Organizational leadership and culture promote tacit knowledge utilization

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ABSTRACT

Tacit Knowledge Utilization (TKU) in organizations is critical for maintaining a competitive advantage. This study tested the hypothesis that an organization's leadership and culture is a predictor of TKU within organizations and addresses a methodology for characterizing the utilization of tacit knowledge. Data were collected from an original survey administered to 192 knowledge workers across several organizations and industries. The study found that an organization's leadership and cultural traits were reliable and valid constructs in the sample. Results support the study's hypotheses that organizational leadership and culture are significant predictors of TKU. Further, to increase TKU, organizational leadership should apply best practices to encourage its traits.

Keywords: Tacit Knowledge, Tacit Knowledge Utilization, Leadership, Organizational Culture

INTRODUCTION

The field of knowledge management has grown in recent years due to the recognition that there is a conundrum regarding loss of knowledge (DeLong, 2004). While much of the research on knowledge management has focused on the recording of explicit knowledge, tacit knowledge is beginning to be viewed as equally vital to an organization's success and competitiveness (Nonaka & Takeuchi, 1995; Pratt, 2006; Rumizen, 2002). For example, research conducted by Mascitelli (2000) provides evidence that tacit knowledge is the driver of revolutionary products and "innovative capabilities" (p. 179). Therefore, the utilization and sharing of tacit knowledge within an organizational setting may be essential to organizational success (Attipoe, 1999; Pratt, 2006; Sure, Staab & Studer, 2002; Vasconcelos, Kimble, Gouveia, & Kudenko, 2000; Weinberger & Frank, 2000). According to Sharkie (2005), tacit knowledge is "the most important strategic resource that enables organizations to exploit and develop resources that enhances their fundamental ability to compete, meet the challenge of change and allows them to develop sustainable competitive advantage" (p. 37). Furthermore, experience is gained knowledge that a corporation can count as an asset (Koskinen, 2003; Mascitelli, 2000). As Teece (1998) states, "…surveys of industries exposed to global competition (and not shielded by governmental controls) will demonstrate that superior profits stem from intangible assets such as know-how, customer relationships, brands, and superior business processes" (p. 55).

Tacit knowledge also appears to have a long-term effect on the competitive advantage of an organization (Hau, Kim, Lee, Kim, 2013). Further, retention of tacit knowledge has been shown to have valuable benefits to an organization's intellectual property and success (Chobdar, Naseri, Bazmi, & Masuminejad, 2016, Leonard, 2011, Mascitelli, 2000, Ryan & O'Connor, 2013). Although tacit knowledge has been conceptualized as experiential knowledge that is difficult to explain, tacit knowledge can be conceptualized and explained by referring to the knowledge gained from an individual's life experiences, or from one-on-one mentoring style relationships (Huang, Huang, & Tzeng, 2016, Polyani, 1966). Experiential, tacit knowledge is often viewed as the knowledge that people use but can't explain.

Tacit knowledge is one of the most critical and important aspects of a company's organizational knowledge (Soo, 2006). Pratt (2006) states: "Failure of organizations to capture and share knowledge results in higher risks of intellectual capital loss and has been shown to have negative impacts on society at large" (p. 134). Companies that are able to make use of their knowledge capital retain an edge in the long run over those that are not able to (Nonaka & Takeuchi, 1995). Tacit knowledge is useful to the individual, but to the organization it is "the most important strategic resource that enables organizations to exploit and develop resources, enhances their fundamental ability to compete, meet the challenge of change and allows them to develop sustainable competitive advantage (Ding & Li, 2014, Sharkie, 2005, p. 37)." "Knowledge, particularly tacit knowledge, provides organizations with unique assets contributing to competitiveness and affecting financial returns (Hammer, 2005, p. 8)." In knowledge based organizations, it is imperative that the organization keep tacit knowledge prevalent so that the organization keeps its competitive edge.

A problem that organizations face today is that young employees usually lack experience and are therefore unable to engage in decision making and problem solving (DeLong, 2004). The ability of an individual or group to make decisions is reliant on previous experience and intuition, and tacit knowledge acquired through experience contributes to critical decision making and problem solving (Ullman, 2002). The study of tacit knowledge philosophy also

shows the relevance in the bounds of decision-making and problem solving (Dzekashu, 2009; Pratt, 2006). By following actual or perceived patterns in past experiences, tacit knowledge gives a person the ability to solve problems and make connections based on their previous experiences (Cross & Baird, 2000; Polanyi, 1966).

All organizations must contend with the loss of an employee's knowledge due to retirement, job switching, or downsizing. With the downturn in the world economy in 2008/2009, and the rapid onset of globalization in the past two decades, the need to reduce the number of employees has become a necessity for organizations to remain viable. Employee reductions has led to organizational experience and know-how (tacit knowledge) essentially walking out the door with the employees. Organizational leaders are starting to realize that most of the knowledge in their company is tacit knowledge that resides in people's minds (Scalzo, 2006). As such, organizations have become more concerned with discovering how to create and retain their workers' tacit knowledge (DeLong, 2004; Koskinen, 2003; Mascitelli, 2000; Teece, 1998).

ORGANIZATIONAL UTILIZATION OF TACIT KNOWLEDGE

While explicit knowledge can be articulated, codified, and stored in media and can be readily transmitted to others (Polyani, 1966), tacit knowledge is experience, know-how, and a personal ability to synthesize experience and know-how with any related knowledge a person might have (Casanovas, P., Poblet, M., Casellas, N., Contreras, J., Benjamins, V.R., & Blazquez, M., 2005; Nicolas, 2004). Understanding the components and utilization of individual tacit knowledge is essential for developing an understanding of organizational tacit knowledge utilization. Consequently, as individuals within an organization gain experience, tacit knowledge utilization in the organization may also grow.

Koskinen (2003) presents a theory that suggests there are three main dimensions that make up organizational tacit knowledge: organizational memory, communication, and motivational systems. These dimensions are dependent upon, and are contained within, the organizational environment or situational systems. In order to encourage these dimensions of tacit knowledge utilization within an organization, leadership and a healthy organizational culture (i.e. healthy situational systems) should be in place to allow tacit knowledge utilization to flourish (Lin, 2007; Soo, 2006).

