

Influence of Organizational and Technological Aspects on the Knowledge Sharing Behaviour in the Vietnam's University Context

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Abstract

This study tries to investigate the influence of organizational culture, leadership style, human resource practices, technology support and job demands on the knowledge sharing behavior of academic and administrative staff in Vietnamese universities. Six research hypotheses were formulated in this study and a multiple regression was applied to test the hypotheses. The sample used for this study consists of 123 lecturers and supporting staffs working in ten universities in Hanoi. This study reveals some interesting results related to the non-significant association between culture, reward and the knowledge sharing behavior of individuals in university context while confirming the role of leadership style and IT support on the knowledge sharing behavior of individuals in universities. Findings from this study suggest that job demands; training and development; and technology support are the strongest drivers for the knowledge sharing behavior of lecturers in universities.

Keywords: knowledge sharing, culture, explicit knowledge, tacit knowledge, reward, technology

1. Introduction

University is a type of organization which is aimed to produce students being “knowledge intensive products” to the society. Although KM over the past few decades has evolved as the most prominent field of research in management science, KM in education sector has more or less remained a little-explore domain (Vashisth et al., 2010). There are two main categories of employee in universities: (i) academic staffs or lecturers whose main job is teaching, and (ii) supporting staffs who perform non-academic functions in such areas as administration, organization and personnel, planning and finance, etc. These two personnel categories are different in some aspects such as work type, work process, work output and therefore, are expected to experience different KM practices.

For decades, Vietnamese universities have been criticized for producing low quality training and research outputs. A question emerges here is whether poor KM leads to poor training and research performance in Vietnamese universities?

This empirical study tries to investigate the relationship between different organizational, cultural and technological factors and knowledge sharing performance in the university context.

2. Literature Review & Problem statement

Tacit vs explicit knowledge. According to Michael Polanyi (1954), knowledge in any organizations exists in two types: explicit knowledge and tacit knowledge. The former is knowledge asset that can be codified, documented and transferred among members in organization. In the context of universities, written working procedures, training manuals, information of students, etc. can be seen as explicit knowledge. The latter is personal, contextual, exists in the form of know-how, skills, institution... and normally can't be easily formalized, codified or documented for sharing purpose.

Knowledge sharing. Knowledge sharing is known as one of the most researched topics in the field of KM and being the most used key word according to a review of 235 papers published over the past 10 years in the journal “Knowledge Management Research and Practice” (Ribiere & Walter, 2013).

Knowledge sharing is more than transferring knowledge but creating it (Van den Hooff, 2009). Riege (2005)

posits that purposeful sharing of useful knowledge translates into accelerated individual and organizational learning and innovation. Bock et al. (2005) emphasize that the movement of knowledge across individual and organizational boundaries is ultimately dependent on employees' knowledge sharing behavior and that even with the codification of knowledge; knowledge objects remain unexposed to others until the knowledge owner makes the objects available.

Organizational culture and knowledge sharing. Organizational culture is defined as a system of shared assumptions, values and norms (Schein, 1985). Organizational culture influences the way individuals interact and share information with each other in the organization. The relationship between organizational culture and knowledge management has been analyzed by several scholars. Nahapiet and Ghoshal (1998) proved that individuals are more willing to engage in cooperative behaviors, such as knowledge sharing behavior, when a relationship is characterized by a high level of trust. Kim and Lee (2006) pointed out that employees who are attached to each other by social networks will demonstrate higher level of knowledge sharing.

De Long and Fahey (2000) suggest that while trust and cooperation may lead the employees to share knowledge, a working climate which encourages individual power and competition may result in knowledge hoarding behaviors among individuals.

Chen and Lin (2004) posit that culture plays a key role in shaping the behavior of staff and influences on staff's perception about knowledge management. Gold et al. (2001) argue that an organizational culture characterized by values such as openness and support will result in organizational behaviors conducive to knowledge management, including willingness of employees to share insights with each other.

An organization culture which prioritizes internal competition among employees would be harmful to knowledge sharing in organization (Schepers & Van den Berg, 2007). According to Kim and Lee (2005), individuals working in a creative environment will tend to share more ideas, initiatives than those working in a less creative working environment. This study therefore tries to measure the influence of organizational culture on the knowledge sharing behavior of individuals working in Vietnamese universities.

Hypothesis 1. Knowledge-centered culture positively influences the knowledge sharing behavior of individuals in organization

Job demands and knowledge sharing. Lecturer and supporting staff in universities differ in their working approaches. The former mainly works at home or in the class. In addition, lecturers are not obliged to go to school every day, therefore they have limited chance for formal interaction and for sharing knowledge with their colleagues and their managers. Riege (2005) identified "lack of time to interact and share knowledge" as one of the barriers to knowledge management. Although lecturers' physical working environment may not be conducive to knowledge sharing, the demand for sharing knowledge seems to be higher for lecturer than for supporting staff in universities. It's therefore expected that the more the job holder is required to share knowledge with others, the better his or her knowledge sharing behavior.

