntary turnover rate had a positive effect on intra-organizational knowledge hiding ($\beta = 0.21$, $p < 0.01$). All of the structural relationships that were supported at the individual level (Figure 2) were also supported at the organizational level of analysis.

5. Implications

The purpose of this study was to identify and empirically test several antecedents and consequences of intra-organizational knowledge hiding. A model was developed and tested with the data from 691 employees from 15 North American credit unions. Several interesting findings emerged that warrant further elaboration.

Implication 1. Employees should objectively re-evaluate the magnitude of their own and their colleagues' knowledge hiding behavior.

In this study, it was observed that the level of intra-organizational knowledge hiding was higher than that of reciprocal knowledge hiding. Thus, employees believe that they engage

Figure 2 The individual-level structural model

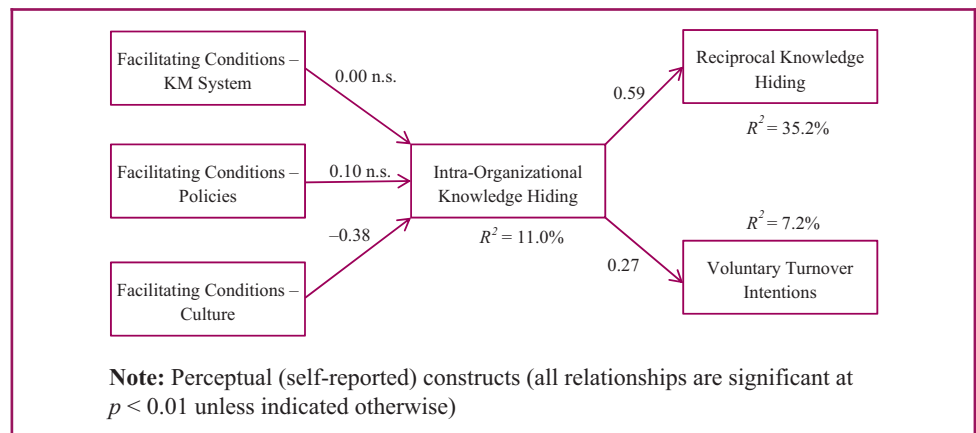
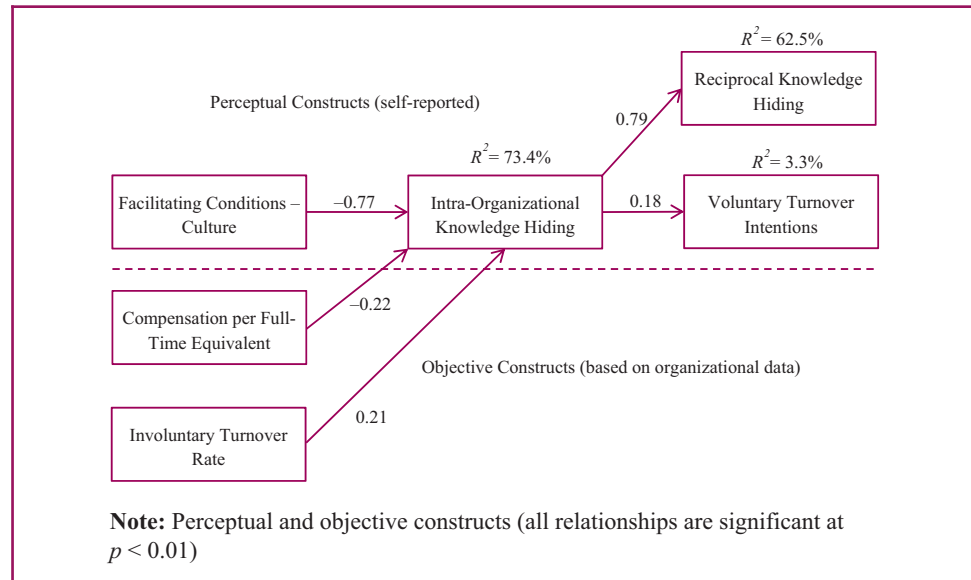


Figure 3 The organizational-level structural model



in counterproductive knowledge behavior – hide knowledge from their fellow co-workers – to a lesser degree than their colleagues hide knowledge from them. It is a well-established fact in the business ethics literature that employees consider themselves more ethical than their peers, managers and subordinates, including those they hardly know (Tyson, 1990; Reynolds, 2003). As a result, they either under-estimate their own knowledge hiding behavior or overstate their colleagues' knowledge hiding behavior. If the former assumption is true, employees should objectively re-analyze their knowledge hiding behavior to make sure their reflection of themselves is aligned with their actual actions. This awareness, in turn, may help them recognize their own counterproductive knowledge behavior and hopefully minimize it. If the latter proposition is true, employees should realize that the knowledge hiding behavior of their colleagues is not as extreme as they assume and consequently reduce their negative knowledge reciprocation behavior.

Implication 2. The availability of KM systems and knowledge policies has no impact on intra-organizational knowledge hiding.

This study hypothesized that when organizations have a KM system and knowledge sharing policies, their employees may find it easier to engage in knowledge sharing activities and, therefore, gradually develop habitual knowledge sharing behavior and minimize undesirable knowledge hiding behavior. Counter to expectations, the availability of KM systems and knowledge policies does not reduce knowledge hiding. Thus, knowledge hiding cannot be weakened through the development of knowledge sharing habit, the ease of knowledge sharing by means of information technologies and policies promoting desirable knowledge activities. Instead, knowledge hiding is likely to represent a form of rationalized behavior that is driven by various personal factors. This is a critically important revelation of the study because organizations that continue to invest heavily in technology-based KM systems without a concomitant review of knowledge hiding behaviors do so at their own risk.