Knowledge employees, also known as knowledge workers, are employees who bring value to an organization through their intellectual capital (Kivrak, Arslan, Dikmen, & Birgonul, 2008). Knowledge workers are the innovators, creators and designers who use and share their experiential knowledge in order to innovate or develop strategies that keep their company competitive (Almeida & Soares, 2014, Koriat & Gelbard, 2014, Ryan & O'Connor, 2013). Knowledge workers are different from other employees because of their continuous problem solving ability. The problems they encounter require creativity and original thought for solutions. Knowledge workers use their previous experience to determine solutions quickly and determine a path to solve problems quickly, based upon that experience. Tacit knowledge can be subjective because the person with tacit knowledge may also attach emotional values to that knowledge or experience, and the person may make the decision to share that information based on emotional values that they may have (Ding, Ng & Li, 2014).

While leadership sets the tone of an organization's culture, tacit knowledge utilization is affected by the culture of the organization. Nonaka, Konno, and Toyama (2001) asserted that a

vital responsibility of leaders is to maintain an atmosphere that is friendly, and one that encourages knowledge creation—leaders who are most successful in this will carry the traits of responsibility, justification, and caring.

Koskinen's (2003) view of tacit knowledge utilization within organizations includes leadership and organizational culture as indicated in Figure 1 (Appendix). While Leadership is comprised of empowering employees, creativity, and risk taking, Organizational Culture is made up of shared vision, shared values, and an environment of openness (i.e., openness, camaraderie, and teamwork).

Developed from Koskinen (2003), Tacit Knowledge Utilization (TKU) is internally made up of three dimensions: memory systems, motivational systems, and communication systems. The individual worker is the primary holder of tacit knowledge within an organization, and the evidence that tacit knowledge is a fundamental aspect of organizational knowledge is supported by an individual's tacit knowledge utilization. Thus, it is the mind of the knowledge worker that gives value to an organization (Ryan & O'Connor, 2013, Scalzo, 2006).

Tacit knowledge is difficult to articulate and write down, and appears to be most effective when shared through face-to-face communication (Koskinen, 2003). A variety of communication systems can lead to tacit knowledge sharing, including apprenticeship, mentoring, storytelling, e-mail, telephone, and face to face communication (Dzekashu, 2009). Of these communication systems, face to face communication appears to be the most effective way to transfer tacit knowledge due to the characteristics of interaction, language, and proximity (Berger & Luckman, 1966; Hammer, 2005; Nonaka & Takeuchi, 1995; Pratt, 2006; Ryan & O'Connor, 2013, Soo, 2006). Proximity of workers to other workers is a particularly important factor in maximizing tacit knowledge utilization and sharing. Proximity refers not only to the relative distance from one worker to another, but also to the type of environment based on the organizational culture (casual, professional, rigid, military) that exists during interaction (Nonaka & Konno, 1998). Speaking the same dialect is also essential for effective communication; however, there is an internal language to each organization and within each department, such as those found in acronyms, or sayings used within the department or company. Sometimes, even the language used from a seasoned worker at an organization will be incomprehensible to a new worker.

Motivational systems describe what drives people to share knowledge (Koskinen, 2003), and trust and organizational commitment are two key factors that motivate people to share. Trust is essential for open communication to take place, and an environment that is conducive to knowledge sharing will have motivational systems of trust and commitment in place so that workers feel secure enough to share knowledge (Kucharska & Kowalczyk, 2016, Kathiravelu, Mansor, Ramayah & Idris, 2014, Lin, 2007, Park & Lee, 2014). These systems are not put into place with a vision statement or goal or by policy, but instead these motivational systems must develop within teams and groups over time as members show that they are trustworthy and committed.

Another important factor necessary for tacit knowledge to be communicated is social networking which needs to be in place and supported by an environment conducive to knowledge sharing (Arpaci & Baloğlu, 2016, Kucharska & Kowalczyk, 2016, Mueller 2014). One aspect of social networking is that it helps direct a worker's desire to the level of an organizational "win", similar to a player on a sports team who strives for their team to be victorious. Thus, the player will do whatever they can to help make that happen. When an organization's employees want the organization to succeed (i.e. when they are committed to the organization) they will be more prone to share knowledge if they believe the knowledge sharing will lead to a "win" for the organization.

PURPOSE OF THE STUDY

The purpose of this study was to determine if particular traits of an organization's situational systems, such as organizational leadership and organizational culture, have a positive effect on employee tacit knowledge utilization. Figure 2 (Appendix) shows the theoretical framework of this study.

This study evaluated the leadership in an organization to determine if the organization appeared to encourage their employees by empowering them to be creative risk takers who are willing to utilize their tacit knowledge in new ways (Kucharska & Kowalczyk, 2016). This study also evaluated the culture in an organization to determine if the organization's shared vision, shared values, and a work environment of openness that appeared to impact employee TKU.

TACIT KNOWLEDGE UTILIZATION

In order to improve the understanding of tacit knowledge within an organization, Koskinen (2003) put forth a tacit knowledge utilization model in which organizational tacit knowledge can be affected generally in two ways: externally through leadership and culture, or internally through memory systems, communication, and motivation. The external tacit knowledge is manifested through leadership and culture; the internal tacit knowledge is manifested through memory systems, communication systems, and motivational systems. The internal aspects have to do with the individuals or groups that make up an organization. "It is …critical to understand individuals involved in the knowledge capture, sharing and transfer activities processes" (Dzekashu, 2009, p. 115). A methodology to measure tacit knowledge within organizations could help to deepen insight and understanding of the effect of tacit knowledge in organizations and therefore, a discussion of each component in the model ensues.

Leadership

Researchers suggest that there are certain qualities or traits that organizations possessing effective knowledge sharing are able to maintain within their organizations. These qualities include management that leads by example, employee empowerment, creative license and risk taking, close cooperation among team members, and a common purpose with shared goals. Situational systems exhibiting particular traits of leadership and culture should provide ample opportunity for people to share tacit knowledge with one another and support its utilization (Koskinen, 2003). While there are other characteristics that could be discussed, this study remains focused on the situational systems discussed in Koskinen's model.

Leaders can lead by the example of sharing their knowledge and encouraging others to do the same. Leaders need to continuously point their employees to the vision and goals of the organization by reminding their employees of these guiding principles, and encouraging conversations in that direction.