Hypothesis 2. There is a positive association between job demands and the knowledge sharing behavior of individuals in organization

Knowledge-centered HR practices and knowledge sharing. Knowledge-centered HR practices include a set of HR initiatives such as staff performance appraisal, reward, training, job rotation, coaching & mentoring, etc. which encourage and foster knowledge sharing behavior in organizations. Numerous studies have been conducted with findings leading to a positive interaction between KM activities and HR practices.

McDermott and O'Dell (2001), in their study of five "best practice" knowledge sharing companies, showed how sharing knowledge is included in the company performance appraisal system. Cabrera and Cabrera (2005) posit that firms can create an environment that was conducive to KM by using practices such as team work, team performance appraisal, and compensation and reward systems. Armbrrecht et al. (2001), Riege (2005) argue that the lack of appropriate rewards, incentives and recognition systems is one of the barriers for KM implementation in organizations. Training and development is an important mechanism to foster knowledge sharing in organization (Cabrera & Cabrera, 2005; Kang et al., 2003). The existing literature however provides different results related to the relationship between incentives policy and knowledge management. While Kim and Lee (2006) proved that performance-based reward could foster knowledge sharing in organization, Bock et al. (2005) pointed out that extrinsic rewards would negatively influence on the knowledge sharing behavior of individuals, or the further financial and material reward is offered, the more likely individuals will "hoard" their knowledge.

Hypothesis 3. Knowledge-centered HR practices positively influences the knowledge sharing behavior of individuals in organization

Knowledge-oriented leadership and knowledge sharing. There have been several empirical studies conducted to examine the relationship between different leadership styles and knowledge management. Yang (2007) pointed out that when leaders play the roles of “innovator”, “mentor” or “facilitator”, knowledge sharing in organizations will be enhanced.

Many scholars (Bryant, 2003; Srivastava et al., 2006) also proved that KM is positively influenced by transformational leadership style which is characterized by empowerment, promotion of trust and commitment.

Singh (2008) suggested that the best form of leadership style for managing knowledge in organization is the delegating style wherein employees are given adequate power, authority and responsibility. Donate and Guadamillas (2011) defined knowledge-oriented leadership as the style whereby leader plays the role of knowledge facilitator, role-modelling; recognizes and rewards knowledge sharing; promotes trust and learning; and put emphasis on staff empowerment.

According to Pan and Scarbrough (1998), the necessary quality of leadership to promote knowledge sharing would include: to act as “role model”, to foster corporate culture, and to create suitable management thinking. Von Krog et al. (2012) proposed a new leadership model, i.e. situated leadership which is linked to the knowledge creation process and is based on the contingency theory as well as on the SECI and BA theories developed by Nonaka.

This study tries to confirm the findings from existing literature that knowledge-oriented leadership will positively influence individuals’ knowledge-sharing behavior.

Hypothesis 4. Knowledge-oriented leadership positively influences the knowledge sharing behavior of individuals in organization

Technology and knowledge sharing. In recent years, ICT is increasingly considered merely as an enabling tool for KM activities and no longer as a determining factor for the success of KM programs in organizations. Bock et al. (2005) recognize that individual’s knowledge does not easily translate into organizational knowledge despite the implementation of knowledge repositories because of the tendency to hoard knowledge. Soliman and Spooner (2000) also posit that KM is about people, not about technology. McDermott and O’Dell (2011) proposed that the chosen KM technology should match the organization culture to ensure the success of KM implementation. So far, although there is a strong belief at practical level that IT would foster KM, it still lacks proven empirical evidence in the existing literature about the relation between IT, KM and organizational effectiveness (Alavi & Leidner, 2001).

Lecturers in universities due to their limited face-to-face interaction, tend to rely heavily on ICT to exchange information and knowledge with their colleagues. The relationship between the use of ICT and the knowledge sharing behavior of individuals in Vietnamese universities will be examined in this study.

Hypothesis 5. The use of information technology positively influences the knowledge sharing behavior of individuals in organization

