CULTURAL ISSUES IN THE USE OF COLLABOR-ATIVE KNOWLEDGE MANAGEMENT SYSTEMS

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Collaborative Knowledge Management Systems (CKMS) have become very important tools for knowledge workers in creating, sharing, and transferring knowledge between people at different times and in different places. Despite numerous research studies addressing the benefits, uses, and challenges in CKMS, cultural issues pose a threat for knowledge workers to distribute and transfer knowledge appropriately. The aim of this research is to understand inherited cultural differences between Eastern and Western knowledge workers using CKMS. Hosftede's well known theory on culture dimensions will be evaluated in our study as the first step toward deepening the understanding between people with different cultural backgrounds. The research outcome, a cultural framework of CKMS, will be developed to increase software development practitioners' awareness on the importance of cultural issues as the underpinning concern for constructing a high-quality knowledge management system.

Keywords: Collaborative knowledge management systems, knowledge workers, culture.

1. INTRODUCTION

One of the aims of creating Knowledge Management Systems (KMS) is to capture, store and re-use intellectual assets for employees within organizations (Ehin, 2000; Sullivan, 2000). Many KMS developed are aimed to build a good context of facilitating tacit knowledge that can be leveraged through people to people interaction.

On the other hand, the content itself within KMS have several challenges. Firstly, the content itself is sizeable; Secondly, it can have inconsistent meta data and; thirdly, lack of appropriate support required for multiple languages. However not many KMS provide good knowledge sharing, this is because their lack of adequate functionalities that allow for asynchronous and synchronous communication. Moreover, managing knowledge in KMS remains a challenge because of the lack of trust involving diverse cultural dimensions. This can lead to inconsistent knowledge sharing brought about by different people with different behaviours towards knowledge sharing.

A Collaborative Knowledge Management System (CKMS) is one that integrates different components in order for knowledge workers to collaborate tasks, capture data, and translate knowledge either onto a local database server or a remote server (Hayden 2003). Such integration will include these components: a document management system, a workflow system work space system, an information search and retrieval system, a data warehouse, a decision support system, and an intelligent agent system (Chua and Brennan 2004). The objective of CKMS is to foster working relationships between knowledge workers by allowing them to collaborate, share, and transfer knowledge to one another for 1) learning by experience how knowledge is being captured and documented, 2) exchanging ideas, and 3) solving tasks effectively.

As the software development globalization increases, particularly outsourcing and virtual community, CKMS have become very important tools for organizations. Organizations want a CKMS that is effective and efficient and is able to support and provide good collaboration for knowledge workers that can be used 1) at the same time and in the same place, 2) at the same time in a different place, 3) at different times in the same place, and 4) at different times and places (Abdullah et al 2004; Bhatt et al 2005, Usoro 2008).

Unfortunately, not all CKMS tools are adequately functional for knowledge workers because some functionalities and features are irrelevant as they do not provide enough resources to the knowledge workers, particularly information on how to achieve or complete tasks successfully. One key difficulty in the way CKMS functions is that knowledge workers' cultural differences define the way they want knowledge to be created, stored, and shared in the CKMS folders. Hence, this poses a difficulty when trying to convince other knowledge workers to appreciate and learn that knowledge stored in CKMS is accurate, timely, and consistent. This paper aims at addressing the cultural characteristics inherent between eastern and western knowledge workers on knowledge creation. Section two discusses related work and Section three highlights the importance of individualism and collectivism for knowledge workers in the use of CKMS. In Section four, we discuss our research question and hypothesis questions. In section five, we present our argument why the quantitative research is chosen and in section six is the conclusion and future work.

2. Related Work

Knowledge created by knowledge workers is performed by the individual and the group. Evaluating the quality of knowledge can be difficult because knowledge is created based on the knowledge worker's understanding of the topic translated into her or his own language and subject to her or his interpretation. Language even plays a part in topic translation as well as in content and context; the level of information gathered depends a great deal on the individual and the way she or he wants the knowledge to be processed and stored. This implies that culture has a significant influence on knowledge workers they the way they understand, receive, and transfer knowledge.

The concept of knowledge is not new. The basic understanding of knowledge consists of two types: Tacit and Explicit (Nonaka, 1991, 1994; Polanyi, 1967; Erden 2008). Tacit knowledge is based on individual experience and ideas which are difficult to document, whereas explicit knowledge is one that can be formulated into sentences and captured in diagrams and documents. Culture, however, is defined as 'the values, beliefs, and assumptions learned in early childhood that distinguishes one group of people from another' (Newman & Nollen 1996). It has an influential role on knowledge sharing and transferring. Particularly, an organization with a combination of cultural backgrounds in its knowledge workers sometimes finds it difficult for workers of one culture to transfer knowledge accurately and conveniently to other knowledge workers who do not belong to the same culture.

