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IT-BASED KNOWLEDGE SHARING AND ORGANIZATIONAL TRUST: the development and initial test of a comprehensive model

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Abstract

Knowledge has been recognized as an important asset for organizations to gain competitive advantage. Increasingly capable Information and Communication Technologies (ICT) and Information Systems (IS) have been developed and employed by organizations to facilitate Knowledge Management (KM). Beside outcomes, organizations are concerned with how to motivate employees to share their knowledge in order to obtain valuable inputs (i.e. knowledge), facilitate KM processes and get the greatest benefits from the investments. This paper aims to: (1) develop a comprehensive research model for studying the behavior of using KM systems to share knowledge in a socio-technical context, and (2) study the effect of Organizational Trust (OT) within this KM context. Literature review and survey were conducted to provide supportive results.

Keywords: Organizational knowledge management, Knowledge management systems, Knowledge sharing, Organizational trust.

1 INTRODUCTION

In the twenty-first century, knowledge has become the key to differentiate organizations from their competitors and maintain competitive advantage. Information and Communication Technologies (ICT) and Information Systems (IS) have been developed and employed by organizations to facilitate Knowledge Management (KM) process (Alavi et al. 2001). They can be classified as KM systems, e.g. Document and Content Management Systems, Expert Networks, Knowledge Portals, Customer Relationship Management (CRM) and E-Learning Management Systems, etc (Lindvall et al. 2003). Organizations have to ensure that KMS invested are fully utilized so that they can benefit most and manage knowledge effectively. Besides, knowledge is embedded in individuals' mind. Organizational members should be willing to contribute their and response to others' knowledge so that organizational knowledge can be preserved and new knowledge can be created and made available for qualified members within the organization and future use with the help of KM systems. Otherwise, important knowledge, e.g. customer profile, certain behaviors and mental maps, may be lost or changed when a knowledge worker leaves the organization (Fiol et al. 1985). Therefore, many organizations are concerned about how to ensure that organizational members share their knowledge or motivate them to contribute knowledge to KM systems (Malhotra 2001; King et al. 2002).

Although factors affecting the use of KM systems and the behavior of knowledge sharing have been investigated and studied by a few researchers (e.g. (Constant et al. 1994; Wasko et al. 2000; Ardichvili et al. 2003; Lee et al. 2003; Politis 2003)), most of the studies have focused on either social or technological factors. There is a lack of integrative studies including both types of factors. Besides, most of them were qualitative studies. This reduces the predictive power, authenticity and generalizability of their theories. Therefore, it is necessary to develop a comprehensive model and carry out empirical quantitative study in order to investigate the relative importance among different types of factors. Significant factors found and questionnaire items developed in this study can be used as indicators to check whether KM resources have been effectively allocated and assess the robustness of organizational context for effective use of KMS and knowledge sharing. These can provide useful information and guidance to organizations on how to allocate their KM efforts and help them find out their inherent weaknesses in providing a supportive KM environment.

This paper aims to: (1) develop a comprehensive research model for studying the behavior of using KM systems to share knowledge in a socio-technical context, and (2) study the effect of Organizational Trust (OT). It is followed by description of the research model and its theoretical foundation. Next, procedures of item development, questionnaire development and data collection were presented. After that, results were generated by using PLS-Graph. Finally, discussions and limitations were presented.

2 THEORETICAL DEVELOPMENT

Technology Acceptance Model (TAM) (Davis 1989) has widely and frequently been used to study user acceptance of information technologies in IS empirical research (Gefen et al. 2003; Ong et al. 2004). This theory indicates that people act according to their beliefs about performance. It hypothesizes that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are two fundamental determinants of system use. This theory has been proved to be applicable to diverse organizational settings. As many organizations have employed KM systems to facilitate communication and knowledge sharing within organizations and studying the behavior of using KM systems is part of the focus in this study, the behavior of using KM systems to share knowledge should be explained in part by TAM.

However, explaining a behavior relating to system use only with TAM is insufficient. Whereas PU affects performance as it is perceived as a consequence of usage, intrinsic motivation or affective attitudes which

is related to the reinforcement and enjoyment in the process of performing a behavior may also affect the performance (Davis 1989). Besides, although perceived behavioral control which is measured by PEOU has been recognized as an important factor affecting performance in the Theory of Planned Behavior (TPB) (Ajzen 1991), in many situations it is still insufficient to account for actions (Beck et al. 1991). When it fails to reflect actual availability of requisite opportunities and resources, a direct path from it to behavior will not be expected. Moreover, social factors from Triandis model (Triandis 1980) or subjective norm from Theory of Reasoned Action (TRA) (Fishbein et al. 1975) or TPB, which has been found to be significant in many behavioral or IS studies (Taylor et al. 1995; Cheung et al. 2000; Venkatesh et al. 2000), is excluded. As knowledge sharing or effective use of KM systems must involve multiple participants, it is believed that social pressure plays an important role in explaining the behavior of this study.