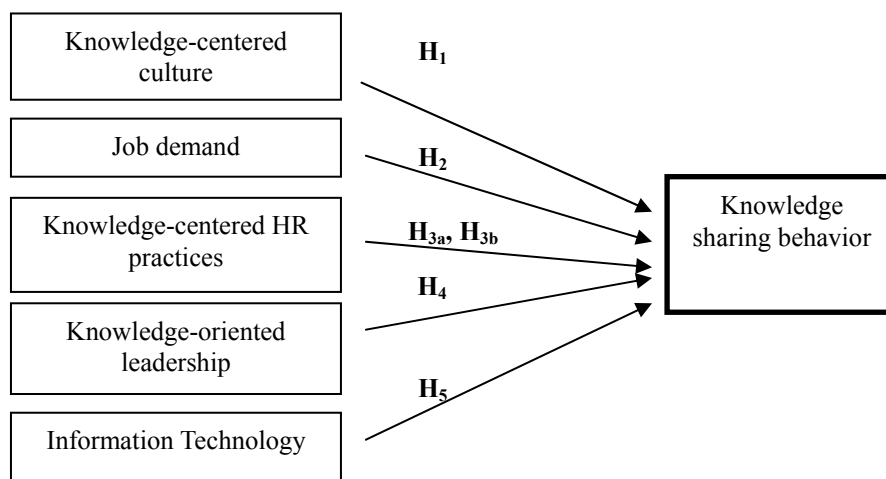


Figure 1. Research model

3. Methodology

3.1 Data Collection

A close ended questionnaire was developed and distributed to both lecturers and staff working in ten different universities in Hanoi. 143 questionnaires were returned out of 200 questionnaires sent to those universities. Finally, 123 (61.5 percent) questionnaires are usable for data analysis. This respond rate is acceptable because similar study by Marques and Simon (2006), use survey-based methods with sample sizes in Spain showed that respond rates in the biotechnology industry and the telecommunications industry was 45.1 and 14.2 percent respectively, while Zhining & Nianxin (2012) examined a sample of managers in 89 high technology firms in China, representing a response rate of 37.9%.

3.2 Sample Characteristics

Table 1 presents some characteristics of the sample used for this study. About 48% of the participants in this study are lecturers and 51% are supporting staffs. The majority of the participants are non-managers (78.9%) and only 21.1% are managers of functional departments or faculties in university. 50.4% of the participants are between 31 and 40 year old and up to 32.5% are less than 30 year old. Female participants account for 65% of the sample while male account for only 29.3%. In terms of number of years working in the university, 47.1% of the participants have worked in their universities for less than 5 years, 21.1% of them have worked from 5 to 10 years in their current organization, and 22.8% of the participants have had more than 10 years of working in their current organization.

Table 1. Sample statistics

| | Variables | Frequency | Percent % |
|------------------|-------------------|-----------|-----------|
| Gender | Male | 36 | 29.3 |
| | Female | 80 | 65.0 |
| | Missing | 7 | 4.1 |
| Age | 20-30 year old | 40 | 32.5 |
| | 31-40 year old | 62 | 50.4 |
| | 41-50 year old | 14 | 11.4 |
| | above 50 year old | 7 | 5.7 |
| Seniority | under 2 years | 32 | 26.0 |
| | 2-5 years | 26 | 21.1 |
| | 6-10 years | 26 | 21.1 |
| | 11-20 years | 22 | 17.9 |
| | above 20 years | 6 | 4.9 |
| Job | Missing | 11 | 8.9 |
| | Lecturer | 59 | 48.0 |
| | Staff | 63 | 51.2 |
| Position | Missing | 9 | 99.2 |
| | Manager | 26 | 21.1 |
| | Non-manager | 97 | 78.9 |

3.3 Measures and Variables

In order to examine the relationship between different organizational, technological factors and knowledge sharing behavior, the authors used the five point Likert scale for all items constituting the constructs as shown in the theoretical model proposed by this study.

3.3.1 Independent Variables

The scale for *knowledge-centered organizational culture* include three items related to values that should support and promote KM activities in organization, including the promotion of trust (Kim & Lee, 2006), affiliation of employee to the working unit (Bock et al., 2005), and affiliation of employee to the organization.

This study uses a five item scale for *knowledge-centered HR practices*. This scale is largely based on the works of Donate and Guadamillas (2011), Cabrera and Cabrera (2005). It emphasizes that relevant HR practices such as knowledge-based reward and evaluation policies, job rotation, training and development, mentoring should be in place to encourage knowledge sharing among individuals in organization.