Implication 3. Organizational knowledge culture dramatically reduces knowledge hiding behavior.

Open, collaborative and altruistic organizational culture that emphasizes group identity and denounces self-interest has been traditionally considered perhaps the most important antecedent of productive knowledge behavior (Witherspoon *et al.*, 2013). The present study revealed that the existence of a positive organizational knowledge culture may also

reduce counterproductive knowledge behavior, particularly knowledge hiding. Given that KM systems alone do not reduce knowledge hiding behavior (see Implication 2 above), it is imperative that senior managers emphasize the importance of organizational culture when attempting to address the issue of knowledge hiding. This can also manifest itself through the behaviors of the most senior executives in an organization who exhibit expected (i.e. standard) behaviors for the rest of the employees to follow.

Implication 4. Knowledge hiding and knowledge sharing belong to unique yet possibly overlapping dimensions of knowledge behavior.

KM systems, policies and culture are generally considered the major facilitating conditions of knowledge sharing behavior. In contrast to expectations, the present study found no evidence that two of them (i.e. the availability of KM systems and policies) reduce knowledge hiding. This shows that the forces maximizing productive knowledge behavior and minimizing counterproductive knowledge behavior are different, and knowledge sharing and knowledge hiding are unlikely to be the opposite sides of the same dimension.

In terms of the Triandis' (1977) types of facilitating conditions, it is concluded that whereas the ability to engage and knowing how to engage in a knowledge behavior may facilitate productive knowledge behavior, they cannot reduce counterproductive one. This phenomenon may be explained theoretically. First, knowledge sharing may be motivated by the feeling of responsibility, accountability and duty that is directed toward an organization and/or the feeling of altruism, helpfulness and kindness that is directed toward a co-worker. The behavior is directed toward the third party – either an entity or a person. In sharp contrast, knowledge hiding is driven by feeling of egoism, selfishness and greed accompanied by a rational assessment of costs and benefits of the action or non-action. The behavior is directed toward the self. Therefore, it is possible that the differences in the valence of motivation (positive vs negative) and the focus (others vs self) make knowledge sharing and knowledge hiding constructs conceptually distinct.

Second, the availability of KM systems and policies makes it easier for employees to share knowledge. It is likely that when employees do not wish to hide their knowledge, the facilitating conditions make it easier for them to perform the knowledge sharing act. However, when people made a conscious decision to hide their knowledge, the ease of the behavior makes no difference. At the same time, despite the uniqueness of productive and counterproductive knowledge behaviors, some overlap between their dimensions is possible because the availability of positive organizational culture has an impact on both behaviors.

Implication 5. Job insecurity motivates knowledge hiding.

This study found that two indicators of job insecurity – compensation per FTE and involuntary turnover rate – facilitate intra-organizational knowledge hiding. When an organization experiences financial difficulties, it reduces employee compensation and initiates workforce reductions. Employees in return start to conceal knowledge from their colleagues to increase their expert power and demonstrate their value to the employer. This relationship may manifest itself even more in organizational contexts that are virtually entirely performance-based. For example, a sales organization that compensates its employees entirely based on commission would expect to have a healthy level of internal competition. This in turn would accelerate the reputation-building behaviors of top sales people who may choose to hide critical client information from their colleagues.

Implication 6. Employees may reciprocate both positive and negative knowledge behavior.

According to social exchange theory, when employees receive help from their colleagues who voluntarily share their knowledge, they are very likely to return the favor later by sharing their knowledge in return, which is referred to as positive reciprocation. The present study demonstrates that employees may also engage in retaliation or negative reciprocation –

they are likely to conceal their knowledge if the other organizational members demonstrate similar behavior. Again, the expectation here is that in certain merit-based organizational contexts, individuals may choose to sabotage the performance of their fellow colleagues. One method for sabotage would be to conceal information from a colleague, even though that colleague may desperately need it. This behavior further facilitates negative knowledge hiding reciprocation. If the variable compensation (or merit pay) in such an organization is a zero-sum game with a finite total to be distributed, it might be hypothesized that these sabotage behaviors would be even more evident.

Implication 7. Intra-organizational knowledge hiding promotes voluntary turnover.

Voluntary turnover results in direct financial expenses, loss of human capital and stronger competition. When employees experience or observe unethical knowledge hiding behavior of their co-workers, they may reduce the degree of their affective, continuance and normative organizational commitment and decide to leave their organization. A useful study to pinpoint such a problem for organizations would be found in data resulting from exit interviews.

6. Conclusions

Since the birth of the KM discipline, academic research has mostly focused on the development of productive knowledge behavior and paid less attention to understanding and preventing counterproductive knowledge behavior. This study contributes to the literature by exploring antecedents and consequences of intra-organizational knowledge hiding, which is a form of counterproductive knowledge behavior. It is concluded that knowledge hiding represents a unique construct that may only partially overlap with knowledge sharing. The availability of organizational KM systems and policies does not reduce knowledge hiding; instead, it is the overall organizational knowledge culture that may curb undesirable knowledge behavior.

Given the complex nature of knowledge hiding behavior, future academic research may also consider what temporal periods or organizational events trigger such behaviors. For example, rookie (i.e. new) employees who have just started working in a new organization may not choose to hide knowledge from any colleague that requests it simply because she is just starting to develop her own reputation. Conversely, a mature (i.e. senior) employee who wields certain power and prestige within the organization may choose to continue exhibiting knowledge hiding behaviors because any perceived threat to his career progress would be considered nominal.