Compared to other existing popular models or theories from the social psychological or IS literature such as TAM, TRA and TPB, Triandis model was found to be more comprehensive and suitable for studying this KM related context. It makes a difference between affective component and cognitive component of attitudes. Besides, it includes both facilitating conditions which measures objective or actual behavioral control and social factors constructs to explain actions. Therefore, the research model of this study was developed based on a subset of Triandis model with some modifications. According to Triandis model, within a voluntary environment, behavior is determined by (1) habit of performing the behavior, (2) intentions to perform the behavior which is determined by social factors, affect and perceived consequences and (3) facilitating conditions. As most of the organizations have adopted some kinds of KM systems and this is a cross-sectional study, this study dropped behavioral intentions construct and studied the direct effects of social factors, affect and perceived consequences on current behavior. This can help simplify the model, prevent retrospective problems and provide more meaningful and accurate results. Besides, habit was excluded because the measurements for habit and actual behavior are the same in cross-sectional studies (Thompson et al. 1991; Cheung et al. 2000). The research model developed for this study was shown in Figure 1.

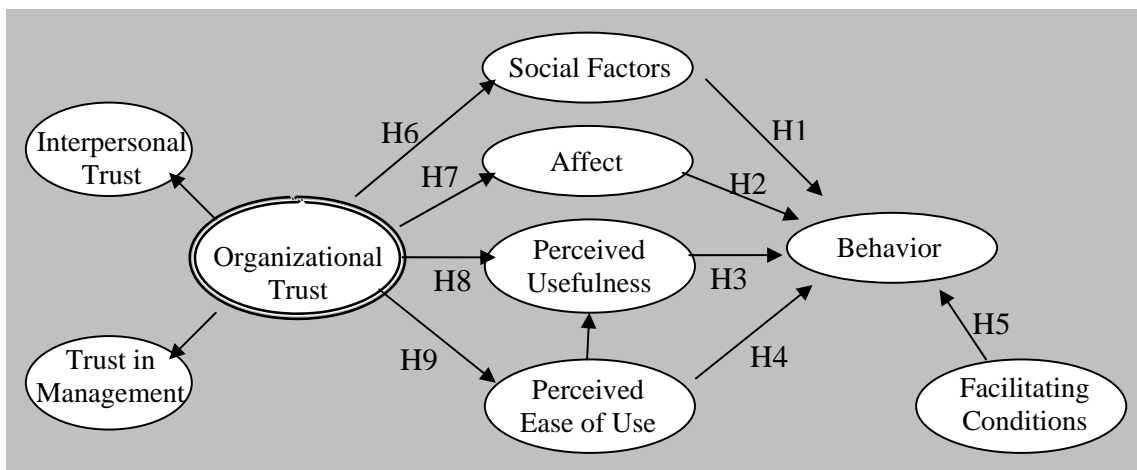


Figure 1 Research Model

2.1 Social Factors (SF)

SF refers to “the individual’s internalization of the reference group’s subjective culture and specific interpersonal agreements that individual has made with others in specific social situations” depending on their personality (Triandis 1980). There is correspondence between individual norms, roles and values and

group's subjective culture. However, they are not identical. People in an organization may think that it is useful to use the KM system to share knowledge, but an individual may still think it is useless according to his/her negative experience or personality. It is similar to the concept of subjective norm of TRA and TPB (Ajzen 1991). Significant relationship between subjective norm and system usage has been found in IS research (Taylor et al. 1995; Cheung et al. 2000). Therefore, the corollary to Hypothesis 1 would be:

H1: SF has a significant effect on the behavior of using KM system to share knowledge.

Each item of SF was obtained by multiplying 'Normative Belief' (NB) of each referent with 'Motivation to Comply' (MC) with the corresponding referent (Cheung et al. 2000). In this study, social influences from colleagues, immediate supervisor and the top management were studied (Costigan et al. 1998; Cheung et al. 2000). They are people at different levels of an organization. The items of SF may not load on the same underlying construct (Lewis et al. 2003). A change in SF construct may mainly due to the change of social influences of one or two referents that are more important. Therefore, it is meaningful to study the relative importance (i.e. weights) among social influences; and thus items of SF should be modeled as formative indicators.

2.2 Affect

Affect refers to "the feelings of joy, elation, or pleasure, or depression, disgust, displeasure, or hate associated by an individual with a particular act" (Triandis 1980). They are affective or emotional-based responses which refer to a person's instincts, intuitions or feelings. Significant relationship between different kinds of affect (e.g. anxiety and enjoyment) and system usage has been found before (Davis 1989; Cheung et al. 2000). Therefore, the corollary to Hypothesis 2 would be:

H2: Affect has a significant effect on the behavior of using KM system to share knowledge.

2.3 Perceived Consequences

Perceived consequences construct is defined as the perception or expectation of having some consequences which give value to an individual who performs the behavior (Triandis 1980). It is the cognitive component of attitude. PU and PEOU from TAM were studied under this construct.