Table 2. Scale items for independent and dependent variable

| | Source |
|---|---|
| Knowledge-centered culture | |
| Cul1. I see my working unit as a “big family” | Adapted from Bock et al. (2005) |
| Cul2. We consider the problems of my organization our own problems | Self developed |
| Cul3. I trust my colleagues and share with them job related information | Adapted from Kim & Lee (2006) |
| Knowledge-centered HR practices | |
| Hr1. The more I contribute ideas/initiatives to my organization, the better chance I have for job promotion or salary increase | Self developed |
| Hr2. The ability to work well in team is one of the criteria for staff performance appraisal | Adapted from Donate & Guadamillas (2011) |
| Hr3. We are given many opportunities to attend training courses to improve knowledge and skill | Adapted from Donate & Guadamillas (2011) |
| Hr4. We are encouraged to teach different courses or to perform different tasks | Adapted from Donate & Guadamillas (2011) |
| Hr5. Old staff is responsible to provide on the job training for new staff | Adapted from Cabrera & Cabrera (2005) |
| Knowledge-oriented leadership | |
| Ld1. Leader of my unit praises or gives compliment whenever a staff has a new idea or initiative to contribute to the organization | Adapted from Donate & Guadamillas (2011) |
| Ld2. Leader plays the role of advisor and welcomes all opinions, perspectives from staff | Adapted from Donate & Guadamillas (2011) |
| Ld3. Leader encourages teamwork | Adapted from Donate & Guadamillas (2011) |
| Ld4. Leader encourages staff to seek information, knowledge from outside | Adapted from Donate & Guadamillas (2011) |
| Ld5. Whenever a staff makes mistakes in work, leader encourages him or her to draw lessons from those mistakes | Adapted from Donate & Guadamillas (2011) |
| Ld6. Leader always creates an open and exciting working atmosphere | Self developed |
| Technology support | |
| Tec1. Work related information and knowledge are stored, classified and updated in a scientific and regular manner | Self developed |
| Tec2. The organization’s IT system provides valuable and useful information/data for my work | Adapted from Lee & Choi (2003) |
| Tec3. The organization’s IT system facilitates the sharing of knowledge and information among members | Adapted from Lee & Choi (2003) |
| Job demands | |
| JobD1. My job requires me to coordinate, interact and share information regularly with my colleagues | Adapted from Casimir et al. (2012) |
| JobD2. Sharing knowledge is a part of my job | Adapted from Casimir et al. (2012) |
| JobD3. Knowledge, information related to my job are easy to understand, describe and to transfer to others | Self developed |
| Knowledge Sharing behaviour | |
| Ks1. I often participate in seminars, workshops at my university to share knowledge or learn from colleagues | Self developed |
| Ks2. I often express my thinking or ideas in meetings at my university | Self developed |
| Ks3. I often share information and knowledge I have with colleagues in my unit | Adapted from Van den Hooff and de Ridder (2004) |
| Ks4. I am ready to share understanding, know-how, institution gained through work with colleagues in my unit | Adapted from Suppiah and Sandhu (2011). |
| Ks5. Whenever I learn something new from training activities, I see in it that I have to share that new learning with colleagues in my unit | Adapted from Van den Hooff and de Ridder (2004) |
| Ks6. I am not reluctant to share success stories and failure lessons with colleagues in my unit | Adapted from Suppiah and Sandhu (2011). |
| Ks7. I feel responsible to mentor and coach new staff/colleague who has little work experience | Adapted from Suppiah and Sandhu (2011). |

Knowledge-oriented leadership was measured through a six item scale adapted from prior research on KM and leadership, especially from the work of Donate and Guadamillas (2011). These authors developed a scale for knowledge-oriented leadership with items related to encouraging and rewarding employees to share knowledge (Pan & Scarbrough, 1999), leading by example (von Krogh et al., 2011), and creating an environment conducive to KM.

Information technology scale consists of three items, among which two are referred to the role of IT in providing useful knowledge for the work of university employees and in fostering knowledge sharing among the later. The last one is referred to the role of IT in codifying the university's explicit knowledge. This IT-related scale is largely adapted from the work of Lee and Choi (2003) and Gold et al. (2001). Job demand scale consists of three items, which are largely based on the scale used by Casimir et al. (2012).

3.3.2 Dependent Variable

A seven item scale for knowledge sharing behavior was developed for this study. This scale was adapted from previous scales developed by Van den Hooff and de Ridder (2004), Chang Lee et al. (2005), Suppiah and Sandhu (2011). Knowledge sharing behavior, as conceptualized in this study, includes not only the act of sharing knowledge but also the willingness or intention of individuals to share knowledge with others. By willingness, it recognizes that knowledge owner will share his/her information, knowledge, know-how, or skills with others whenever he or she has the chance to do it.

In addition, as knowledge exists either in tacit form or explicit form, this scale also considers the sharing of codified information or data (explicit knowledge) and of know-how, skill, best practices, institution (tacit knowledge) among individuals in organization.

4. Empirical Study Results

4.1 Factor Analysis

Table 3. Rotated component matrix

| | Component | | | | | |
|----------------------|-----------|-------|-------|-------|-------|------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Cul1 | | | | | | .667 |
| Cul2 | | | | | | .755 |
| Cul3 | | | | | | .837 |
| Hr1 | | | .782 | | | |
| Hr2 | | | .717 | | | |
| Hr3 | | | | | .615 | |
| Hr4 | | | | | .815 | |
| Hr5 | | | | | .680 | |
| Ld1 | .548 | | | | | |
| Ld2 | .645 | | | | | |
| Ld3 | .415 | | | | | |
| Ld4 | .667 | | | | | |
| Ld5 | .745 | | | | | |
| Ld6 | .747 | | | | | |
| Tec1 | | .811 | | | | |
| Tec2 | | .890 | | | | |
| Tec3 | | .749 | | | | |
| JobD1 | | | | .715 | | |
| JobD2 | | | | .819 | | |
| JobD3 | | | | .653 | | |
| % Explained variance | 14.63 | 13.05 | 11.43 | 10.79 | 10.77 | 9.83 |

Note: Loadings above 0.40 are shown. Cul = Culture, HR = Human Resources Practices, Ld = Leadership Support, Tec = Technology, JobD = Job demand. Kaiser-Meyer-Olkin test = 0.831, Bartlett's Test of Sphericity = 1085.645, Significance = 0.000. Total explained variance of six components is 70.5%

A principal components analysis was conducted on the items selected to measure knowledge-centered organizational climate, knowledge centered-HR practices, Knowledge-oriented leadership, job demand, and knowledge supporting technology. Table 3 below provides the result of a six component varimax solution with a cut-off value of 0.4 for item loadings.