Another fruitful avenue for future research would be an examination of multi-level knowledge hiding. For example, perhaps personality-type or gender influences a dyadic relationship between two individuals who choose to share or hide knowledge from each other. As an extension, it is likely that the diversity (or homogeneity) of a group dictates the existence of hiding (or collaborative) behaviors within that team.

Note

1. In 2015, the *Journal of Knowledge Management* published 68 articles; 35 of them focused on the issue of knowledge sharing.

References

- 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.
- Alavi, M. and Leidner, D.E. (2001), "Knowledge management and knowledge management systems: conceptual foundations and research issues", *MIS Quarterly*, Vol. 25 No. 1, pp. 107-136.
- Al-Ubaydli, O. and Lee, M.S. (2009), "An experimental study of asymmetric reciprocity", *Journal of Economic Behavior and Organization*, Vol. 72 No. 2, pp. 738-749.

- Andreeva, T. and Kianto, A. (2012), "Does knowledge management really matter? Linking knowledge management practices, competitiveness and economic performance", *Journal of Knowledge Management*, Vol. 16 No. 4, pp. 617-636.
- Aramburu, N. and Sáenz, J. (2007), "Promoting people-focused knowledge management: the case of IDOM", *Journal of Knowledge Management*, Vol. 11 No. 4, pp. 72-81.
- Ardichvili, A., Page, V. and Wentling, T. (2003), "Motivation and barriers to participation in virtual knowledge-sharing communities of practice", *Journal of Knowledge Management*, Vol. 7 No. 1, pp. 64-77.
- Ardichvili, A., Maurer, M., Li, W., Wentling, T. and Stuedemann, R. (2006), "Cultural influences on knowledge sharing through online communities of practice", *Journal of Knowledge Management*, Vol. 10 No. 1, pp. 94-107.
- Attewell, P. (1992), "Technology diffusion and organizational learning: the case of business computing", *Organization Science*, Vol. 3 No. 1, pp. 1-19.
- Avey, J.B., Avolio, B.J., Crossley, C.D. and Luthans, F. (2009), "Psychological ownership: theoretical extensions, measurement and relation to work outcomes", *Journal of Organizational Behavior*, Vol. 30 No. 2, pp. 173-191.
- Barrick, M.R., Mount, M.K. and Strauss, J.P. (1994), "Antecedents of involuntary turnover due to a reduction in force", *Personnel Psychology*, Vol. 47 No. 3, pp. 515-535.
- Barron, D.N., West, E. and Hannan, M.T. (1998), "Deregulation and competition in the financial industry", *Industrial and Corporate Change*, Vol. 7 No. 1, pp. 1-32.
- Baumeister, R.F., Bratslavsky, E., Finkenauer, C. and Vohs, K.D. (2001), "Bad is stronger than good", *Review of General Psychology*, Vol. 5 No. 4, pp. 323-370.
- Bennett, R.J. and Robinson, S.L. (2000), "Development of a measure of workplace deviance", *Journal of Applied Psychology*, Vol. 85 No. 3, pp. 349-360.
- Blau, P.M. (1964), *Exchange and Power in Social Life*, John Wiley, New York, NY.
- Bock, G.W., Zmud, R.W., Kim, Y.G. and Lee, J.N. (2005), "Behavioral intention formation in knowledge sharing: examining the rules of extrinsic motivators, social-psychological forces, and organizational climate", *MIS Quarterly*, Vol. 29 No. 1, pp. 87-111.
- Bontis, N. (1998), "Intellectual capital: an exploratory study that develops measures and models", *Management Decision*, Vol. 36 No. 2, pp. 63-76.
- Bontis, N. (1999), "Managing organizational knowledge by diagnosing intellectual capital: framing and advancing the state of the field", *International Journal of Technology Management*, Vol. 18 Nos 5/6/7/8, pp. 433-462.
- Bontis, N. and Fitz-enz, J. (2002), "Intellectual capital ROI: a causal map of human capital antecedents and consequents", *Journal of Intellectual Capital*, Vol. 3 No. 3, pp. 223-247.
- Bontis, N. and Serenko, A. (2009a), "A causal model of human capital antecedents and consequents in the financial services industry", *Journal of Intellectual Capital*, Vol. 10 No. 1, pp. 53-69.
- Bontis, N. and Serenko, A. (2009b), "Longitudinal knowledge strategizing in a long-term healthcare organization", *International Journal of Technology Management*, Vol. 47 Nos 1/2/3, pp. 276-297.
- Brown, G., Lawrence, T.B. and Robinson, S.L. (2005), "Territoriality in organizations", *Academy of Management Review*, Vol. 30 No. 3, pp. 577-594.
- Bundred, S. (2006), "Solutions to silos: joining up knowledge", *Public Money & Management*, Vol. 26 No. 2, pp. 125-130.
- Černe, M., Nerstad, C.G.L., Dysvik, A. and Škerlavaj, M. (2014), "What goes around comes around: knowledge hiding, perceived motivational climate, and creativity", *Academy of Management Journal*, Vol. 57 No. 1, pp. 172-192.
- Chin, W.W. (1998), "The partial least squares approach for structural equation modeling", in Marcoulides, G.A. (Ed.), *Modern Methods for Business Research*, Lawrence Erlbaum Associates, Mahwah, NJ, pp. 295-336.
- Chin, W.W. and Gopal, A. (1995), "Adoption intention in GSS: relative importance of beliefs", *Data Base for Advancements in Information Systems*, Vol. 26 Nos 2/3, pp. 42-64.