According to Igarashi et al (2008), people from different national cultures have different levels of trust. For example, people from collectivistic cultures show a higher level of trust than people from individualistic cultures. A model based on culture dimensions by Hosftede's (1997) was introduced to identify cultural differences and classify them into four dimensions: Power distance, Individualism, Masculinity, and Uncertainty Avoidance. Only individualism and Uncertainty Avoidance are considered in our research as we notice that more research targets individual and uncertainty avoidance in the literature. Although the others have repeatedly discussed, some are not fully validated.

Doney et al (1998) highlights the dimensions of individualism and collectivism and the varying degrees of trust from person to person. Consequently, it is believed that the degree of trust has an impact on knowledge workers in their use of CKMS. According to Park (1993), the trust in an uncertainty avoidance situation by knowledge workers is low as a result of the impact level on people being high as they have to accept the way the situation is. In view of CKMS, a new system is bound to have some uncertainty situations arise, such as information security issues, information quality issues, etc. These are classified as uncertainty avoidance because knowledge workers' concern about the features is high, and as a result their trust of the system is reduced. On the other hand, if knowledge workers' trust in uncertainty avoidance situations is high, then it constitutes a smaller impact on the people to use CKMS.

3. Importance of Collectivism and Individualism

Collectivism and individualism are one set of culture traits that show differences between eastern and western cultures. According to Noguchi [(2007), collectivism is classified as a key role in eastern cultures; on the contrary, western cultures value individualism. The relationship between knowledge workers in a collectivist culture is stable. For example, knowledge workers are at ease when working with people in the same group once they are familiar with one another. However, the drawback of collectivist groups is that they don't trust people who are outside of the organization very easily. On the other hand, individualistic knowledge workers from western cultures build trust easily with people both inside and outside an organization (Triandis, R. Bontempo, &. Villareal 1998).

In this context, we understand why knowledge workers from eastern cultures adhere to collectivist thinking because good relationships (in Chinese we call this 'Guan Xi') are established in order to build trust. Unfortunately, when the concern of knowledge sharing arises, people share very little knowledge with other knowledge workers, and in the worst case scenario, some do not share knowledge with people who do not belong to the organization because they do not trust them. For western cultures, knowledge workers are classified as individualistic. The merit of this way of thinking is that they trust people they do not know and have a tendency to share and transfer knowledge anytime and anywhere.

One noticeable issue between eastern and western knowledge workers is that people from western cultures are good communicators; they can communicate effectively with strangers and they feel more comfortable in trusting them. This is noted by Gefen (2006). Other attributes of knowledge workers from highly individualist cultures is that they

prefer to work individually and to seek for individual recognition; they take the challenges of trying new techniques or systems in order to achieve their goals (Kimery & kmirkhalkhali 2007).

In other words, they show a keen interest in using CKMS and trust in the new system. Knowledge workers from collectivist cultures seek personal recognition through recommendations from their team and place less trust in new techniques or systems. The diagram below shows the attributes attributed to eastern and western cultures concerning trust and knowledge sharing in the use of CKMS. The attributes presented in table one provide us information that we need to conduct this research by investigating the effect of cultural issues on the use of CKMS.

As far as we are aware, modern technology like teleconferencing, videoconferencing, and workspaces provide more effective support than traditional tools in organizations. The decline in face-to-face meetings in organizations results in more virtual teams being formed locally and internationally where trust is no longer just based on mutual responsibility and obligations (Su, & Lin 2008).

Attributes	Eastern	Western
	Collectivism	Individualism
Good Communication	Low	High
Trust people in the organization	High	Low
Trust people outside the Organization	Low	High
Knowledge Sharing	Low	High
System Use	Low	High

Table One: The differences between eastern and western knowledge workers

This goes level of trust extends further in knowledge sharing by the knowledge workers in an organization that uses CKMS so that the right knowledge can be delivered to the right person accurately. However, trust is an issue that difficult to build when working on the virtual team (Vance, Elie-Dit-Cosaque &. Straub 2008).

Our research aims at developing a cultural framework of CKMS. The benefits are to increase software development practitioners' awareness of the importance of cultural issues as the underpinning concern for constructing a high-quality knowledge management system. In the next section, we outline our research question and the hypothesis questions.