Item loadings table reveals the following:

- All three items used for knowledge-centered organizational culture loaded satisfactorily
- All five items related to knowledge-centered HR practices loaded satisfactorily into two separate components. Hence, the scale for HR practices should be split into two separate scales, namely (i) *knowledge-centered reward and evaluation*, and (ii) *training and development* and two hypotheses related to HR practices (H3a & H3b) are formulated accordingly.
- All six items related to knowledge-oriented leadership loaded satisfactorily;
- All three items related to technology loaded satisfactorily.

All three items related to job demand loaded satisfactorily

4.2 Internal Consistency of Measures

To assess the internal consistency reliability of all measures, the famous Cronbach's alpha was used. Knowledge-centered culture measure has an acceptable consistency ($\alpha = 0.71$). HR practices measures were split into two separate measures and the consistency level of these two new measures are also acceptable for analysis ($\alpha = 0.67$ for HR1; $\alpha = 0.76$ for HR2). Consistency level is highest for leadership measure ($\alpha = 0.86$), followed by IT support measure ($\alpha = 0.84$) and knowledge sharing measure ($\alpha = 0.82$).

A correlation matrix of all variables is shown in Table 4, along with means, standard deviations and Cronbach's alpha for both independent and dependent variable. This study used a multiple regression analysis with six different models to test the different hypotheses presented in previous section. The first model includes five control variables: job category, age, gender, position of respondents and the size of the unit where they are working. The two variables job category and position were created in the form of dummy variable with 1 equal's lecturer, 0 equals staff and 1 equals manager, 0 equals non-manager.

Table 4. Means, standard deviations, correlations

| | Job category | Size | Age | Gender | Position | Job demand | Lead | Culture | Reward | Train | IT | KS |
|--------------------|--------------|--------|--------|--------|----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Size | 0.017 | | | | | | | | | | | |
| Age | -.189* | 0.042 | | | | | | | | | | |
| Gender | -0.03 | -0.062 | -0.141 | | | | | | | | | |
| Position | 0.023 | 0.011 | .305** | -0.072 | | | | | | | | |
| Job demand | 0.02 | 0 | -0.028 | -0.005 | 0.17 | 0.72 | | | | | | |
| Lead | 0.048 | -0.022 | -.224* | 0.12 | 0.091 | .527** | 0.86 | | | | | |
| Culture | -0.039 | -0.086 | -0.169 | 0.037 | -0.047 | 0.177 | .371** | 0.71 | | | | |
| Reward | .258** | 0.121 | -0.019 | .179* | 0.153 | .322** | .510** | .215* | 0.67 | | | |
| Training | -.234** | 0.002 | -0.12 | 0.129 | 0.08 | .486** | .573** | .420** | .385** | 0.76 | | |
| IT | .343** | 0.003 | -.207* | 0.097 | 0.033 | .348** | .425** | .212* | .469** | .314** | 0.84 | |
| Ksharing | -0.14 | 0.033 | 0.032 | -0.021 | .297** | .556** | .515** | .232* | .253** | .530** | .356** | 0.82 |
| Mean | | | | | | 4.02 | 4 | 3.94 | 3.57 | 3.82 | 3.65 | 3.89 |
| Standard deviation | | | | | | 0.52 | 0.52 | 0.58 | 0.7 | 0.68 | 0.71 | 0.45 |

Note: *. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed). Dummy variables coded as Lecturer = 1, Staff=0; Manager =1, Non-Manager = 0. Numbers in italic are Cronbach's Apha coefficient.

In the second model, two independent variables Culture and Reward were first added, ruling out the effect of

other independent variables. In the third model, all remaining independent variables were added so that direct effect of each independent variable on the dependent variable can be measured controlling for all other variables. Models 4a, 4b and models 5a, 5b examine the effects of control and independent variables on the knowledge sharing behavior of lecturers and supporting staffs respectively.

4.3 Results of Multiple Regression

All three models: 1, 2, 3 are significant. The position of the participants in this study has a positive influence on knowledge sharing behavior across the models 1-3. This indicates that managers do a better job in knowledge sharing than their staff. Job category has a negative influence on knowledge sharing behavior in model 2 & 3, as job category has been coded as lecturer = 0, staff = 1, this could mean that knowledge sharing behavior is stronger for lecturer than supporting staff in university context. Other variables in the control model such as unit size or number of staff, age and gender of respondents don't have any effect on knowledge sharing behavior.

The second model is significant (adjusted $R^2 = 16.9$) and R^2 is increased by 9.7%, mainly due to the effects created by the two independent variables: reward and culture. Both these two independent variables show a positive significant relationship to the knowledge sharing behavior of respondents. However, as this 2nd model does not control for other important variables such as leadership style, training, IT support, any conclusions drawn at this stage could be misleading.