2.3.1 Perceived Usefulness

PU is defined as "the degree to which a person believes that using a particular system would enhance his or her performance" (Davis 1989). According to Triandis model, perceived consequences constitute one of the determinants to behavioral intention which in turn affects behavior (Triandis 1980). It is also analogous to relative advantage (Moore et al. 1991; Rogers 2003) which is defined as "the degree to which using an innovation as being better than using its precursor". Relative advantage has been frequently found to be positively related to information technology adoption and usage (Tornatzky et al. 1982; Taylor et al. 1995; Gefen et al. 2003). Therefore, the corollary to Hypothesis 3 should be:

H3: PU has a significant effect on the behavior of using KM systems to share knowledge.

2.3.2 Perceived Ease of Use

PEOU is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis 1989). According to Triandis' theory, person's perceptions that the act is easy or not are determined as "internal" factors and should be included in studying perceived consequences (Triandis 1980). PEOU is reciprocal to Complexity (Rogers 2003) which is defined as "the degree to which an innovation is perceived as relatively difficult to understand and use". Both PEOU and Complexity have

frequently been found to be related to information technology adoption and usage (Tornatzky et al. 1982; Taylor et al. 1995; Gefen et al. 2003). Besides, previous research showed that the association between PEOU and usage became insignificant when there was a significant correlation between PEOU and PU. It is believed that PU mediates the association between PEOU and usage. Therefore, the corollary to Hypothesis 4 should be:

H4: The association between PEOU and the behavior is mediated by PU.

2.4 Facilitating Conditions (FC)

Facilitating conditions refer to “objective factors, ‘out there’ in the environment, that several judges or observers can agree make an act easy to do” (Triandis 1980). They include technical and non-technical supports, e.g. the availability of the KM systems, supports and ease of access to KM systems, etc. (Cheung et al. 2000). They are objective conditions or geographic barriers in the environment will prevent a person from performing a behavior even though he/she has intentions to perform a behavior (Triandis 1980). Besides, support has been empirically found to be a factor which is significantly related to system use (Thompson et al. 1991; Cheung et al. 2000). Therefore, the corollary to Hypothesis 5 would be:

H5: FC has a significant effect on the behavior of using KM system to share knowledge.

2.5 Organizational Trust (OT)

2.5.1 Second Order Factor Model

OT can be defined as the overall or general faith and confidence in the qualities and abilities of specific others (i.e. coworkers) and groups (i.e. the top management) within an organization; and the willingness to depend on them and be vulnerable based on the expectation that they will behave as expected, irrespective of the ability to monitor or control (Rousseau et al. 1998; McKnight et al. 2002; Chen et al. 2003). Trust is an underlying psychological condition which will affect a person’s intention and behavior (Costigan et al. 1998; Morrow et al. 2004). It was found to be a pre-requisite in motivating human beings to perform in a desirable way (Cook et al. 1980; Morrow et al. 2004). Trust has been recognized to be an important factor that can help motivate individuals to contribute knowledge and has found to be significantly related to KM (Lee 2000; Ardichvili et al. 2003; Lee et al. 2003; Politis 2003). Two dimensions of OT were identified to be closely related to knowledge sharing: (1) Interpersonal Trust (IT) and (2) Trust in Management (TIM).

IT can be defined as maintaining reciprocal faith and confidence in each other in terms of intention and behavior (Lee et al. 2003; Politis 2003). IT within an organization can be interpreted as trust among coworkers. It is dyadic (Costigan et al. 1998) and knowledge-based. When people have to interact or share knowledge with a colleague they know before, they will try to make prediction and expectation on others’ behavior or performance based on previous experience in order to determine whether to participate or not (Ardichvili et al. 2003). If mutual trust or IT exists, employees will be more willing to provide their ideas and feelings, use resources provided by other colleagues and learn together (Costigan et al. 1998).

TIM refers to employees’ confident positive expectations regarding the conduct or behavior of an organization’s CEO and the top management (Ellis et al. 2001); intention and willingness to have confidence in its words and actions based on rules, policies, leadership and decision outcomes (e.g. efficiency and fairness of the organization-wide systems such as performance appraisal system and professional development opportunities, etc.) (Costigan et al. 1998). TIM can include trust in supervisors and top management (Politis 2003). It is an institutional trust (Costigan et al. 1998). As more and more organizations have business in different geographical locations, employees may have higher chance to interact or share knowledge with people they do not know before or unfamiliar. In this case, individuals

will rely on institutional trust (Ardichvili et al. 2003) to determine the trustworthiness of other people's behavior or activity and ensure that they are being protected and secured. Besides, TIM is closely related to job satisfaction and job commitment. Organizations with employees' support will be easier in carrying out policies (e.g. use of KM systems for knowledge sharing).