To establish this, a leader must have integrity. Honesty and integrity are important components of a leader's idealized influence (Avolio, 1999, Buvik & Rolfsen, 2015). The leader is responsible for creating an atmosphere that encourages dialogue; making employees feel comfortable to ask questions, provide insight and opportunity for open conversation so that the directives and objectives can be met, as well as continually providing an atmosphere of trust. Leaders need to be competent enough in an area to determine if their employees are working

competently (Senge, 1990). Leaders need to be willing to relinquish some leadership control in order to help increase tacit knowledge utilization. A good leader will look for opportunities to publically acknowledge how an employee's willingness to share added to the successful completion of a project. Leaders who clearly support tacit knowledge utilization will be an example by being a mentor and participating in meetings that encourage knowledge sharing, such as post project reviews or storytelling (Armbrecht, F. M., Chapas, R. B., Chappelow, C. C., Farris, G. F., Friga, P. N., Hartz, C. A., McIlvaine, M. E., Postle, S. R., & Whitwell, G. E., 2001). Leaders will also provide means for others to be mentored, to encourage others by not only being an example, but also by teaching how to mentor, lead meetings that provide ample room for tacit knowledge sharing, and offer encouragement and incentives to employees who follow suit (Armbrecht et al., 2001; Goffin, Koners, Baxter, & van der Hoven, 2010).

An organization should be able to empower its employees if it provides the following: Structure – An organizational structure should have a clear vision, organizational goals and be able to identify individual roles (Quinn & Spreitzer, 1997). Shared information – The organization must be willing to share with its employee's information that may often be sensitive (Quinn & Spreitzer, 1997). Organizational willingness to share includes financial reports on the organizations profits, performance information, and other areas that would give the employees knowledge that would drive them to perform better and take responsibility for the organizations outcomes. Development of Teams – This area of empowerment allows for more decentralization of employees, and provides a more open communication structure.

The role of an organization empowering employees was mentioned by Koskinen (2003) as a part of a culture that allows for tacit knowledge utilization. A culture that supports employee empowerment that is supported by the above characteristics would need open lines of communication to be successful. An organization that is truly willing to empower its employees must be willing to give up its complete control and allow for the risk that this invites (Quinn & Spreitzer, 1997).

The employee also has a part in empowerment. Employees must have characteristics of self-determination, a sense of meaning, sense of competence, and feel as if their work has an impact on the organization's achievement of its vision (Quinn & Spreitzer, 1997). An empowered employee should feel confident of their abilities, and their leader should be an encourager that believes in the employee's abilities (Paroby & White, 2010).

A key characteristic of an empowered employee is their desire to learn all the time. A continuing learner will be more likely to ask questions and seek out all types of knowledge from their fellow employees, from those in leadership positions, or wherever they can. In the future, it could be beneficial to study how an empowered employee who has the drive and access to continuous learning benefits or profits a company (Quinn & Sprieitzer, 1997).

Another key is risk taking. "The first technique for unleashing the creative potential of tacit knowledge is for managers to elicit deep emotional commitment of employees to the innovation process" (Mascitelli, 2000, p.184). Although risk taking can be seen as dangerous to the bottom line, empowered employees need to give air to their creativity. Thus, risk taking serves a vital function in learning cultures.

A clear, collective vision within an organization drives direction and focus in the culture to induce harmony among team members, providing positive influence and direction to the organization's members (Barrett, 2006). Culture provides a format that will encourage or hinder tacit knowledge utilization within an organization. The organization's vision, goals and communication patterns will affect knowledge sharing and utilization (Moitra & Kumar, 2007).

The type of culture affects the interaction of face to face interaction and framework for the interaction as well as the openness of the person's sharing. The culture that consists of strong ethics, and a clear, and shared vision enables tacit knowledge utilization (Koskinen, 2006).

Culture

These trusting relationships rarely occur in an environment that is stifled by rigid rules, agendas and time limits. Social events support teamwork based on trust (Buvik & Rolfsen, 2015, Du Plessis, 2006, Park & Lee, 2014). When Koskinen (2003) speaks of trust he writes, "The development of relationships directs the process (p. 74)."Shared Vision captures the focus of the organization when the members are vested in that vision. Focused membership helps individuals use all of their resources, including their tacit knowledge, and be willing to do all that they can to drive that vision forward. When the vision relays that an organization values learning and sharing of knowledge in order to achieve profitable results, it may lead to more tacit knowledge utilization.

Values that support a successful vision benefit the situational systems as a whole. According to Barrett in *Building a Values-Driven Organization,* there are three reasons for values within an organization: To provide guidelines for behavior, to aid the organization in determining its direction and future, and to support decision making (Barrett, 2006).

Shared values are different from shared vision and organizational values in that organizational values might be stated by the organization but may not be internalized by their employees; shared values are values that the organization members have internalized and do share with one another. A study conducted by Michailova and Minbaeva (2004) showed that knowledge sharing is more likely to happen when values have been internalized. Values such as innovation, creativity, and continuous learning support a culture that shares tacit knowledge utilization. The values will support the motivational and communication systems that support tacit knowledge utilization (Barrett, 2006). Shared values are often reflected in an organization's vision statement. Camaraderie in conjunction with openness creates a foundation for knowledge sharing (Buvik & Rolfsen, 2015, Nonaka & Takeuchi, 1995).

Memory Systems

Koskinen (2003) states memory systems are made up of three parts. These parts are experience, mental models and intuition. Koskinen (2003) is very clear that the individual is the primary holder of tacit knowledge within an organization, and the individual's utilization of tacit knowledge must be manifested in some way for there to be evidence of this. The mind of the knowledge worker gives value to an organization (Scalzo, 2006).

Intuition is the result of experience and a person's ability to subconsciously recognize patterns and trends (Callahan, 2010, Ryan & O'Connor, 2013). Leaders who have good intuition are more likely to be experienced, and those who are decision makers or who have assisted in decision making for some time.

Four rules of thumb for learners who wish to use intuition (Callahan, 2010):

1. The learning outcome needs to be focused on the difficult to make decisions, not the process.

2. Do not rely on interviewing in the conference room as a method to get tacit knowledge out of experts, rather use situational observation, or storytelling of difficult or unusual problems the experts were involved in solving.
3. Create a database of unusual or uncommon problems solved within the organization.
4. Look at the options that were faced, both the correct one and one followed and those that were incorrect or not followed.

Experience is the teacher of tacit knowledge. The greater the breadth of experience a person has, the more connections that person can make from past experience to the current one (Badaracco, 1991). The greater the quantity of experience a person has, the greater their tacit knowledge will be (Koskinen & Pihlanto, 2006). The more experience, or competence that an organization has, the more likely the members are to share information since the benefit of hoarding information becomes void when the competence level of those around them is similar and they would be more likely to solve the problems when they work collectively rather than individually. Their focus is turned from securing their position to attaining the vision (Liebowitz, Ayyavoo, Nguyen, Carran, & Simien, 2007). The tacit knowledge that an employee may have gained through their life experiences will only be valuable to the organization when applied in the context of their current purpose as described by their position. Thus, mentorship is recommended resource in this matter (DeLong, 2004).