- Chin, W.W., Marcolin, B.L. and Newsted, P.R. (2003), "A partial least squares latent variable modeling approach for measuring interaction effects: results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study", *Information Systems Research*, Vol. 14 No. 2, pp. 189-217.
- Connelly, C.E. and Zweig, D. (2015), "How perpetrators and targets construe knowledge hiding in organizations", *European Journal of Work and Organizational Psychology*, Vol. 24 No. 3, pp. 479-489.
- Connelly, C.E., Zweig, D., Webster, J. and Trougakos, J.P. (2012), "Knowledge hiding in organizations", *Journal of Organizational Behavior*, Vol. 33 No. 1, pp. 64-88.
- Cropanzano, R. and Mitchell, M.S. (2005), "Social exchange theory: an interdisciplinary review", *Journal of Management*, Vol. 31 No. 6, pp. 874-900.
- Crowne, D.P. and Marlowe, D. (1960), "A new scale of social desirability independent of psychopathology", *Journal of Consulting Psychology*, Vol. 24 No. 4, pp. 349-354.
- Daghfous, A., Belkhdja, O. and Angell, L.C. (2013), "Understanding and managing knowledge loss", *Journal of Knowledge Management*, Vol. 17 No. 5, pp. 639-660.
- Dalal, R.S. (2005), "A meta-analysis of the relationship between organizational citizenship behavior and counterproductive work behavior", *Journal of Applied Psychology*, Vol. 90 No. 6, pp. 1241-1255.
- Dandapani, K. and Lawrence, E.R. (2008), "Virtual bank failures: an investigation", *Managerial Finance*, Vol. 34 No. 6, pp. 399-412.
- Davenport, T.H. (1997), *Information Ecology: Mastering the Information and Knowledge Environment*, Oxford University Press, Oxford.
- Davenport, T.H. and Prusak, L. (1998), *Working Knowledge: How Organizations Manage What They Know*, Harvard Business Review Press, Boston, MA.
- Davis, F.D. (1989), "Perceived usefulness, perceived ease of use and user acceptance of information technology", *MIS Quarterly*, Vol. 13 No. 3, pp. 319-340.
- Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989), "User acceptance of computer technology: a comparison of two theoretical models", *Management Science*, Vol. 35 No. 8, pp. 982-1003.
- Dehghani, R. and Ramsin, R. (2015), "Methodologies for developing knowledge management systems: an evaluation framework", *Journal of Knowledge Management*, Vol. 19 No. 4, pp. 682-710.
- Donate, M.J. and Guadamillas, F. (2015), "An empirical study on the relationships between knowledge management, knowledge-oriented human resource practices and innovation", *Knowledge Management Research & Practice*, Vol. 13 No. 2, pp. 134-148.
- Durst, S. and Wilhelm, S. (2012), "Knowledge management and succession planning in SMEs", *Journal of Knowledge Management*, Vol. 16 No. 4, pp. 637-649.
- Emerson, R.M. (1976), "Social exchange theory", *Annual Review of Sociology*, Vol. 2 No. 1, pp. 335-362.
- Evans, J.M., Hendron, M.G. and Oldroyd, J.B. (2015), "Withholding the ace: the individual- and unit-level performance effects of self-reported and perceived knowledge hoarding", *Organization Science*, Vol. 26 No. 2, pp. 494-510.
- Fiske, S.T. and Taylor, S.E. (1984), *Social Cognition*, Longman Higher Education, London.
- Ford, D., Myrden, S.E. and Jones, T.D. (2015), "Understanding 'disengagement from knowledge sharing': engagement theory versus adaptive cost theory", *Journal of Knowledge Management*, Vol. 19 No. 3, pp. 476-496.
- Ford, D.P. and Staples, S. (2010), "Are full and partial knowledge sharing the same?", *Journal of Knowledge Management*, Vol. 14 No. 3, pp. 394-409.
- 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.
- Foucault, M. (Ed.) (1980), *Power/knowledge: Selected Interviews and Other Writings, 1972-1977*, Pantheon Books, New York, NY.
- Fredrickson, B.L. (2001), "The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions", *American Psychologist*, Vol. 56 No. 3, pp. 218-226.
- Gamo-Sanchez, A.L. and Cegarra-Navarro, J.G. (2015), "Factors that influence the success of a KM-program in a small-sized airport", *Journal of Knowledge Management*, Vol. 19 No. 3, pp. 593-610.