2.5.2 *Nomological Network*

According to Triandis model (Triandis 1980), individual perceptions of subjective culture variables in a collective will affect social factors, affect and perceived consequences which will then affect behavioral intentions and actual behavior. Within an organization, OT can reflect employees' perceptions of the subjective culture variables, e.g. fairness (Kim et al. 1997; Ellis et al. 2001), integrity (Clark et al. 1997) and benevolence (McKnight et al. 2002) held by colleagues and the top management. Besides, higher level of OT can reflect employees' positive values on employees-to-employees and employees-to-management relationships and consistency between organization's subjective culture and employees' values. These can increase the likelihood that a positive stimulus or decrease the likelihood that a negative stimulus will be perceived, change the interpretation of the outcomes of responses and provide guidelines for the selection (Triandis 1980) of using KM systems to share knowledge. Therefore, it is predicted that OT will influence affect, social factors and perceived consequences. This changes the importance (i.e. weights) of those independent variables towards the behavior of using KM systems to share knowledge. Besides, as PU is affected by PEOU in the model, it is predicted that the association between OT and PU will be mediated by PEOU. Therefore, the corollary to Hypothesis 6, 7, 8, 9 would be:

H6: OT has a significant effect on SF.

H7: OT has a significant effect on affect.

H8: The association between OT and PU is mediated by PEOU.

H9: OT has a significant effect on PEOU

3 INSTRUMENT DEVELOPMENT

In order to develop better measures, literature review was conducted and constructs were carefully defined to specify the domain of the constructs and ensure content and face validity (Churchill 1979; Moore et al. 1991). Reliable and valid instruments for measuring affect, PU, PEOU, FC, SF and behavior constructs were adopted from existing literature (Moore et al. 1991; Madden et al. 1992; Cheung et al. 2000). A minimum of three indicators were selected to measure each of them (Bollen 1989).

OT has been widely studied in the field of Management and Organizational Psychology (Clark et al. 1997; Ellis et al. 2001; Morrow et al. 2004). Different dimensions and measures of OT are available and validated (Cook et al. 1980; Clegg et al. 1981; Cummings et al. 1996; Clark et al. 1997; Costigan et al. 1998; Ellis et al. 2001; Moffett et al. 2003; Morrow et al. 2004). However, they are seldom adopted for use in the study of KM. This is because empirical studies relating to the relationship between OT and KM is limited and most of them intended to use their own selected instruments. In order to obtain more reliable and valid measures of OT for studying KM, a detailed item development procedure was conducted. In-depth interviews with twelve experts specializing in different disciplines (i.e. Information Systems, Management and Management Science) were carried out. They were asked to perform card sorting (Moore et al. 1991), item ranking (Davis 1989), proofreading and provide opinions. For card sorting, Kappa scores averaged for the sixty-six pairs of judges is 0.84 and the overall placement ratio of items within the target constructs was 96%. A finalized item pool was generated with four indicators per each dimension based on the results of the interviews. The four items of IT were "I can trust the people I work with to lend me a hand if I need it", "If I got into difficulties at work, I know my workmates would try and

help me out”, “I have full confidence in the skills of my workmates” and “Most of my workmates can be relied upon to do as they say they will do” (Cook et al. 1980). The four items of TIM were “I can rely on management to try to help me out when I run into difficulties with the job” (Clark et al. 1997), “Top management is sincere in its efforts to communicate with employees” (Ellis et al. 2001), “Top management keeps its commitments to employees” and “I feel quite confident that the firm will always try to treat me fairly”. OT as an overall factor that represents the two first order constructs (IT and TIM) was then operationalized by all the indicators of the two first order constructs (Chin 2000). All items were measured using a seven-point likert scale.

An online survey was used to collect data. The goals, authority and tasks were clearly stated on the cover page to induce the confidence of respondents to do the survey. Incentive (i.e. results of the survey) was given to increase response rate. Definitions of KM and examples of KM systems were also included in order to increase accuracy of responses. Respondents were asked to specify a KM system that they have been using to share knowledge within their organization and answer questions relating to affect, SF, PU, PEOU and behavior based on their experience with that particular system. Pilot test was performed to collect opinions and find out errors concerning the questionnaire items and the design of online survey.

4 DATA COLLECTION

Various KM associations, forums and interest groups of different countries were contacted. At last, four European, one British, one Australian and one Hong Kong based KM associations agreed to provide support in data collection. They posted the link of the online survey on their websites or/and inform their members through emails or newsletters. Besides, unsolicited emails were sent to addresses available on organizations’ websites. Follow-up emails were made to organizational members who did not respond within two weeks after unsolicited emails were sent. The number of valid samples collected was 80. 5% of the respondents noticed the survey by themselves when surfing the web, 6% have learnt about it through KM associations directly, 43% through unsolicited emails from the authors and 46% were informed by other people (e.g. their friends or colleagues) who had learnt about it. Regarding respondents’ experience of using KM system, average is 3.83 years and standard deviation is 3.23 years. The demographic profile of the respondents is shown in Table 1.

