

## A study on the knowledge sharing behaviour of information management instructors at technological universities in Taiwan

Shi-Jer Lou†, Yun-Shiue Yang†, Ru-Chu Shih† & Kuo-Hung Tseng‡

National Pingtung University of Science and Technology, Pingtung, Taiwan†  
Meiho Institute of Technology, Pingtung, Taiwan‡

**ABSTRACT:** This study was aimed at exploring the behaviour of instructors from information management departments with regard to knowledge sharing at technological universities. The influence of self-motivation and incentive mechanism on instructors' individual knowledge sharing and the obstacles encountered while knowledge sharing are investigated in this study. A literature analysis and questionnaire survey were conducted, and a self-constructed research tool was also used. A total of 370 questionnaires were sent to instructors at 31 vocational and technological colleges and universities in seven counties in southern Taiwan. A total of 175 valid responses were returned, yielding a 47.29% return rate. Frequency distribution, percentage, one-sample t-test, independent sample t-test, one-way ANOVA, Pearson product-moment correlation and path analysis were used to analyse the collected data. The results show that instructors may encounter some barriers when sharing knowledge with others. In addition, the four aspects of knowledge sharing between instructors were correlated with their demographic information including gender, seniority of teaching, marital status, educational background, type of institute, institute location, administrative duties and age.

### INTRODUCTION

Knowledge sharing is often considered as being at the core of knowledge management [1][2]. Not only can effective knowledge sharing lower the cost and time of acquiring information and knowledge, but it can also avoid repeated investment in existing knowledge resources and improve the added value and innovation of resources already in use [3]. Current research has gradually shifted direction from the exploration of the whole knowledge management to knowledge acquisition, knowledge sharing, knowledge application and knowledge innovation [4][5]. In particular, knowledge sharing has become the core and research focus of knowledge management. One of the major tasks of education is to cultivate workers for society and schools are the major institutions to achieving this task. As the main institutions of cultivating labour in the 21<sup>st</sup> Century, administrators of schools should pay more attention and concern to face the challenge and changes of future job markets.

According to a 2004 report on the average supply and demand of workers with baccalaureates from 2003 to 2011, the supply of labour in information management will exceed demand in the next seven years. Thus, instructors of information management in technological universities should be aware of the issue of cultivating students with competitiveness and move towards business continuity and sustainability. Traditionally, the role of an instructor is to deliver knowledge, but nowadays the instructor is expected to play the role of a facilitator in this era of the knowledge economy. As a result, Wang pointed out that knowledge sharing should be a priority for school knowledge management reform and a key for promoting the competitiveness of schools [6].

### PURPOSES OF THE STUDY

The purposes of the study incorporated the following elements:

- Analyse information management instructors' behaviour regarding knowledge sharing at technological universities;
- Explore the relationship between personal motives and knowledge sharing of information management instructors;
- Identify the barriers to the knowledge sharing of information management instructors at technological universities;
- Explore the influence of activities, materials, social incentives and inspiring systems on the knowledge sharing of information management instructors;
- Provide research outcomes and suggestions as references for school administrative units, instructors of information management and future studies.

### DESIGN OF THE STUDY

A systematic literature review was conducted in this study to obtain related literature for analysis and integration in order to construct a questionnaire, including knowledge management related theories and applications. The modified Delphi technique was employed to collect panellists' opinions and comments on items of the questionnaire. The researchers then integrated the results of the modified Delphi questionnaire to construct the *Questionnaire for Cultivating Knowledge Management Application for Vocational High School Teachers of ME* to explore the application occasions, mediums, most feasible methods and related information, and thus to establish the learning model for applying knowledge management of vocational high school teachers of ME.

### SUBJECTS

The research subjects were the full-time faculty members of information management departments at technological universities in southern Taiwan. The research questionnaire was sent to 370 full-time instructors at 31 technological

colleges and universities. A total of 175 valid responses were returned, yielding a 47.29% return rate.

## INSTRUMENT

The contents of the questionnaire include personal background information and four major aspects. These are as follows:

- The behaviour of instructors' knowledge sharing refers to the actual situation of instructors' knowledge sharing occurring in daily life, such as teaching, research, and educational and student counselling knowledge sharing;
- The motives of instructors' knowledge sharing refer to the instructors' motives for knowledge sharing, including inner and outer motives;
- Incentives of instructors' knowledge sharing refer to incentives that may motivate or stimulate instructors' knowledge sharing behaviour, including activities, materials and social incentives;
- Situations of instructors' knowledge sharing refer to difficulties that instructors may encounter while engaged in knowledge sharing with colleagues, including insufficient information equipment, instructors' attitudes and opinions, time and space limitations, opinions of knowledge power, instructor recognition and abilities.