Table 5. Multiple regressions

| | Model 1 | | Model 2 | | Model 3 | |
|-----------------------|---------|----------|---------|---------|---------|---------|
| | Beta | t-value | Beta | t-value | Beta | t-value |
| (Constant) | | 21.490 | | 8.513 | | 3.780 |
| Job Category | -.168 | -1.885 | -.215 | -2.425* | -.145 | -1.778* |
| Size | .035 | .406 | .020 | .232 | .047 | .697 |
| Age | -.104 | -1.104 | -.073 | -.799 | .061 | .796 |
| Gender | -.015 | -.169 | -.064 | -.743 | -.051 | -.738 |
| Position | .331 | 3.607*** | .292 | 3.298** | .207 | 2.870** |
| Culture | | | .179 | 2.043** | .014 | .182 |
| Reward | | | .233 | 2.508** | -.125 | -1.395 |
| Job demand | | | | | .265 | 3.154** |
| Leadership style | | | | | .233 | 2.398** |
| Training | | | | | .205 | 2.110** |
| IT support | | | | | .216 | 2.562** |
| F | | 3.164 | | 4.51 | | 10.467 |
| (%) R^2 | | 12 | | 21.7 | | 51.1 |
| (%) Adjusted R^2 | | 8.2 | | 16.9 | | 46.3 |
| (%) Increase in R^2 | | 12 | | 9.7 | | 29.4 |
| Change in F | | 3.164 | | 7.05 | | 16.58 |

Note: Dependent Variable: Knowledge Sharing; *Significant $p < 0.1$; **Significant $p < 0.05$; ***Significant $p < 0.01$

In the 3rd model, when all the independent variables were entered, R^2 is improved by 29.4% and this model explains 46.3% of the variance of the knowledge sharing behavior result. All the newly added variables (i.e. job demand, leadership style, IT support, training) have positive and significant relationship to knowledge sharing behavior whereas the two variables (reward and culture) previously entered in the 2nd model lose importance in terms of their relationship to knowledge sharing behavior.

Model 4b is highly significant and explains 60.7% of the variance of the knowledge sharing behavior result. Only three out of the six independent variables, i.e. job demand, IT support and training show a direct and significant relationship to knowledge sharing behavior. Leadership style doesn't have a significant effect on knowledge sharing behavior in this model, suggesting that the leadership style of faculty manager does not play an important role in deciding the knowledge sharing behavior of lecturer and the knowledge sharing behavior of the later is rather influenced by other aspects such as IT support and training.

Table 6. Multiple regressions for *lecturer* sub-group

| | Model 4a | | Model 4b | |
|--------------------------------|-----------------|----------|-----------------|----------|
| | Beta | t-value | Beta | t-value |
| (Constant) | | 15.130 | | 1.983 |
| Size | -.014 | -.122 | .021 | .235 |
| Age | -.085 | -.698 | .097 | 1.044 |
| Gender | -.082 | -.693 | -.087 | -.979 |
| Position | .544 | 4.515*** | .304 | 3.110*** |
| Job demand | | | .249 | 2.447** |
| Leadership Style | | | .165 | 1.402 |
| Culture | | | -.030 | -.274 |
| Reward | | | -.045 | -.453 |
| Training | | | .257 | 2.225** |
| IT support | | | .292 | 3.196*** |
| F | | 5.578 | | 9.943 |
| (%)R ² | | 29.2 | | 67.4 |
| (%) Adjusted R ² | | 24 | | 60.7 |
| (%) Increase in R ² | | 29.2 | | 38.2 |
| Change in F | | 5.578 | | 9.387 |

Note: Dependent Variable: Knowledge Sharing; *Significant $p < 0.1$; **Significant $p < 0.05$; ***Significant $p < 0.01$

Model 5b is also significant and explains only 33% of the variance of the knowledge sharing behavior result. Among the six independent variables, only Job demand has positive influence on knowledge sharing behavior for both sub-groups. Similar to the 3rd model, there are no direct relationships between the two variables: culture and reward and the knowledge sharing behavior of both sub-groups: lecturer and staff.

Table 7. Multiple regressions for *staff* sub-group

| | Model 5a | | Model 5b | |
|--------------------------------|-----------------|---------|-----------------|----------|
| | Beta | t-value | Beta | t-value |
| (Constant) | | 16.986 | | 3.293 |
| Size | .134 | 1.041 | .116 | 1.093 |
| Age | -.155 | -1.130 | -.026 | -.203 |
| Gender | .083 | .646 | .029 | .264 |
| Position | .091 | .667 | .038 | .339 |
| Job demand | | | .270 | 1.850* |
| Leadership Style | | | .480 | 2.715*** |
| Culture | | | .026 | .221 |
| Reward | | | -.202 | -1.325 |
| Training | | | .187 | 1.196 |
| IT support | | | -.111 | -.701 |
| F | | 0.751 | | 4.048 |
| (%)R ² | | 4.9 | | 43.8 |
| (%) Adjusted R ² | | -1.6 | | 33 |
| (%) Increase in R ² | | 4.9 | | 38.8 |
| Change in F | | 0.751 | | 5.988 |

Note: Dependent Variable: Knowledge Sharing; *Significant $p < 0.1$; **Significant $p < 0.05$; ***Significant $p < 0.01$

Knowledge-centered leadership has a strong direct positive effect on the knowledge sharing behavior for staff ($\beta = 0.48$, $p < 0.01$), but not for lecturer. This can be explained by the fact that faculty leaders don't interact with lecturers on a daily basis, thus the former doesn't have strong power over or influence on the working behavior of the later.