| | | | | | | |
|--|------------------------------|---------------------|-------------------------------|---------------------------|----------------------------|----|
| Size of Organization | Fewer than 50 or equal to 50 | 36% | Position | CEO / MD | 1% | |
| | 51 - 200 | 19% | | Senior Management | 16% | |
| | 201 – 500 | 11% | | Middle Management | 8% | |
| | More than 500 | 34% | | Supervisory | 5% | |
| Functional Specialty of Current Department | Finance / Accounting | 9% | | Administrative / Clerical | 28% | |
| | General Management | 9% | | Technical | 24% | |
| | Human Resources / Personnel | 1% | | Others | 19% | |
| | IS / IT | 29% | | Education Level | Some high school or less | 4% |
| | Manufacturing/Production | 6% | | | Graduated from high school | 9% |
| | Marketing / Sales | 19% | Vocational / technical school | | 3% | |
| | Planning | 6% | Some college | | 6% | |
| | Research & Development | 4% | Graduated from college | | 49% | |
| Others | 18% | Post-graduate study | 30% | | | |

Table 1 Demographic Profile

5 DATA ANALYSIS

PLS-Graph (Chin 2001) was used. Indicators were standardized to avoid computational errors (Chin et al. 2003). A bootstrap resampling procedure (500 resamples) was performed to examine the stability of estimates (Chin et al. 2003) and develop robust confidence intervals (Chin 1998).

5.1 Measurement Model

In assessing the measurement model, the acceptance level for path loading was set to 0.7. To assess the internal consistency for a given block of indicators (Chin 1998), the acceptance level of composite reliability (Werts et al. 1974) was set at 0.70 (Hair et al. 1998) and that of average variance extracted (AVE) (Fornell et al. 1981) was set at 0.50 (Chin 1998). To evaluate the discriminant validity, AVE of each latent variable should be greater than the square of the correlations between it and other latent variables (Chin 1998). Besides, cross-loadings were examined. Each indicator should load higher on its respective latent variable than indicators for measuring other latent variables (Chin 1998).

For all reflective indicators (Chin 1998) at the first order level, i.e. IT, TIM, Affect, PU, PEOU, FC and Behavior, had factor loadings above 0.70 and were significant at the 0.01 level. Composite reliability was found to be between 0.54 and 0.97 and AVE was found to be between 0.62 and 0.88. Therefore, reliability and convergent validity of the measurement model were supported. The discriminant validity was also verified as AVE of each latent variable was greater than the square of the correlations between it and the other unrelated latent variables; and each block of indicators load higher for its respective latent variable than indicators for other unrelated latent variables.

5.2 Second Order Model

For OT, all of its indicators had factor loadings above 0.7 and were significant at the 0.01 level. Only two out of eight items had loadings below 0.7 (i.e. 0.66). However, it is still acceptable as there are additional and other reliable indicators in the block (Chin 1998). Composite reliability and AVE were found to be 0.90 and 0.54 respectively. It showed that all indicators of IT and TIM were able to capture the domain of OT. Besides, all indicators load higher on first order factors than on the second order factor and AVE of OT was greater than the square of the correlations between it and its two first order factors. It indicated that those indicators reflected second order factors better. It was confirmed that IT and TIM were richer in detail and OT is more parsimonious and abstract. They are strongly correlated and OT can be reflected sufficiently by IT and TIM. Regarding relative importance of the two dimensions, IT and TIM are both very importance as their path coefficients from OT to IT and OT to TIM were 0.86 and 0.88 respectively.

5.3 Structural Model

A moderate R-square of 0.44 was obtained. SF, PU and FC were found to be significantly related with the behavior of using KM systems to share knowledge at the 0.05 level. Hypothesis 1, 3 and 5 were supported. Among the three significant variables, FC was found to be the most important with a path of 0.42 followed by PU (0.35) and SF (0.32). For SF, social influence from the top management was found to be the most important and the best surrogate for the component score with weight of 0.99 and factor loading of 0.97 followed by colleagues (0.40, 0.70) and immediate supervisor (-0.36, 0.66).

PEOU was found to be insignificantly related with Behavior. There are two possible reasons: (1) the association between PEOU and Behavior is mediated by PU and (2) there is a strong correlation between FC and PEOU. PEOU was found to be significant at the 0.01 level when PU and FC were not controlled. When PU was controlled in the model, PEOU became insignificant and a strong correlation was found

between PU and PEOU (0.62). Therefore, hypothesis 4 was supported. Besides, the correlation between PEOU and FC is 0.76 which is very strong (Cohen 1988). Although it was expected that there would be some correspondence between PEOU and FC (Triandis 1980), the strong correlation may indicate that actual control was better and more realistic than perceived control in predicting the probability of a successful behavioral attempt in this study (Madden et al. 1992). Perceived behavioral control may not be particularly realistic when a person has relatively little information about the behavior, when requirements or available have changed, or when new and unfamiliar elements have entered into the situation (Madden et al. 1992). As respondents were from different types of organizations and with different experiences, FC would be a more powerful and secure predictor than PEOU. The only insignificant hypothesis was the relationship between affect and Behavior. It may be related to the fact that the theoretical model was a little bit different from the Triandis' model. The impact of affect on Behavior was not studied through intention. Previous studies also found that affect does not significantly affect current behavior (Thompson et al. 1991; Cheung et al. 2000). Besides, people in a working environment may simply use KM systems as tools to share knowledge to facilitate their work. Therefore, using KM systems to share knowledge may not evoke strong moods or emotions, either positive or negative. Moreover, as this study did not examine a particular KM system, respondents might usually refer to a KM system that they like.