"Mental models, such as schemata, paradigms, perspectives, beliefs, and viewpoints, help individuals to perceive and define their world" (Nonaka & Takeuchi, 1995, p. 60). A person's mental model adjusts and changes as they have more experiences, correcting it to fit new or unexpected results. As Koskinen (2003) says, "Mental models provide the context in which to view and interpret new material, and they determine how stored knowledge is relevant to a given situation" (p. 70). Individuals may perceive a situation and describe it differently from one another because their mental models "affect what they see" (Senge, 1990, p. 175). Mental models can also form within teams (Rasker & Post, 2000). Shared experiences can lead to shared mental models. The team's mental models are formed as the individuals experience and solve problems within the team and through the feedback they provide to one another (Pratt, 2006 ; Klein 1998) suggests that intuition is an essential part of professional judgment that is experience-based.

Communication Systems

Communication systems consist of interaction, language, and proximity. Tacit knowledge is difficult to articulate and write down, so it must be shared through communication of a different sort—through social interaction (Koskinen, 2003). "The most common strategies used to capture tacit knowledge in individuals or groups include apprenticeship, mentoring, and storytelling, whereas at the organizational level they include grafting, vicarious learning, experiential learning, and inferential learning" (Dzekashu, 2009, p. 63). An organization that encourages these forms of communication will be rich with tacit knowledge transfer (Koskinen, 2003). Leaders should be fluent in using a metaphor when explaining to their employees, as to encourage similar behavior (DeLong, 2004).

People within an organization need the opportunity to interact in order to share their experience, i.e. their tacit knowledge. One must then be able to convey their tacit knowledge in a method in which it can be understood and internalized (Nonaka, 1991). Social interaction is a

key to creating and sharing knowledge (Nonaka & Takeuchi, 1995). It is the responsibility of an organization to allow time and environment for the exchange of knowledge to take place. A group of individuals that connect to share experiences, know-how, and unwritten knowledge is called a tacit knowledge network. Sharing tacit knowledge generally takes multiple interactions before internalization takes place (Bhatt, 2000).

Team members must make each person's opinions valued, so that no one shuts down thinking their input is not valuable to the team, and potentially cutting off any opportunity for TK to be shared. Each person must have a sense of value and belonging in the group. According to the research of Enberg, C., Lindkvist, L., & Tell, F. (2006), when informal interactions occurred, they "calibrated the tacit knowledge accumulation of the individuals involved" (p. 157-158). Rantaša (2004) notes, that brainstorming teams are important micro communities that have the potential to retain tacit knowledge within a project group.

The language within an organization needs to be consistent among its members so that communication remains at a maximum, and confusion remains at a minimum. People who are hiring into a company need to understand any common vernacular of those within the department, and new hires should be taught things that can be reduced to nicknames of practices and systems (Hildrum, 2009).

Close proximity has been shown to increase interaction (Bratianu & Orzea, 2010; Holtshouse, 1998; Nonaka & Takeuchi, 1995) and tacit knowledge sharing (Holtshouse, 1998; Mascitelli, 2000).

Motivational Systems

An organization can only be improved by enhancing their motivational systems: commitment and trust. Knowledge workers who feel their work is important and serves a purpose are more likely to put forth the effort necessary to share tacit knowledge in order to make the company successful (Nonaka & Takeuchi, 1995; Soo, 2006). According to Iqbal (2010), commitment is characterized by three factors: An intense confidence and belief in the mission, vision and goals of the organization; an enthusiasm to work hard for the organization; and a wish to stay employed by the organization.

The amount of trust expressed within and between an organization's members influences the amount and quality of knowledge that is spread within an organization (Bratianu & Orzea, 2010, Park & Lee, 2014). "People make emotional investments in trust relationships, express genuine care and concern for the welfare of their partners, believe in the intrinsic virtue of such relationships, and expect that such sentiments are reciprocated" (Anubha & Bahl, 2008, p. 18). Leaders who continually seek direction, advice and input from their employees make their employees feel trusted, and the trust is likely to be reciprocated.

SIGNIFICANCE OF THE STUDY

While much of the literature concerning knowledge management within organizations has an emphasis on explicit knowledge (DeLong 2004; Hammer, 2005; Wiig, 1997), this study is focused on the utilization of tacit knowledge rather than general or explicit knowledge. More importantly, there is limited empirical research on tacit knowledge and no empirical research conducted on the ways in which tacit knowledge is utilized within a corporate organization. For example, a study conducted by Lin (2007) reported findings concerning the effects of

motivational factors on tacit knowledge sharing, and a second study done by Insch, G. S., McIntyre, N., & Dawley, D. (2008) was conducted on college students' success in relation to their levels of tacit knowledge. Neither study looked at tacit knowledge utilization.

Koskinen's (2003) model was previously untested in an organizational context, and therefore, this study is an important contribution to the research on tacit knowledge utilization among organizational workers. This model has the potential to determine weaknesses and strengths within organizations in order to improve tacit knowledge utilization.

KEY RESEARCH VARIABLES AND HYPOTHESES

The independent variables in this study are the specific traits of the situational systems, Organizational Leadership (OL) and Organizational Culture (OC), and the dependent variable in this study is TKU. The model proposes that OL is comprised of Creativity (LC), Employee Empowerment (LEE), and Risk Taking (LRT); OC is comprised of Shared Values (CSVA), Environment of Openness (CEOP), and Shared Vision (CSVI). According to Koskinen (2003), the presence of Organizational Experience (OE), Communication Systems (CS), and Motivational Systems (MS) within an organization creates a favorable climate for TKU. OE is made up of the employee's Experience (EEX), Training (ETR), and Talent (EET); CS refers to the Interaction (COI), Language (COL), and Proximity (COP) aspects of communication; and MS are made up of Commitment (MCO) and Trust (MTR). OL and OC are hypothesized to impact TKU, while testing for the impact of the employee's demographic characteristics on this relationship. The hypotheses are shown below.

H1a: Organizational Leadership consists of three traits: creativity, employee empowerment and risk taking.

H1b: Organizational Culture consists of three traits: shared values, an environment of openness and shared vision.

H1c: TKU consists of three dimensions: organizational experience, communication systems and motivational systems.

H2: Organizations with high measurements of organizational leadership traits will have strong TKU.

H3: Organizations with high measurements of organizational culture traits will have strong TKU.

H4: Demographic factors impact the effect that organizational leadership and organizational culture traits have on TKU.