4. Research Question
Our research question is: "What degree of trust level between eastern and western

knowledge workers is appropriate in order that knowledge sharing in CKMS be productive for organizations?" Based on the research question and literature review, four hypotheses are created. They are as follows:

Hypothesis 1: Knowledge workers from individualistic cultures are more willing to use CKMS than the people from collectivist cultures.

People from individualistic cultures feel more comfortable in communicating with strangers, so we assume that knowledge workers from individualistic cultures have a better capability of using CKMS and sharing knowledge with people from different departments and different nations. On the contrary, knowledge workers from collectivist cultures tend to share knowledge only with the people they find familiar.

Hypothesis 2: Knowledge workers from individualistic cultures can accept and use CKMS more easily than knowledge workers from collectivist cultures can.

People from highly individualistic cultures prefer to work individually and want to seek more individual recognition; they tend to use new techniques or systems to achieve this goal (Kimery, & Amirkhalkhali 2007). CKMS is a new technology, so we assume that knowledge workers from individualistic cultures might accept the CKMS system more easily than the knowledge workers from collectivist cultures. Also, those from individualistic cultures will tend to use CKMS as a powerful tool for improving their individual recognition.

Hypothesis 3: Knowledge workers from low uncertainty avoidance cultures can accept and use CKMS more easily than the knowledge workers from high uncertainty avoidance cultures.

Uncertainty avoidance can affect people's ability to accept uncertainty. People from high uncertainty avoidance cultures fear uncertainty. CKMS is a new technology and there are many potential risks such as knowledge security issues, so we assume that knowledge workers from high uncertainty avoidance cultures will have more difficulty accepting and using CKMS.

Hypothesis 4: Knowledge workers do not want to share knowledge using CKMS because they want to keep their knowledge as a secret to obtain a more competitive advantage.

Knowledge is the most important resource for organizations; simultaneously, knowledge is important for individuals in organizations in order to obtain a more competitive advantage. When knowledge workers use CKMS, they normally have no chance to meet each other, so it is difficult to build trust between knowledge workers. Without trust, knowledge workers are not willing to share their work experiences with other people, and tend to keep their knowledge as a secret.

5. Research Methodology and Research Outcome

In this research, the intention is to deepen our understanding of the attitudes and behaviors of knowledge workers in organizations; a self-administered quantitative survey will be e-mailed to eastern and western knowledge workers in twenty medium and large companies in Australia. The choice of e-mail for distribution of the survey is because it is less expensive and has a faster turnaround time. However, the drawback of e-mailing the survey is that knowledge workers who receive the email might think it is junk mail and ignore it.

The survey is divided into three parts. Part one is for gathering knowledge of the worker's personal information such as name, age, gender, organization type, and position in the organization. Part two contains questions asked pertaining to the relationship of cultural issues in the use of CKMS. Part three asks knowledge workers to comment on impact of the use of CKMS. The research framework is proposed to help designers better design CKMS taking cultural issues into consideration so that they can:

• offer flexible and suitable features and functionality in response to individualistic and collectivist knowledge workers needs and wants.
• transfer knowledge correctly to knowledge workers at the right time
• increase knowledge workers' trust in knowledge sharing

6. Conclusion and Future Work

The next step is to conduct preliminary research by collecting real data for our analysis then constructing a framework that will be used for pilot studies in case studies. We noted that in both eastern and western society, a common threat to knowledge sharing by knowledge workers is the fear of losing individual power and recognition within the organization. As a result, the knowledge workers from both eastern and western cultural backgrounds tend to keep knowledge as a secret (Wu et al 2006).

In consideration of this factor, we will interview knowledge workers to gain insight as to why they perceive knowledge sharing as a threat rather than perceiving it as an opportunity for learning and growth in organizations. This framework not only benefits knowledge workers by providing better assessment of knowledge, but it also encourages more knowledge workers in different cultures to be more open to knowledge sharing addressed ways to ensure knowledge quality (Erden, Krogh.& Nonaka 2008) as follows:

• Support from senior management is important in the use of Collaborative Knowledge Management Systems (CKMS); one example is that it is necessary that all employees receive sufficient training to use CKMS.
• Knowledge is important for employees to obtain a competitive advantage in the organization, so they cannot share knowledge with other people without reward. Thus it is necessary to build a mechanism to evaluate those who share more knowledge with other people and provide a reward for them.
• Organizations should encourage employees to share knowledge using CKMS and

convince them that CKMS can provide many benefits to them.
- With delegated organizations, knowledge can be shared among different departments effectively. The delegated organization might be responsible for all the knowledge sharing and transferring issues.