Significant relationship was found between OT and SF at the 0.05 significance level (path coefficient is 0.35). Hypothesis 6 was supported. OT reflects the qualities of referents (e.g. competence, integrity and benevolence, etc.) and employees' willingness to rely on individuals or groups within an organization (Clark et al. 1997). Besides, OT is significantly related with motivation to perform (Costigan et al. 1998). In a working environment with low OT, employees may focus more on self-interest. They are less likely to use collaborative technologies to share information perceived to be owned by the organization (Wasko et al. 2000). Therefore, OT should be significantly related with SF. It was found that the path coefficient of SF to Behavior was increased from 0.27 in a model when OT was not controlled to 0.32 when OT was controlled and linked to SF in the model.

There is no significant relationship between OT and affect. Hypothesis 7 was not supported. This may due to the fact that affect was an insignificant factor on the behavior of using KM systems to share knowledge. When single regression was performed, the relationship between OT and affect was significant at the 0.05 level. OT reflects the existence of mutually supportive culture within an organization. Open and honest communications will be facilitated (Politis 2003). It will be more enjoyable to share knowledge with KM systems. Besides, in such an environment, employees will have higher moral obligation and community interests (Ardichvili et al. 2003). They will feel good when knowledge is shared (Wasko et al. 2000). Therefore, although the relationship between OT and affect was insignificant, the weight of affect to Behavior did increase (from 0.15 to 0.29) when OT was linked to affect.

OT has a significant relationship with PU at the 0.01 level when PEOU was not controlled and linked to PU. However, when the effect of PEOU on PU was controlled, the path of OT to PU became insignificant. It was found that OT has a significant relationship with PEOU (path coefficient is 0.42) and PEOU has a strong relationship with PU (path coefficient is 0.62) at the 0.01 significance level. The weight of PU to Behavior increased from 0.29 to 0.35. Therefore, it indicated that the association between OT and PU is mediated by PEOU. Hypothesis 8 and 9 were supported. It has been found that the effective functionality of a system depends on its usability (Davis 1989). In a working environment with high OT, the social environment is believed to be less complicated. Open and honest communications are facilitated (Politis 2003). Employees will have less concern on potential risk of using KM systems to share knowledge (e.g. privacy and security) or more willing to take risk (Costigan et al. 1998). They will find that KM systems are easier for them to use for knowledge sharing. When usage is increased, effectiveness or usefulness of KM systems will also be experienced. It was found that employees were willing to contribute knowledge to virtual communities of practice because they felt that the communities provided them with

opportunities to share their expertise, mentor new employees and contribute back to the society (Ardichvili et al. 2003). Therefore, OT should exist within the organization so that employees will find it easy for them to use KM systems and share knowledge; and thus experience effectiveness.

6 CONCLUSION

Our results show that KM research models based on the Triandis approach may be more comprehensive and useful than those based on TAM in enhancing our understanding of knowledge sharing behaviour in KM systems. This approach allows us to study both social and technological factors in the same model. Notably, FC was found to be the most important predictor in this study. However, there are a few limitations in this study which should be taken into account when interpreting the results and drawing implications, e.g. small sample size, non-random sampling and no additional sets of data. More demographic information (e.g. gender, education level, position, functionality specialty of department, organizational size) was collected and provided for reference and analysis to examine sampling errors. The items are all within normal limits with skewness between +1 and -1 (ranging from -0.53 to 0.26) except education level (-1.48) or kurtosis between +2 and -2 (ranging from -1.98 to 1.41) (Boomsma 1987). Besides, no insignificant relationship was found between each of them and Behavior using t-test or one-way ANOVA (P-value > 0.05) (George et al. 2003). Moreover, as the participation in this survey was voluntary and the compensation was only the report of this study, it is possible that some respondents may have a disposition towards KM or to use KMS. However, it was found that their interest did not significantly bias the results. Items of all KM-related constructs (i.e. Behavior, PU, PEOU, FC, NB and MC of SF) were found to be within normal limits with skewness ranging from -0.30 to 0.96 and kurtosis ranging from -0.96 to 1.81. Therefore, sampling errors may be minimal and the results are still with high validity.