RESEARCH INSTRUMENT

The research instrument that was utilized in this study was an electronic survey that was administered via SurveyMonkey. The research instrument was developed specifically for this study. The items in the instrument were developed, adapted and compiled from the research and literature surrounding this subject area. The survey contains 78 items presented in six sections. The first section of the survey assesses demographic characteristics of the employee. Sections two and three assess the independent variables of the study, OL and OC. Sections 4-6 assess the 3 dimensions that comprise the dependent variable of the study, TKU: CS, OE, and MS.

DATA COLLECTION PROCEDURES

The selections of participants were twofold. First, several selected organizations were approached to request permission to administer the survey instrument to a select group within their organization. The employees from organizations that agreed to participate were invited to participate in the survey. Second, organizations were contacted or requested by direct contact or request from the researcher. Participants were knowledge workers who have a high probability of encountering work situations that have given them the opportunity to use tacit knowledge. The first 40 respondents served as the pilot wave. Upon review of the pilot wave it was determined that no adjustments needed to be made with the data (the pilot participants were included in the final data set). A reminder request was sent about a week after the initial request. Organizations were contacted in waves until the survey was closed. At that time, a total of 192 usable respondents were attained from 75 organizations.

DATA ANALYSIS

Data from the completed surveys were downloaded from SurveyMonkey into Excel for cleaning. Next, data were transferred into Minitab 16.2.2 for descriptive and inferential quantitative statistical analysis. Data were transferred into M*plus* 6.12 for structural equation modeling. For all statistical analyses, all available data were used, and all inferential statistics were evaluated for significance at the 95% level of significance (alpha = .05, two-tail tests of statistical significance). For the statistical tests conducted using M*plus*, maximum likelihood estimation was used to handle data missing at random.

Descriptive statistics for the categorical demographic characteristics included frequency analysis and chi-square tests for equality of distribution. Descriptive statistics for the situational systems and TKU continuous variables included means and standard deviations.

Hypothesis testing of H1 involved evaluating the psychometric properties of the OL, OC, and TKU constructs. Specifically, the reliability and validity of the three constructs tested in H1 were determined prior to testing H2-H4. Reliability refers to the stability and consistency of the scale that measures a construct, and validity refers to the accuracy and truthfulness of the scale. In this study, reliability was evaluated via Cronbach's coefficient alpha test of internal consistency (Cronbach, 1951), and validity was evaluated via confirmatory factor analysis (CFA) tests of construct validity (Jöreskog & Sörbom, 1993).

The essence of Cronbach's alpha test is the calculation of the intercorrelations among items in a scale, which can range from an alpha of 0.0, to an alpha of 1.0. Alpha measures of 0.7 and higher serve as a reference for acceptable reliability (Hinkin, 1998). In this study Cronbach's alpha measured the intercorrelations among items in the OL, OC and TKU scales, with alpha measures of 0.7 or higher indicating acceptable reliability. To correct for the underestimation of Cronbach's alpha in scales measured by less than six items, the Spearman-Brown prophecy formula was applied to adjust α values (Charter, 2003, Dimitrov, 2002).

In evaluating construct validity using CFA, CFA was assessed according to Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and the ratio of chi-square to the degrees of freedom (*df*). Specifically, acceptable construct validity was evaluated as occurring when CFI was at least .90, when RMSEA was less than .08, and when χ^2/df ratio was less than 2 to 1 (Bentler, 1990; Bentler, 2007; Loehlin, 1998). H1 was tested using alpha and CFA such that acceptable reliability and validity indicated statistical support for H1.

Hypothesis testing of hypotheses H2, H3, and H4 was conducted using ANOVA, and linear regression. Specifically, ANOVA was used to test mean differences in OL, OC, and TKU scores within each demographic characteristic, and linear regression was used to test the significance of OL and OC in predicting TKU. Given the sample size of < 200, multiple regression was utilized to test the hypothesized predictive relationships instead of structural equation modeling to maximize power, and multiple regression allowed for efficient testing of several categorical demographic variables as moderators for H4.

Demographic Characteristics

The survey collected several demographics on the knowledge workers surveyed about themselves and the organizations they worked for. The participants level of education, gender, time in their current industry, years at current organization and position, number of direct reports and job title (classed). In addition, their organizations name, industry (classed), number of employees total, in that participants location and department, and number of years in that industry.

Chi-square test for equality of distribution found that all of the demographic characteristics measured in the study survey were significantly distributed across the sample ($p < .01$). The significant chi-square tests found that the respondents were not evenly distributed across each of the demographic characteristics. These results suggest demographic characteristics should be included in regression analyses as covariates to determine if they impact the significance of any inferential statistics conducted among the key study variables.

Reliability and Validity of Leadership, Culture and Tacit Knowledge Utilization

The psychometric properties of the OL, OC, and TKU constructs were evaluated according to tests of reliability and validity. Specifically, the reliability of each scale used to measure the three constructs was examined via Cronboch's alpha test of internal consistency reliability; validity was examined via CFA tests of construct validity.

OC and OL scale were found to have excellent internal consistency reliability ($\alpha = 0.910$ and .915, respectively). In addition, their subscales also had excellent internal consistency reliability. CFA results found OL and OC demonstrated acceptable construct validity according to the model fit indices and the significant factor loadings for the items loading onto each factor.

TKU scale and its traits were found to have excellent internal consistency reliability. However, within communications system its factor of language was found to have a low α (0.456). Upon further analysis it was found that one item, "It was difficult to understand the company lingo when I first started", of the survey did not show acceptable validity. Therefore this item was dropped from the data analysis. Dropping the item is justified as this was the first time this newly written survey was administered. After this item was dropped the CS α went to an excellent 0.864. In the end TKU had an α of 0.911 and its traits of OE, CS & MS had α's of 0.776, 0.864 and 0.858 respectively.

After the reliability of the adjusted TKU scale was confirmed, the independent variables of culture and leadership and the dependent variable of TKU were tested for validity using confirmatory factor analysis (CFA). CFA is a structural equation modeling (SEM) technique performed using Mplus statistical modeling software. In evaluating the results of a CFA analysis as an index of construct validity, three tests of model fit are used: (1) the ratio of the chi-square statistic relative to the degrees of freedom ($\chi 2/df$), (2) the comparative fit index (CFI), and (3) the

root mean square error of approximation (RMSEA) (Bentler, 1990; Bentler, 2007; Loehlin, 1998). The hypothesis H1 was tested using CFA such that acceptable construct validity indicated support of H1. To accept H1, the CFA would need to produce a $\chi 2/df$ ratio of less than two to one, a CFI value ≥ 0.90, and a RMSEA that is less than 0.08. The independent variable of leadership and culture model fit was found to be acceptable according to all three of these indices. The dependent variable TKU model fit was found to be acceptable according to one of these indices, with both the RMSEA (0.084) and CFI (0.731) index close to criterion.