IT support has a significant influence on the knowledge sharing behavior of lecturer ($\beta = 0.29$, $p < 0.01$), however it doesn't have any influence of knowledge sharing behavior of staff. This could be logical as lecturers nowadays should rely heavily on the information technology, especially on the internet to constantly look for updated professional knowledge and to share knowledge with their colleagues on a regular basis.

Training also has a significant influence on the knowledge sharing behavior of lecturer ($\beta = 0.257$, $p < 0.05$), but doesn't have a direct effect on the knowledge sharing behavior of staff. Training obviously is a very important channel for lecturers to upgrade their knowledge and to share knowledge with others in class.

5. Discussion

Findings from this study have shown that most demographic information such as the size of the working unit, age and gender don't have any effect on the respondents' knowledge sharing behavior. Job category (lecturer vs staff) has a significant negative association with knowledge sharing behavior. The position of the respondents (manager vs non-manager) does have a significant positive relationship to knowledge sharing behavior. In university context, the need for knowledge sharing is therefore more important for lecturer than for staff. Similarly, the knowledge sharing behavior of managers is better than staffs in universities.

Culture has been widely considered as a catalyst for knowledge management in organizations. However, this study shows that culture values including trust, affiliation to the organization and affiliation to the working unit don't have a direct effect on the knowledge sharing behavior of employees in universities. This finding contradicts with the results from a number of studies in the existing literature, for example Lee and Choi (2003) and Alawi et al. (2007) have identified a positive relationship between trust among employees and knowledge sharing in organizations.

In the same manner, this study could not point out a direct relationship between knowledge-oriented reward policy and knowledge sharing behavior. This is not contradictory as some previous studies in the existing literature also pointed out that extrinsic reward did not have a positive influence on knowledge sharing. Bock et al. (2005) found out a negative effect of extrinsic rewards on knowledge sharing attitude while Chang, Yeh and Yeh (2007) assert that outcome-based rewards do not foster knowledge sharing among team members. This study shows that reward lose its importance in terms of its effect on knowledge sharing behavior in the presence of other predictors such as leadership, training and job demand. It could be suggested that the relationships between culture, reward and knowledge sharing behavior seems to be controlled by other factors such as leadership, job characteristic, technology support, etc.

Knowledge-oriented leadership has a significant positive effect on the knowledge sharing behavior for individuals in universities. This is consistent with the results of a number of previous studies showing that appropriate leadership style would foster knowledge management. For example, Srivastava et al. (2009) argue that leadership style focusing on empowerment positively influences team efficacy and knowledge sharing. However, when only lecturers are taken into account as research sample, the relationship between leadership style and knowledge sharing behavior is no longer significant. Hence, the role of leadership in fostering knowledge sharing may be contingent on the frequency of interaction between leader and staff, i.e. when individuals don't interact with their leader on a daily basis like in the case of university lecturers, leadership does not have a significant effect on knowledge sharing behavior.

Technology support is positively associated with knowledge sharing behavior in both model 3 and model 4b. This study points out that more the IT system of the university facilitates the work and communication of lecturers, the better the knowledge sharing behavior of the later. This result confirms the findings from previous studies which suggest a positive and direct effect of technology on knowledge sharing. Information technology is undoubtedly a vital tool for lecturers to enrich their knowledge and to share knowledge/information with their colleagues. Adel Ismail et al. (2007) argue that information systems together with other organizational factors such as trust, communication, and organizational structure are positively related to knowledge sharing in organizations.

Training also has a positive and significant influence on knowledge sharing behavior in both model 3 and model 4b, thus suggesting that training and development is an effective HR practice to foster knowledge sharing among lecturers in universities. Cabrera and Cabrera (2005) emphasize that when training and development help to

increase self-efficacy among organizational employees, the later will feel more assured of their abilities and will be more willing to exchange knowledge with others. The relationship between training and the knowledge sharing behavior of staffs, however, is not found in model 5b. One explanation could be that staffs in universities are given fewer training opportunities compared to lecturers, hence training is not perceived by staffs in university as a facilitator for their sharing knowledge with others.

Knowledge oriented job demand has a positive and significant association with the knowledge sharing behavior of university employees, including both lecturer sub-group and staff sub-group. This implies that the knowledge sharing behavior is much driven by the extent to which a job itself requires the job holder to share knowledge with others. The findings from this study show that the more a job requires the employee to interact and share knowledge with others, the stronger his or her knowledge sharing behavior.

This study has practical implications for university management in order to promote knowledge sharing. First, knowledge oriented leadership style is vital to foster knowledge sharing in universities. Leaders in universities should be trained on how to encourage lecturers and staffs to acquire knowledge from inside and outside organization, to share knowledge with others, and to learn from mistakes. Leaders of faculties or professional departments in particular should try to create frequent interaction among and with lecturers. By meeting and talking to lecturers more frequently, faculty leaders will strengthen their influence on the knowledge sharing behavior of the lecturers. Training and development has been proved in this study as an effective HR practice to foster knowledge sharing among lecturers, as such, lecturers in university should be given frequent training and job rotation opportunity so that knowledge is effectively shared among individuals in university and the intelligence of the university as a whole is built up. In addition, universities should place priority on developing a strong IT system that enables knowledge to be easily stored, acquired, and shared among lecturers. Lastly, human resources manager in university may consider to institutionalize knowledge sharing as a duty or responsibility specified in the job description of both lecturer and staff as the findings from this study has shown that the more a job requires knowledge to be shared, the better the knowledge sharing behavior of the job holder.