The results of this study may also inform management in their effort to promote the use of KM systems to share knowledge. The predictors of behavior are not all necessary in any given application (Madden et al. 1992). This study helps show the relative importance of the predictors in affecting the usage of KM systems to share knowledge. This can draw the attentions of organizations, make them aware of their inherent weaknesses in providing an effective KM environment and help them better allocate their resources. As FC (which is a controllable factor) was found to be the most important factor, organizations should try to provide more technical support or training to organizational members to increase usage. Besides, they should also communicate the positive impacts of knowledge sharing to organizational members and demonstrate management support as PU and social influence from the top management were found to play an important role towards the behavior. Moreover, as it was found that OT could affect those important predictors belonging to volitional/emotional control, organizations should try to create a supportive social environment in order to enhance the intention to use or actual usage behavior. Even though OT is partially controllable, management can try to involve employees in decision making, explain its final decisions and actions to employees and state clearly its new rules (Kim et al. 1997) in order to enhance TIM and thus the usage of KM systems to share knowledge.

Additional samples are also needed to validate the results of this initial study. Further research can use this research model to study more potential factors and other dimensions of perceived consequences. Besides, further research can try to test whether this research model based on Triandis can be extended to study other aspects of KM e.g. knowledge creation.

Reference

- Ajzen, I. (1991). "The Theory of Planned Behavior." *Organization Behavior and Human Decision Processes* 50(2): 179-211.
- Alavi, M. and D. E. Leidner (2001). "Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues." *MIS Quarterly* 25(1): 107-136.
- Ardichvili, A., V. Page and T. Wentling (2003). "Motivation and Barriers to Participation in Virtual Knowledge-Sharing Communities of Practice." *Journal of Knowledge Management* 7(1): 64-77.
- Beck, L. and I. Ajzen (1991). "Predicting Dishonest Actions Using the Theory of Planned Behavior." *Journal of Research in Personality* 25: 285-301.
- Bollen, K. A. (1989). *Structural Equations with Latent Variables*. United States of America, John Wiley & Sons, Inc.
- Boomsma, A. (1987). *The Robustness of Maximum Likelihood Estimation in Structural Equation Models. Structural Modeling by Example*. P. Cuttance and R. Ecob. New York, Cambridge University Press: 160-188.
- Chen, S. C. and G. S. Dhillon (2003). "Interpreting Dimensions of Consumer Trust in E-Commerce." *Information Technology and Management* 4(2-3): 303-318.
- Cheung, W., M. K. Chang and V. S. Lai (2000). "Prediction of Internet and World Wide Web Usage at Work: A Test of an Extended Triandis Model." *Decision Support Systems* 30(1): 83-100.
- Chin, W. W. (1998). *The Partial Least Squares Approach to Structural Equation Modeling. Modern Methods for Business Research*. G. A. Marcoulides. New Jersey, Lawrence Erlbaum Associates, Inc.: 295-336.
- Chin, W. W. (2000). *Frequently Asked Questions - Partial Least Squares & PLS-Graph*, Wynne W Chin. 2004.
- Chin, W. W. (2001). *PLS Graph Manual, Unpublished Manuscript*: 1-18.
- Chin, W. W., B. L. Marcolin and P. R. Newsted (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* 14(2): 189-217.
- Churchill, G. A. (1979). "A Paradigm for Developing Better Measures of Marketing Constructs." *Journal of Marketing Research* 16(1): 64-73.
- Clark, M. C. and R. L. Payne (1997). "The Nature and Structure of Worker' Trust in Management." *Journal of Organizational Behavior* 18(3): 205-224.
- Clegg, C. W. and T. D. Wall (1981). "A Note on Some New Scales for Measuring Aspects of Psychological Well-being at Work." *Journal of Occupational Psychology* 54(3): 221-225.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. New Jersey, Lawrence Erlbaum Associates, Inc.
- Constant, D., S. Kiesler and L. Sproull (1994). "What's Mine Is Ours, or Is It? A Study of Attitudes about Information Sharing." *Information Systems Research* 5(4): 400-421.
- Cook, J. and T. Wall (1980). "New Work Attitude Measures of Trust, Organizational Commitment and Personal Need Non-fulfilment." *Journal of Occupational Psychology* 53(1): 39-52.
- Costigan, R. D., S. S. Iltter and J. J. Berman (1998). "A Multi-Dimensional Study of Trust in Organizations." *Journal of Management Issues* 10(3): 303-317.
- Cummings, L. L. and P. Bromiley (1996). *The Organizational Trust Inventory (OTI) Development and Validation*. Trust in Organizations. R. M. Kramer and T. R. Tyler. London, International Educational and Professional Publisher: 302-330.
- Davis, F. D. (1989). "Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology." *MIS Quarterly* 13(3): 319-340.