References

1. Hayden, T. W.(2003): The Age of Collaborative Knowledge Management Systems: A Technical View, The Society for Modeling and Simulation International. View on 19th September 2008, <http://www.scs.org/getDoc.cfm?id=2060>

2. Chua, B. B. and Brennan J. (2004). Enhancing Collaborative Knowledge Management Systems Design. In Proceedings of 5th European Knowledge Management Conference, Paris, France.

3. Abdullah. R., Sahibudin, S., Alias, R. A. & Selamat, M.H.(2004). Collaborative Knowledge Management Systems for Learning Organizations, *Journal of Information & Knowledge Management,* vol.4, issue 4, pp.237-245.

4. Bhatt, G. , Gupta, J. N. & Kitchen, F. (2005). An exploratory study of groupware use in the knowledge management process, *Journal of Enterprise Information Management,* vol.18, issue 1, pp.28-46.

5. Nonaka, I. (1991).The knowledge-creating company. *Harvard Business Review,* vol. 69, issue 6, pp.96–104.

6. Nonaka, I. (1994). A dynamic theory of organizational knowledge creation, *Organization Science,* vol.5, issue 1, pp.14-37.

7. Polanyi, M. (1967). *The Tacit Dimension.* Routledge, London.

8. Newman, K.L. & Nollen, S. D. (1996). Culture and congruence: the fit between management practices and national culture. *Journal of International Business Studies,* vol.27, issue 4, pp.753–779.

9. Igarashi, T., Kashima, Y., Kashima, E.S, Farsides, T., Kim, U. Strack, T., Werth, L. & Yuki, M (2008). Culture, Trust and Social Networks", *Asian Journal of Social Psychology,* vol.11, issue 1, pp.88-101.

10. Hofstede, G. (1997). *Cultures and Organisations: Software of the mind,* McGraw-Hill International Ltd, UK.

11. Doney, P. M., Cannon, J.P, &. Mullen, M.R (1998). Understanding the influence of national culture on the development of trust, *Academy of Management,* vol.23, pp.601–620.

12. Park, H. (1993).Cultural impact on life insurance penetration: a cross-national analysis. *International Journal of Management,* vol.10, issue 3, pp.342–350.

13. Noguchi, K. 2007.Examination of the content of individualism/collectivism scales in cultural comparisons of the USA and Japan. *Asian Journal of Social Psychology*, vol.10, issue 3, pp.131-144.

14. Triandis, H.C., Bontempo, R., &. Villareal, M.J. (1998). Individualism and Collectivism: Cross-Cultural Perspectives on Self-Ingroup Relationships", *Journal of Personality and Social Psychology*, vol.54, issue.2, pp.323-338.

15. Gefen, D. (2006). On the Need to Include National Culture as a Central Issue in E-Commerce Trust Beliefs, *Journal of Global Information Management*. vol.14, issue 4.

16. Kimery, K.M., & Amirkhalkhali, S.(2007). National Culture And Diffusion Of Electronic Commerce: Preliminary Results From Japan And The US. EABR & ETLC Conference Proceedings.

17. Wu, S. , Lin. C., and Lin, T. (2006). Exploring Knowledge Sharing in Virtual Teams.

18. Usoro (2005). Cultural dimensions of knowledge-sharing in global virtual teams: an exploratory study. *Computing and Information Systems Journal,* Viewed 21st September 2008 <http://cis.paisley.ac.uk/research/journal/V9/V9N3/abel.doc>

19. Su, H. & Lin, Y.(2006).Enhancing knowledge-based service quality: A knowledge management perspective. *The Service Industries Journal,* vol.26, issue7, pp.787 – 800.

20. Vance, C., Elie-Dit-Cosaque, & Straub, D.W. (2008). Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture. *Journal of Management Information System,* vol.24, issue 4, pp.73-100

21. Erden, Z., Krogh, G.V. & Nonaka, I. (2008). The quality of group tacit knowledge. *Journal of Strategic Information Systems,* vol.17. issue no.1. pp.4-18.

22. Ehin, C. (2000) *Unleashing Intellectual Captial.* London, Uk: Butterworth-Heinemann.

23. Sullivan, P.H. (2000). *Value Driven Intellectual Captial: How to Conv ert Intangible Corporate Assests Into Market Value.* New York. Wiley.