6. Limitations of This Study and Suggestions for Future Research

This research presents several similar limitations as found in common organizational behavior research. First, the cross-sectional nature of the research design in this study does not allow causality to be inferred. Second, data related to all constructed was collected using a single questionnaire, findings were based on self-reports of respondents, thus the issue of common methods variance cannot be avoided. Third, a single Likert five point scales was used for all constructs, as a result, some of responses seemed to be deliberately replicated and had to be rejected. This study only focused on the main effects of organizational and technological aspects on knowledge sharing behavior and did not consider other aspects moderating these relationships. Also, in this study, knowledge sharing behavior was treated as the “final outcome” of organizational and technological factors, not as an intermediate outcome to reveal its moderating or mediating role in the relationships between those organizational antecedents and organizational or individual performance. Future research may investigate how knowledge sharing leads to improved organizational performance of universities that could be justified by the number of international publications, ranking of university, post-graduation employment rate, etc. Future research may also examine how the organizational, cultural and technological factors interact internally or with knowledge management strategies (codification verses personalization) to influence on the organizational performance of universities.

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Appendix

QUESTIONNAIRE

I. General Information

Organization/University:.....

Division/Department:.....

How long have you been in this position? :years?

Current job: **Lecturer** **Staff**

Position: **Head/Vice Head of Academic Department** **Head/Vice Head of Support Division**

Gender: **Male** **Female**

Age: **20-30** **30-40** **40-50** **> 50**

How many people are working in your department/division? **<10** **10-20** **>20**

II. Organizational, cultural and technological aspects

1. Working unit's sub-culture

(5= Strongly Agree; 4=Agree; 3=Not sure; 2= Disagree; 1= Strongly disagree)

1.1 I find my working unit like a "big family"

1.2 We consider the problems of our organization our own problems

1.3 I trust my colleagues and share with them information related to both work and life

1.4 We are fully aware of the vision and goals of the organization

1.5 We have many occasions to meet outside the workplace to discuss both job and life issues

1.6 The workplace of my unit has open layout, allowing easy communication among staff

2. HR practices

(5= Strongly Agree; 4=Agree; 3=Not sure; 2= Disagree; 1= Strongly disagree)

2.1 The more I contribute ideas/initiatives to my organization, the better chance I have for job promotion or salary increase

2.2 The ability to work well in team is one of the criteria for staff performance appraisal

2.3 We are given many opportunities to attend training courses to improve knowledge and skill

2.4 We are encouraged to teach different courses or to perform different tasks

2.5 Old staff is responsible to provide on the job training for new staff

3. Leadership style

(5= Strongly Agree; 4=Agree; 3=Not sure; 2= Disagree; 1= Strongly disagree)

3.1 Leader of my unit praises or gives compliment whenever a staff has a new idea or initiative to contribute to the organization

3.2 Leader plays the role of advisor and welcomes all opinions, perspectives from staff

3.3 Leader encourages teamwork

3.4 Leader encourages staff to seek information, knowledge from outside

3.5 Whenever a staff makes mistakes in work, leader encourages him or her to draw lessons from those mistakes

3.6 Leader always creates an open and exciting working atmosphere

4. Information Technology

(5= Strongly Agree; 4=Agree; 3=Not sure; 2= Disagree; 1= Strongly disagree)

4.1 Work related information and knowledge are stored, classified and updated in a scientific and regular manner

4.2 The organization's IT system provides valuable and useful information/data for my work

4.3 The organization's IT system facilitates the sharing of knowledge and information among members

6. Job characteristics

(5= Strongly Agree; 4=Agree; 3=Not sure; 2= Disagree; 1= Strongly disagree)

6.1 My job requires me to coordinate, interact and share information regularly with my colleagues

6.2 Sharing knowledge is a part of my job

6.3 Knowledge, information related to my job are easy to understand, describe and to transfer to others

7. Knowledge sharing behavior

(5= Strongly Agree; 4=Agree; 3=Not sure; 2= Disagree; 1= Strongly disagree)

7.1 I often participate in seminars, workshops at my university to share knowledge or learn from colleagues

7.2 I often express my thinking or ideas in meetings at my university

7.3 I often share information and knowledge I have with colleagues in my unit

7.4 I am ready to share understanding, know-how, institution gained through work with colleagues in my unit

7.5 Whenever I learn something new from training activities, I see in it that I have to share that new learning with colleagues in my unit

7.6 I am not reluctant to share success stories and failure lessons with colleagues in my unit

7.7 I feel responsible to mentor and coach new staff/colleague who has little work experience

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