- Gefen, D. and Straub, D. (2005), "A practical guide to factorial validity using PLS-Graph: tutorial and annotated example", *Communications of the Association for Information Systems*, Vol. 16 No. 5, pp. 91-109.
- Gefen, D., Straub, D. and Boudreau, M.-C. (2000), "Structural Equation Modeling and Regression: guidelines for research practice", *Communications of the Association for Information Systems*, Vol. 4 No. 7, pp. 1-77.
- Guenther, H., van Emmerik, I.H. and Schreurs, B. (2014), "The negative effects of delays in information exchange: looking at workplace relationships from an affective events perspective", *Human Resource Management Review*, Vol. 24 No. 4, pp. 283-298.
- Haas, M.R. and Park, S. (2010), "To share or not to share? Professional norms, reference groups, and information withholding among life scientists", *Organization Science*, Vol. 21 No. 4, pp. 873-891.
- Hall, H., Widén, G. and Paterson, L. (2010), "Not what you know, nor who you know, but who you know already: examining online information sharing behaviours in a blogging environment through the lens of social exchange theory", *Libri: International Journal of Libraries and Information Services*, Vol. 60 No. 2, pp. 117-128.
- Han, T.S., Chiang, H.H. and Chang, A. (2010), "Employee participation in decision making, psychological ownership and knowledge sharing: mediating role of organizational commitment in Taiwanese high-tech organizations", *International Journal of Human Resource Management*, Vol. 21 No. 12, pp. 2218-2233.
- Harman, H.H. (1967), *Modern Factor Analysis*, University of Chicago Press, Chicago, IL.
- Heizmann, H. and Olsson, M.R. (2015), "Power matters: the importance of Foucault's power/knowledge as a conceptual lens in KM research and practice", *Journal of Knowledge Management*, Vol. 19 No. 4, pp. 756-769.
- Hinkin, T.R. (1995), "A review of scale development practices in the study of organizations", *Journal of Management*, Vol. 21 No. 5, pp. 967-988.
- Hinkin, T.R. and Schriesheim, C.A. (1989), "Development and application of new scales to measure the French and Raven (1959) bases of social power", *Journal of Applied Psychology*, Vol. 74 No. 4, pp. 561-567.
- Hislop, D. (2003), "Linking human resource management and knowledge management via commitment: a review and research agenda", *Employee Relations*, Vol. 25 No. 2, pp. 182-202.
- Homans, G.C. (1958), "Social behavior as exchange", *American Journal of Sociology*, Vol. 63 No. 6, pp. 597-606.
- Homans, G.C. (1974), *Social Behavior: Its Elementary Forms*, Harcourt Brace, New York, NY.
- Husted, K. and Michailova, S. (2002), "Diagnosing and fighting knowledge-sharing hostility", *Organizational Dynamics*, Vol. 31 No. 1, pp. 60-73.
- Husted, K., Michailova, S., Minbaeva, D.B. and Pedersen, T. (2012), "Knowledge-sharing hostility and governance mechanisms: an empirical test", *Journal of Knowledge Management*, Vol. 16 No. 2, pp. 754-773.
- Hutchings, K. and Michailova, S. (2004), "Facilitating knowledge sharing in Russian and Chinese subsidiaries: the role of personal networks and group membership", *Journal of Knowledge Management*, Vol. 8 No. 2, pp. 84-94.
- Israilidis, J., Siachou, E., Cooke, L. and Lock, R. (2015), "Individual variables with an impact on knowledge sharing: the critical role of employees' ignorance", *Journal of Knowledge Management*, Vol. 19 No. 6, pp. 1109-1123.
- Jacobs, E. and Roodt, G. (2007), "The development of a knowledge sharing construct to predict turnover intentions", *Aslib Proceedings: New Information Perspectives*, Vol. 59 No. 3, pp. 229-248.
- Jang, H. and Ko, I. (2014), "The factors influencing CoP activities and their impact on relationship commitment and individual performance", *Journal of Knowledge Management*, Vol. 18 No. 1, pp. 75-91.
- Jaros, S.J. (1997), "An assessment of Meyer and Allen's (1991) three-component model of organizational commitment and turnover intentions", *Journal of Vocational Behavior*, Vol. 51 No. 3, pp. 319-337.