In summary, the results of the alpha tests of internal consistency reliability and the CFA tests of construct validity demonstrate that the independent variables, 12-item culture and 9-item leadership, OL and OC, and the dependent variable, TKU, have acceptable psychometric properties in this sample of 192 knowledge workers. Therefore, hypothesis H1 was supported. Consequently, hypotheses H2, H3, and H4 were tested.

Descriptive Statistics of Organizational Leadership, Culture and TKU

In preparation for conducting the inferential statistics to test H2, H3 and H4, the descriptive statistics of the key variables of the study are described: organizational leadership, organizational culture, and TKU. Analysis of Variance (ANOVA) tests found that the mean independent variables, organizational leadership (OL) and organizational culture (OC), varied significantly across some of the demographics. For example within job title, OL's traits of employee empowerment and risk taking varied significantly ($p < .05$) with consultants and professors ranking high, physicians ranked in the low and OC's traits of shared values and shared vision varied significantly across department ($p < .01$), with marketing scoring the highest, and operations scoring the lowest.

For the dependant variable of TKU and its dimensions the ANOVA tests found significant varaitaion across some of the demographics. For example, TKU showed a significant variation across departments within organizations ($p < .05$), with purchasing having the lowest overall TKU, sales having the next lowest score, and human resources and executives having the highest scores.

Hypotheses Testing Results

Results support H1, OL, OC & TKU are represented by their respective traits and dimensions, in that the psychometric properties of the original surveys that measured OL, OC and TKU among the study sample were good. The Cronbach's alphas and factor analysis loadings show the survey data demonstrated excellent reliability and validity. H1 results support that OL consists of creativity (LC), employee empowerment (LEE), and risk taking (LRT); OC consists of shared values (CSVA), environment of openness (CEOP), and shared vision (CSVI); and TKU consists of organizational experience (OE), communication (CS), and motivation (MS).

Table 1 (Appendix) supports H2, OL is a positive predictore of TKU, results of linear regression tests in which the dependent variables, TKU and its factors OE, CS, and MS were regressed on OL and its factors LC, LEE, and LRT. As shown, OL was found to be a significant predictor of TKU ($\beta = 0.427$), OE ($\beta = 0.419$), CS ($\beta = 0.338$), and MS ($\beta = 0.551$) at $p < .01$. Additionally, LEE and LRT were found to significantly predict TKU at $p < .01$.

Table 2 (Appendix) presents supports H3, OC is a positive predictore of TKU, results of linear regression tests in which the dependent variables, TKU and its factors OE, CS, and MS were regressed on OC and its factors, CSVA, CEOP, and CSVI. As shown, OC was found to significantly predict TKU ($\beta = 0.516$), OE ($\beta = 0.535$), CS ($\beta = 0.379$), and MS ($\beta = 0.670$) at $p < .01$. Additionally, CSVA, CEOP, and CSVI were found to significantly predict TKU at $p < .01$.

H4, demographics factors as moderators of the effect of OL and OC on TKU, was supported. Multiple regressions were run to determine the moderating effects of the demographics on the prediction of TKU by OL and OC. Depending on the type of regression many of the demographic factors had significant impact. However, only the age of the respondent had a consistent moderating effect across almost all the regression models.

Table 3 (Appendix) presents all the coefficient of determination (R2) for the regressions that were performed. OL and OC run independently are very significant explaining 50.0% and 52% of what affects TKU respectively. The significant demographics alone that explain TKU are age (R2 = 3.9%), number of direct reports the respondent has (R2 = 2.5%), years the respondent has been at the organization (R2 = 3.2%) and in the industry (R2 = 3.5%).

DISCUSSION

This study was conducted to determine if an organization's situational systems have a positive impact on employee tacit knowledge utilization (TKU). This study expands on Koskinen's (2003) model of knowledge sharing in which TKU is a multidimensional construct. Although there is empirical research on tacit knowledge, to my knowledge, this is the first empirical study conducted on the ways in which TKU occurs in a corporate organization.

This study charted new territory in the intuitive link that an organization's leadership and culture can affect TKU. This study moves beyond the research in the literature and provides a theoretical framework (supported by empirical research) of the impact of leadership and culture on TKU within organizations (see conceptual model presented in Figure 1). This study was the first in which an original TKU survey developed by the researcher was administered and evaluated in a sample of knowledge workers. Results of the TKU survey were analyzed to determine if a link exists between an organization's leadership and culture and the organization's TKU. Results also explored which demographic characteristics may have impacted the effectiveness of leadership and culture on TKU. This study supports previous research on the importance of TKU within organizations (DeLong, 2004; Nonaka & Takeuchi, 1995; Pratt, 2006). Specifically, this study suggests that organizational leadership and organizational culture have an effect on an organization's aptitude to utilize tacit knowledge within their organization.

Table 4 (Appendix) presents an overview of the study results organized by research questions and corresponding research hypotheses.

APPLICATIONS AND IMPLICATIONS FOR PRACTITIONERS

The findings in this study may be useful to organizations and their leaders. For example, practitioners who are looking to enhance the utilization of tacit knowledge within an organization should consider the impact that an organization's leadership and culture may have on TKU.

In this study, OL, OC, and each of their respective factors were found to be significant predictors of TKU and its dimensions, with the exception of the creativity trait within OL.

Overall, OL and OC had a significant impact on TKU such that a one unit increase in OL or OC appeared to significantly predict approximately one-half unit increase in TKU.

The results of this study support the conceptual model shown in Figure 1 in which the independent variables, OL and OC, have an effect on the dependent variable, TKU. Additionally, select demographic characteristics appear to augment how organizational leadership and culture can affect TKU, with age functioning as the only demographic characteristic to consistently moderate the prediction of TKU by OL and OC. Overall, these results suggest that it is important for practitioners to consider how to implement best practices to improve OL and OC within their organization in order to facilitate more TKU.

LIMITATIONS AND FUTURE RESEARCH

There are some limitations to this study. First, the survey and study were only administered in the U.S.A. even though TKU is of interest in several countries as determined by the literature (Koskinen, 2003; Nonaka & Takeuchi, 1995; Soo, 2006). The sample consisted of only knowledge workers, that is, people whose main asset is to solve problems. The study was limited to 192 participants. Of the 75 organizations that the participants were employed at, only 6 of the organizations had 6 or more respondents in the study sample.