- Ellis, K. and P. S. Zalabak (2001). "Trust in Top Management and Immediate Supervisor: The Relationship to Satisfaction, Perceived Organizational Effectiveness, and Information Receiving." *Communication Quarterly* 49(4): 382-398.
- Fiol, C. M. and M. A. Lyles (1985). "Organizational Learning." *The Academy of Management Review* 10(4): 803-813.
- Fishbein, M. and I. Ajzen (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*, Addison-Wesley.
- Fornell, C. and D. F. Larcker (1981). "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error." *Journal of Marketing Research* 18(1): 39-50.
- Gefen, D., E. Karahanna and D. W. Straub (2003). "Trust and TAM in Online Shopping: An Integrated Model." *MIS Quarterly* 27(1): 51-90.
- George, D. and P. Mallery (2003). *SPSS for Windows Step by Step A - Simple Guide and Reference 11.0 Update*. United States of America, Pearson Education, Inc.
- Hair, J. F., R. E. Anderson, R. L. Tatham and W. C. Black (1998). *Multivariate Data Analysis*. United States of America, Prentice Hall.
- Kim, W. C. and R. Mauborgne (1997). "Fair Process: Managing in the Knowledge Economy." *Harvard Business Review* 75(4): 65-75.
- King, W. R., P. V. Marks and S. McCoy (2002). "The Most Important Issues in Knowledge Management." *Communications of the ACM* 45(9): 93-97.
- Lee, H. and B. Choi (2003). "Knowledge Management Enablers, Processes, and Organizational Performance: An Integrative View and Empirical Examination." *Journal of Management Information Systems* 20(1): 179-228.
- Lee, J. N. (2000). "The Impact of Knowledge Sharing, Organizational Capability and Partnership Quality on IS Outsourcing Success." *Information & Management* 38(5): 323-335.
- Lewis, W., R. Agarwal and V. Sambamurthy (2003). "Sources of Influence on Beliefs about Information Technology Use: An Empirical Study of Knowledge Workers." *MIS Quarterly* 27(4): 657-678.
- Lindvall, M., L. Rus and S. S. Sinha (2003). "Software systems support for knowledge management." *Journal of Knowledge Management* 7(5): 137-150.
- Madden, T. J., P. S. Ellen and I. Ajzen (1992). "A Comparison of the Theory of Planned Behavior and the Theory of Reasoned Action." *Personality and Social Psychology Bulletin* 18(1): 3-9.
- Malhotra, Y. (2001). *Knowledge Management for E-Business Performance: Advancing Information Strategy to "Internet Time"*. Knowledge Management and Business Model Innovation. Y. Malhotra. London, Idea Group Publishing.
- McKnight, D. H., V. Choudhury and C. Kacmar (2002). "Developing and Validating Trust Measures for e-Commerce: An Integrative Typology." *Information Systems Research* 13(3): 334-359.
- Moffett, S., R. McAdam and S. Parkinson (2003). "An Empirical Analysis of Knowledge Management Applications." *Journal of Knowledge Management* 7(3): 6-26.
- Moore, G. C. and I. Benbasat (1991). "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation." *Information Systems Research* 2(3): 192-222.
- Morrow, J. L., M. H. Hansen and A. W. Pearson (2004). "The Cognitive and Affective Antecedents of General Trust Within Cooperative Organizations." *Journal of Management Issues* 16(1): 48-64.
- Ong, C. S., J. Y. Lai and Y. S. Wang (2004). "Factors Affecting Engineers' Acceptance of Asynchronous E-Learning Systems in High-Tech Companies." *Information & Management* 41(6): 795-804.
- Politis, J. D. (2003). "The Connection between Trust and Knowledge Management: What Are Its Implications for Team Performance." *Journal of Knowledge Management* 7(5): 55-66.
- Rogers, E. M. (2003). *Diffusion of Innovations*. New York, The Free Press.
- Rousseau, D. M., S. B. Sitkin, R. S. Burt and C. Camerer (1998). "Not So Different After All: A Cross-Discipline View of Trust." *The Academy of Management Review* 23(3): 393-404.

- Taylor, S. and P. A. Todd (1995). "Understanding Information Technology Usage: A Test of Competing Models." *Information Systems Research* 6(2): 144-176.
- Thompson, R. L., C. A. Higgins and J. M. Howell (1991). "Personal Computing Toward a Conceptual Model of Utilization." *MIS Quarterly* 15(1): 125-142.
- Tornatzky, L. G. and K. J. Klein (1982). "Innovation Characteristics and Innovation Adoption-Implementation: A Meta-Analysis of Findings." *IEEE Transactions on Engineering Management* 29(1): 28-45.
- Triandis, H. C. (1980). *Values, Attitudes, and Interpersonal Behavior. Beliefs, Attitudes, and Values : Nebraska Symposium on Motivation, 1979.* M. M. Page. University of Nebraska Press, 1980., Lincoln: 195-259.
- Venkatesh, V. and M. G. Morris (2000). "Why Don't Men Ever Stop to Ask for Directions? Gender, Social Influence, and Their Role in Technology Acceptance and Usage Behavior." *MIS Quarterly* 24(1): 115-139.
- Wasko, M. M. and S. Faraj (2000). "'It is what one does': Why People Participate and Help Others in Electronic Communities of Practice." *Journal of Strategic Information Systems* 9: 155-173.
- Werts, C. E., R. L. Linn and K. G. Joreskog (1974). "Intraclass Reliability Estimates: Testing Structural Assumptions." *Educational and Psychological Measurement* 34: 25-33.