- 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.
- Junnarkar, B. and Brown, C.V. (1997), "Re-assessing the enabling role of information technology in KM", *Journal of Knowledge Management*, Vol. 1 No. 2, pp. 142-148.
- Kang, S.W. (2016), "Knowledge withholding: psychological hindrance to the innovation diffusion within an organisation", *Knowledge Management Research & Practice*, Vol. 14 No. 1, pp. 144-149.
- Kianto, A., Andreeva, T. and Pavlov, Y. (2013), "The impact of intellectual capital management on company competitiveness and financial performance", *Knowledge Management Research & Practice*, Vol. 11 No. 2, pp. 112-122.
- Kruger, C.J. and Johnson, R.D. (2010), "Principles in knowledge management maturity: a South African perspective", *Journal of Knowledge Management*, Vol. 14 No. 4, pp. 540-556.
- Kube, S., Maréchal, M.A. and Puppe, C. (2013), "Do wage cuts damage work morale? Evidence from a natural field experiment", *Journal of the European Economic Association*, Vol. 11 No. 4, pp. 853-870.
- Lee, H., Kim, J.W. and Hackney, R. (2011), "Knowledge hoarding and user acceptance of online discussion board systems in eLearning: a case study", *Computers in Human Behavior*, Vol. 27 No. 4, pp. 1431-1437.
- Levy, M. (2011), "Knowledge retention: minimizing organizational business loss", *Journal of Knowledge Management*, Vol. 15 No. 4, pp. 582-600.
- Li, J., Yuan, L., Ning, L. and Li-Ying, J. (2015), "Knowledge sharing and affective commitment: the mediating role of psychological ownership", *Journal of Knowledge Management*, Vol. 19 No. 6, pp. 1146-1166.
- Li, W. (2010), "Virtual knowledge sharing in a cross-cultural context", *Journal of Knowledge Management*, Vol. 14 No. 1, pp. 38-50.
- Liao, L.F. (2008), "Knowledge-sharing in R&D departments: a social power and social exchange theory perspective", *International Journal of Human Resource Management*, Vol. 19 No. 10, pp. 1881-1895.
- Lin, H.F. (2015), "Linking knowledge management orientation to balanced scorecard outcomes", *Journal of Knowledge Management*, Vol. 19 No. 6, pp. 1224-1249.
- Lin, S.W. and Lo, L.Y.S. (2015), "Mechanisms to motivate knowledge sharing: integrating the reward systems and social network perspectives", *Journal of Knowledge Management*, Vol. 19 No. 2, pp. 212-235.
- Lin, T.C. and Huang, C.C. (2010), "Withholding effort in knowledge contribution: the role of social exchange and social cognitive on project teams", *Information & Management*, Vol. 47 No. 3, pp. 188-196.
- Liu, C.C., Liang, T.P., Rajagopalan, B., Sambamurthy, V. and Wu, J.C.H. (2012), "Knowledge sharing as social exchange: evidence from a meta-analysis", *Pacific Asia Journal of the Association for Information Systems*, Vol. 3 No. 4, pp. 21-47.
- Manhart, M. and Thalmann, S. (2015), "Protecting organizational knowledge: a structured literature review", *Journal of Knowledge Management*, Vol. 19 No. 2, pp. 190-211.
- Matayong, S. and Mahmood, A.K. (2013), "The review of approaches to knowledge management system studies", *Journal of Knowledge Management*, Vol. 17 No. 3, pp. 472-490.
- Meyer, J.P. and Allen, N.J. (1991), "A three-component conceptualization of organizational commitment", *Human resource management review*, Vol. 1 No. 1, pp. 61-89.
- Mobley, W.H., Horner, S.O. and Hollingsworth, A.T. (1978), "An evaluation of precursors of hospital employee turnover", *Journal of Applied Psychology*, Vol. 63 No. 4, pp. 408-414.
- Molm, L.D. (2006), "Homans's vision of social exchange", in Trevino, A.J., Tilly, C. and Homans, G.C. (Eds), *History, Theory, and Method*, Paradigm Publishers, London, pp. 135-156.
- Molm, L.D., Collett, J.L. and Schaefer, D.R. (2007), "Building solidarity through generalized exchange: a theory of reciprocity", *American Journal of Sociology*, Vol. 113 No. 1, pp. 205-242.
- Nonaka, I. (1994), "A dynamic theory of organizational knowledge creation", *Organization Science*, Vol. 5 No. 1, pp. 14-37.
- Nunnally, J.C. and Bernstein, I.H. (1994), *Psychometric Theory*, McGraw Hill, New York, NY.

- Offerman, T. (2002), "Hurting hurts more than helping helps", *European Economic Review*, Vol. 46 No. 8, pp. 1423-1437.
- Offsey, S. (1997), "Knowledge management: linking people to knowledge for bottom line results", *Journal of Knowledge Management*, Vol. 1 No. 2, pp. 113-122.
- Orbell, S. and Verplanken, B. (2010), "The automatic component of habit in health behavior: habit as cue-contingent automaticity", *Health Psychology*, Vol. 29 No. 4, pp. 374-383.
- Patin, R.P. and McNiel, D.W. (1991), "Benefit imbalances among credit union member groups: evidence of borrower-dominated, saver-dominated and neutral behaviour?", *Applied Economics*, Vol. 23 No. 4, pp. 769-780.
- Paulin, D. and Suneson, K. (2012), "Knowledge transfer, knowledge sharing and knowledge barriers – three blurry terms in KM", *Electronic Journal of Knowledge Management*, Vol. 10 No. 1, pp. 81-91.
- Peng, H. (2013), "Why and when do people hide knowledge?", *Journal of Knowledge Management*, Vol. 17 No. 3, pp. 398-415.
- Pereira, P.T., Silva, N. and Silva, J.A.E. (2006), "Positive and negative reciprocity in the labor market", *Journal of Economic Behavior and Organization*, Vol. 59 No. 3, pp. 406-422.
- Pierce, J.L., Kostova, T. and Dirks, K.T. (2003), "The state of psychological ownership: integrating and extending a century of research", *Review of General Psychology*, Vol. 7 No. 1, pp. 84-107.
- 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.
- Prusak, L. (2001), "Where did knowledge management come from?", *IBM Systems Journal*, Vol. 40 No. 4, pp. 1002-1007.
- Qureshi, A.M.A. and Evans, N. (2015), "Deterrents to knowledge-sharing in the pharmaceutical industry: a case study", *Journal of Knowledge Management*, Vol. 19 No. 2, pp. 296-314.
- Raven, B.H. (2008), "The bases of power and the power/interaction model of interpersonal influence", *Analyses of Social Issues and Public Policy*, Vol. 8 No. 1, pp. 1-22.
- Rechberg, I. and Syed, J. (2013), "Ethical issues in knowledge management: conflict of knowledge ownership", *Journal of Knowledge Management*, Vol. 17 No. 6, pp. 828-847.
- Reynolds, S.J. (2003), "Perceptions of organizational ethicality: do inflated perceptions of self lead to inflated perceptions of the organization?", *Journal of Business Ethics*, Vol. 42 No. 3, pp. 253-266.
- Reynolds, W.M. (1982), "Development of reliable and valid short forms of the Marlowe-Crowne social desirability scale", *Journal of Clinical Psychology*, Vol. 38 No. 1, pp. 119-125.
- Ridgway, N.M., Kukar-Kinney, M. and Monroe, K.B. (2008), "An expanded conceptualization and a new measure of compulsive buying", *Journal of Consumer Research*, Vol. 35 No. 4, pp. 622-639.
- Riege, A. (2005), "Three-dozen knowledge-sharing barriers managers must consider", *Journal of Knowledge Management*, Vol. 9 No. 3, pp. 18-35.
- Robinson, S.L. and Bennett, R.J. (1995), "A typology of deviant workplace behaviors: a multidimensional scaling study", *The Academy of Management Journal*, Vol. 38 No. 2, pp. 555-572.
- Rodríguez-Gómez, D. and Gairín, J. (2015), "Unravelling knowledge creation and management in educational organisations: barriers and enablers", *Knowledge Management Research & Practice*, Vol. 13 No. 2, pp. 149-159.
- Romano, M., Giudice, M.D. and Nicotra, M. (2014), "Knowledge creation and exploitation in Italian universities: the role of internal policies for patent activity", *Journal of Knowledge Management*, Vol. 18 No. 5, pp. 952-970.
- Seguí-Mas, E. and Izquierdo, R.J.S. (2009), "Studying the financial resources for agrifood industry and rural development: description of human capital in credit unions through Delphi analysis", *Interciencia*, Vol. 34 No. 10, pp. 718-724.
- Serenko, A. and Bontis, N. (2013), "The intellectual core and impact of the knowledge management academic discipline", *Journal of Knowledge Management*, Vol. 17 No. 1, pp. 137-155.