Another limitation was that while the assumption was made that participants would honestly respond to the survey, the inherent limitation of self-report methodology should be recognized, and suggests that the original survey should be replicated in future research using participants sampled from a wide selection of populations (Junger-Tas & Marshall, 1999).

This study opens the door for continued research on tacit knowledge utilization in organizations. Organizations need to determine if knowledge sharing in their organization involves tacit knowledge. Since the survey developed for this study evaluates tacit knowledge and TKU in an organization, future research should continue to evaluate the efficacy of the survey tool for validating the existence of tacit knowledge in an organization. Future research should also be geared towards learning if the survey instrument developed for this study could be adapted and used as a standard baseline measure of the impact of organizational leadership and organizational culture on TKU. In this regard, the survey instrument could function as an evaluation tool that can be used to measure improvement within an organization and link this improvement to changes in TKU.

Future research should also be concerned with the development of best practices to help organizations stem the loss of useful tacit knowledge so that they are able to protect the investments of increased knowledge and potentially reduce constant turnover. Further research would be beneficial in the areas of best practices that would have impact on the factors of organizational leadership and organizational culture, and have the ability to increase TKU. It would also be beneficial to determine the causal relationship between certain demographic characteristics and TKU. For instance, why was gender a factor in the results regarding motivational systems? Why did age, more so than length in the industry, matter more to the level of TKU? Answers to these questions would be beneficial to organizations in determining the impact of OL and OC on TKU within their organization. Research should continue to examine the impact of OL and OC on TKU. As found in the literature; knowledge is power, and the use of that knowledge can help the competitive advantage of organizations, especially in this information age (Lindström, Delsing & Gustafsson, 2015, Kivrak, et al, 2008; Koskinen, 2003; Mascitelli, 2000; Nonaka et al, 2001; and Sharkie, 2005).