- Serenko, A. and Bontis, N. (2016), "Negotiate, reciprocate, or cooperate? The impact of exchange modes on inter-employee knowledge sharing", *Journal of Knowledge Management*, Vol. 20 No. 4, pp. 687-712.
- Serenko, A., Bontis, N. and Hull, E. (2016), "An application of the knowledge management maturity model: the case of credit unions", *Knowledge Management Research & Practice*, Vol. 14 No. 3, pp. 338-352.
- Smith, A.D. (2008), "Modernizing retail grocery business via knowledge management-based systems", *Journal of Knowledge Management*, Vol. 12 No. 3, pp. 114-126.
- Smith, D.J., Cargill, T.F. and Meyer, R.A. (1981), "Credit unions: an economic theory of a credit union", *Journal of Finance*, Vol. 36 No. 2, pp. 519-528.
- Spector, P.E., Fox, S., Penney, L.M., Bruursema, K., Goh, A. and Kessler, S. (2006), "The dimensionality of counterproductivity: are all counterproductive behaviors created equal?", *Journal of Vocational Behavior*, Vol. 68 No. 3, pp. 446-460.
- Steinel, W., Utz, S. and Koning, L. (2010), "The good, the bad and the ugly thing to do when sharing information: revealing, concealing and lying depend on social motivation, distribution and importance of information", *Organizational Behavior and Human Decision Processes*, Vol. 113 No. 2, pp. 85-96.
- Stovel, M. and Bontis, N. (2002), "Voluntary turnover: knowledge management friend or foe", *Journal of Intellectual Capital*, Vol. 3 No. 3, pp. 303-322.
- Suppiah, V. and Sandhu, M.S. (2011), "Organisational culture's influence on tacit knowledge-sharing behaviour", *Journal of Knowledge Management*, Vol. 15 No. 3, pp. 462-477.
- Tett, R.P. and Meyer, J.P. (1993), "Job satisfaction, organizational commitment, turnover intention, and turnover: path analyses based on meta-analytic findings", *Personnel Psychology*, Vol. 46 No. 2, pp. 259-293.
- Townley, B. (1993), "Foucault, power/knowledge, and its relevance for human resource management", *Academy of Management Review*, Vol. 18 No. 3, pp. 518-545.
- Triandis, H.C. (1977), *Interpersonal Behavior*, Brooks/Cole Publishing Company, Monterey, CA.
- Tsay, C.H.H., Lin, T.C., Yoon, J. and Huang, C.C. (2014), "Knowledge withholding intentions in teams: the roles of normative conformity, affective bonding, rational choice and social cognition", *Decision Support Systems*, Vol. 67 No. 11, pp. 53-65.
- Tseng, F.C. and Fan, Y.J. (2011), "Exploring the influence of organizational ethical climate on knowledge management", *Journal of Business Ethics*, Vol. 101 No. 2, pp. 325-342.
- Turel, O., Serenko, A. and Giles, P. (2011), "Integrating technology addiction and use: an empirical investigation of online auction users", *MIS Quarterly*, Vol. 35 No. 4, pp. 1043-1106.
- Tyson, T. (1990), "Believing that everyone else is less ethical: implications for work behavior and ethics instruction", *Journal of Business Ethics*, Vol. 9 No. 9, pp. 715-721.
- Verplanken, B. and Aarts, H. (1999), "Habit, attitude, and planned behaviour: is habit an empty construct or an interesting case of goal-directed automaticity?", *European Review of Social Psychology*, Vol. 10 No. 1, pp. 101-134.
- Verplanken, B. and Orbell, S. (2003), "Reflections on past behavior: a self-report index of habit strength", *Journal of Applied Social Psychology*, Vol. 33 No. 6, pp. 1313-1330.
- Vinzi, V.E., Chin, W.W., Henseler, J. and Wang, H. (Eds) (2010), *Handbook of Partial Least Squares: Concepts, Methods and Applications*, Springer, Berlin.
- Wang, Y.S., Lin, H.H., Li, C.R. and Lin, S.J. (2014), "What drives students' knowledge-withholding intention in management education? An empirical study in Taiwan", *Academy of Management Learning & Education*, Vol. 13 No. 4, pp. 547-568.
- Webster, J., Brown, G., Zweig, D., Connelly, C.E., Brodt, S. and Sitkin, S. (2008), "Beyond knowledge sharing: withholding knowledge at work", in Martocchio, J.J. (Ed.), *Research in Personnel and Human Resources Management*, Emerald, Bingley, pp. 1-37.
- West, R. (2008), "The psychology of security", *Communications of the ACM*, Vol. 51 No. 4, pp. 34-40.
- Wiig, K.M. (1997), "Knowledge management: where did it come from and where will it go?", *Expert Systems with Applications*, Vol. 13 No. 1, pp. 1-14.

Witherspoon, C.L., Bergner, J., Cockrell, C. and Stone, D.N. (2013), "Antecedents of organizational knowledge sharing: a meta-analysis and critique", *Journal of Knowledge Management*, Vol. 17 No. 2, pp. 250-277.

Yahyapour, S., Shamizanjani, M. and Mosakhani, M. (2015), "A conceptual breakdown structure for knowledge management benefits using meta-synthesis method", *Journal of Knowledge Management*, Vol. 19 No. 6, pp. 1295-1309.

Zimmerman, R.D. and Darnold, T.C. (2009), "The impact of job performance on employee turnover intentions and the voluntary turnover process", *Personnel Review*, Vol. 38 No. 2, pp. 142-158.

Appendix. The questionnaire

Facilitating conditions – knowledge management systems. My organization has an information system to help employees:

FCS1 – acquire internal information (e.g. documents, policies, templates, procedures, best practices, success stories, etc.);

FCS2 – acquire external information (e.g. documents, policies, templates, procedures, best practices, success stories, etc.);

FCS3 – share knowledge with fellow colleagues;

FCS4 – facilitate knowledge exchange electronically;

FCS5 – store and preserve their knowledge;

FCS6 – reuse internal organizational knowledge;

FCS7 – engage in group work;

FCS8 – locate internal or external experts; and

FCS9 – avoid work duplication.

Facilitating conditions – knowledge policies. My organization has well-articulated policies and procedures to:

FCP1 – acquire internal information (e.g. documents, policies, templates, procedures, best practices, success stories, etc.);

FCP2 – acquire external information (e.g. documents, policies, templates, procedures, best practices, success stories, etc.);

FCP3 – share information with fellow colleagues;

FCP4 – facilitate knowledge exchange electronically;

FCP5 – store and preserve their knowledge;

FCP6 – reuse internal organizational knowledge;

FCP7 – engage in group work;

FCP8 – locate internal or external experts;

FCP9 – avoid work duplication; and

FCP10 – encourage the reuse of organizational knowledge.

Facilitating conditions – organizational knowledge culture:

FCC1– my organization has an open knowledge sharing environment;

FCC2 – in my organization, knowledge sharing is embedded in everyday work practices;

FCC3 – in my organization, people with expert knowledge are always ready to help their fellow colleagues;

FCC4 – my fellow employees routinely exchange their knowledge while working; and

FCC5 – knowledge hoarding is a major problem in my organization. (R)

Intra-organizational knowledge hiding. Upon receiving a knowledge request:

IOKH1 – my fellow colleagues often communicate only part of the whole story to me;

IOKH2 – my fellow colleagues often twist the facts to suit their needs when communicating with me; and

IOKH3 – my fellow colleagues often leave out pertinent information or facts when communicating with me.

Reciprocal knowledge hiding. Upon receiving a knowledge request: RKH1 – I often communicate only part of the whole story to my fellow colleagues;

RKH2 – I often twist the facts to suit my needs when communicating with my fellow colleagues; and

RKH3 – I often leave out pertinent information or facts when communicating with my fellow colleagues.

Voluntary turnover intentions:

VT11 – in the past 6 months, I have thought about leaving the organization to work elsewhere;

VT12 – in the past 6 months, I have thought about leaving my work unit to work elsewhere within the organization;

VT13 – I am seriously considering leaving in the next five years;

VT14 – presently, I am actively looking for job opportunities outside my current employer but within the financial services industry; and

VT15 – presently, I am actively looking for job opportunities outside the financial services industry.

R – negatively worded items.

About the authors

Dr Alexander Serenko is a Professor of Management Information Systems in the Faculty of Business Administration at Lakehead University, Canada. Dr Serenko holds a PhD in Management Information Systems from McMaster University. His research interests pertain to scientometrics, knowledge management and technology addiction. Alexander has published over 70 articles in refereed journals, including *MIS Quarterly*, *European Journal of Information Systems*, *Information & Management*, *Communications of the ACM* and *Journal of Knowledge Management*. He has also won six Best Paper awards at Canadian and international conferences. In 2015, Dr Serenko received the Distinguished Researcher Award which is the highest honor conferred by Lakehead University for research and scholarly activity. Alexander Serenko is the corresponding author and can be contacted at: aserenko@lakeheadu.ca

Dr Nick Bontis is Chair of Strategic Management at the DeGroot School of Business, McMaster University. He received his PhD from the Ivey Business School at Western University. He is the first McMaster Professor to win Outstanding Teacher of the Year and Faculty Researcher of the Year simultaneously. He is a 3M National Teaching Fellow, an exclusive honour only bestowed upon the top university professors in Canada. He is recognized the world over as a leading professional speaker and a consultant.

For instructions on how to order reprints of this article, please visit our website:

www.emeraldgroupublishing.com/licensing/reprints.htm

Or contact us for further details: permissions@emeraldinsight.com