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APPENDIX

Figure 0. Tacit Knowledge Aspects

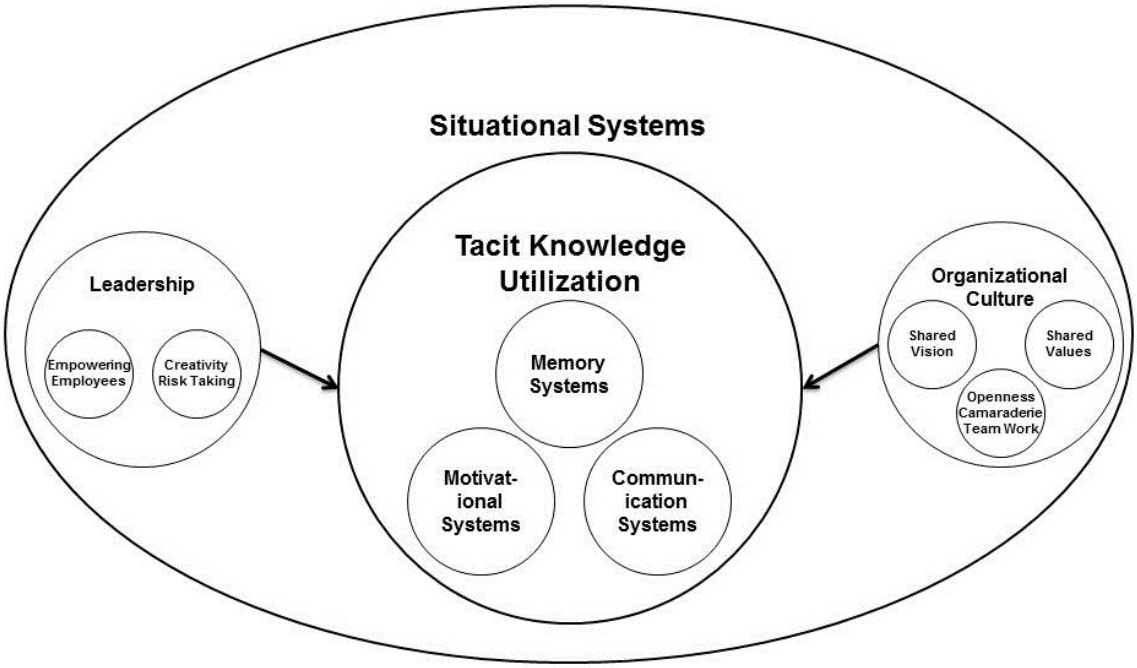

Figure 2. Conceptual Model of the Study

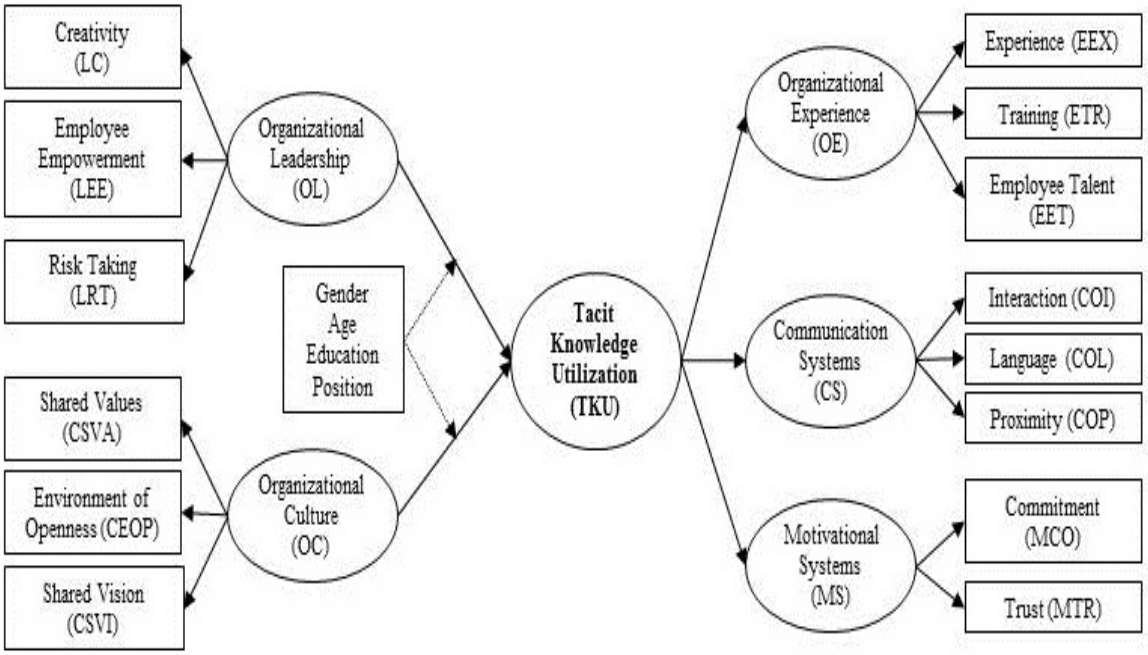

Table 1. Regression of TKU on Organizational Leadership

	TKU			OE			CS			MS		
Predictor	β	SE	T	β	SE	T	β	SE	T	β	SE	T
OL	.427	.035	12.33**	.419	.045	9.29**	.338	.048	6.99**	.551	.043	12.94**
LC	.044	.051	0.87	.062	.067	.93	-.008	.070	-0.12	.096	.062	1.54
LEE	.208	.065	3.20**	.125	.086		.218	.090	2.42*	.325	.080	4.06**
LRT	.185	.043	4.30**	.233	.054	4.28*	.140	.059	2.36*	.145	.051	2.83**

Table 2. Regression of TKU on Organizational Culture

	TKU			OE			CS			MS		
Predictor	β	SE	T	β	SE	T	β	SE	T	β	SE	T
OC	.516	.040	12.87**	.535	.051	10.57**	.379	.057	6.65**	.670	.048	14.01**
CSVA	.144	.049	2.92**	.235	.064	3.68**	.106	.070	1.51	.199	.060	3.30**
CEOP	.239	.051	4.65**	.135	.066	2.03*	.218	.072	3.01**	.224	.062	3.62**
CSVI	.137	.048	2.86**	.164	.061	2.66**	.063	.068	0.92	.245	.059	4.13**

Table 3. Regression of TKU on OL, OC, and Demographic Characteristics

Predictor	Alone	OL	OLx	OC	OCx	OL&OC
OL & OC	-	-	-	-	-	61.1**
OL	-	50.0**	-	-	-	-
OC	-	-	-	52.0**	-	-
Education	2.3	50.7	51.2	53.6*	54.0	62.1*
Age	3.9*	51.7*	55.5**	54.0	56.8**	62.4
Gender	0.5	50.5	50.5	52.0	52.3	61.2
Emp@Org	0.0	51.3	51.4	53.7*	53.8	62.2*
Emp@Loc	0.2	53.0**	53.1	56.1**	56.1	66.1**
Emp@Dep	0.2	51.4	51.5	52.7	53.0	62.5
Direct Reports	2.5*	50.2	51.7	53.4*	54.1	61.6
Years Org in Industry	0.1	53.4**	53.7	52.3	52.8	62.9**
Emp@Pos	0.9	51.1*	51.1	52.2	52.2	61.5
Years Emp@Org	3.2*	55.8**	55.9	54.0*	54.0	64.7**
Years Emp in Industry	3.5*	51.7**	51.8	51.5	51.9	61.1

Table 4. Overview of Study Results

Research Questions and Hypotheses	Study Results	Literature Support	Results
RQ1a: Do the traits of LC, LEE & LRT represent OL within an organization? H1a: OL consists of 3 traits: LC, LEE & LRT. RQ1b: Do the traits of CSVA, CEOP & CSVI represent OC within an organization? H1b: OC consists of 3 traits: CSVA, CEOP & CSVI. RQ1c: Do the dimensions of CS, OE & MS represent TKU within an organization? H1c: TKU consists of 3 dimensions: OE, CS & MS.	Supported H1a that OL consists of LC, LEE & LRT. Supported H1b that OC consists of CSVA, CEOP & CSVI. Supported H1c that TKU consists of OE, CS, & MS.	Avolio, 1999; Cabrera, 2006; Koskinen, 2003; Kotter, 1996; Lin, 2007; Mascitelli, 2000; Quinn & Spreitzer, 1997; Senge, 1990; Soo, 2006	This study supported the literature that OL consists of LC, LEE & LRT, OC consists of CSVA, CEOP & CSVI and TKU consists of OE, CS, & MS. The TKU survey demonstrates reliability and validity when administered to knowledge workers. The TKU survey provided statistical support as a valid and reliable instrument when used in organizations with knowledge workers. Given that this study was the first instance in which the TKU survey was administered in an organization with knowledge workers, opportunity for further testing and future research is warranted.
RQ2: Do particular organizational leadership traits (encouragement of creativity, risk taking, and employee empowerment) have a positive effect on TKU? H2: Organizations with high measurements of OL traits (i.e. LC, LEE & LRT) will have strong TKU.	Supported H2 that organizations with high measurements of OL traits will have strong TKU.	DeLong, 2004; Koskinen, 2003; Nonaka et al., 2001; Quinn, & Spreitzer, 1997; Soo, 2006	This study supported the literature that OL impacts TKU within an organization. In addition, the higher the perceived OL and its traits the higher the perceived TKU and its dimensions in an organization. The study did show that LEE and LRT accounted for most of the impact on TKU and that LC for this group of respondents had little or no effect on TKU. This study provides support that leaders who encourage risk taking and empower their employees will have higher TKU in their organization. An increase of 1OL will result in ½ increases in TKU.
RQ3: Do particular organizational cultural traits (shared vision, shared values, and an environment of openness) have a positive effect on TKU? H3: Organizations with high measurements of OC traits (i.e. CSV, CSVA & CEOP) will have strong TKU.	Supported H3 that organizations with high measurements of OC traits will have strong TKU.	El-Sayed & Abou-Zeid, 2003; Lin, 2006; Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995; West, 1997	This study supported the literature that OC impacts TKU within an organization. In addition, the higher the perceived OC and its traits the higher the perceived TKU and its dimensions in an organization. The study did show all the traits of OC, CSVA, CEOP & CSVI, have a significant that impact on TKU. This study provides support that organizations with cultural traits of having a shared vision, shared values, and environment of openness will have higher TKU in their organization. An increase of 1OC will result in ½ increases in TKU.
RQ4: Do demographic factors, such as gender, age, and position affect the impact of organizational leadership and organizational culture on TKU? H4: Demographic factors of the employees impact the effect that OL and OC traits have on TKU.	Supported H4 that the age and amount of time in an organization or industry impacts the effect that OL and OC have on TKU.	DeLong, 2004; Soo, 2006	This study supported that some of the demographics do have an impact on TKU. Age was the only demographic that showed a consistent impact across all the regressions. When the age of an individual and the amount of time an organization or individual is in an industry, then dimensions of OE is higher.