The researchers concluded the results of literature analysis to construct the questionnaire called *Information management instructors' knowledge sharing in technological colleges and universities* as the research framework (as shown in Figure 1). The reliability of the questionnaire was tested by Cronbach  $\alpha$  with a value of 0.82, indicating that internal consistency had been established. Finally, descriptive statistical analysis, ANOVA, Pearson product-moment correlation and path analysis were utilised to analyse the 175 valid responses.

## DATA ANALYSIS

### Item Analysis

One-sample t-test with a median of 3 was used to explore the degree of consensus on items of each aspect (as shown in Tables 1 to 4).

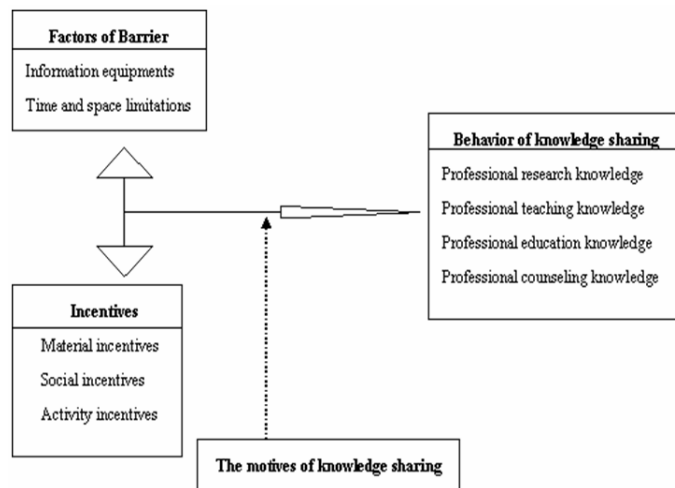


Figure 1: The research model of the study.

The results of the item analysis include those detailed below.

Instructors of information management obtained a high consensus on the behaviour aspect of knowledge sharing. Among items on the phrase of instructor's knowledge sharing behaviour, *I will present personal research outcomes in public as needed* and *I will share the latest information technology with colleagues* obtained the two highest consensuses, respectively. This contrasts with the responses to *I will discuss students' career plans with colleagues*, *I will share experience of counselling students with colleagues*, and *I will share the experience of teaching students' clubs with colleagues*. As a result, in terms of sharing research professional knowledge with colleagues, instructors of colleges and universities contribute the most in research and the least in student counselling.

Instructors of information management also obtained a high consensus on the motive to engage in knowledge sharing, particularly *I am willing to share knowledge because I can satisfy my research interests* obtained the highest consensus and *I am willing to share knowledge because I can obtain happiness from it* obtained the second highest consensus. On the other hand, the three items that showed the least consensus

Table 1: Item analysis of instructors' behaviours concerning knowledge sharing.

Aspect	Item	Average	t-value	Rank
Behaviour in knowledge sharing	I will discuss teaching experiences with colleagues	3.81	12.11***	8
	I will discuss teaching methods with colleagues	3.78	11.97***	10
	I will share teaching files with colleagues	4.03	21.03***	7
	I will discuss students' career plans with colleagues	3.07	0.76	18
	I will present personal teaching results in public as needed	3.67	11.86***	12
	I will share research feedback with colleagues	4.09	29.91***	6
	I will share the feedback from publishing articles	3.66	10.49***	13
	I will present personal research outcomes in public as needed	4.79	58.55***	1
	I will share the latest information techniques with colleagues	4.60	33.86***	2
	I will share my own opinions of the school with colleagues	4.12	25.56***	5
	I will share my administrative experiences with colleagues	4.23	38.44***	3
	I will share my own opinions regarding educational policies	4.19	25.38***	4
	I will discuss student counselling approaches with colleagues	3.79	12.11***	9
	I will discuss class management with colleagues	3.72	11.91***	11
	I will share experiences of teaching students' club with colleagues	3.61	11.98***	16
	I will share experiences with colleagues regarding counselling students to enter higher schools	3.63	9.90***	14
	I will share experiences in counselling students to seek employment	3.62	9.62***	15
I will share experiences in counselling students' learning	3.57	9.74***	17	

Table 2: Item analysis of instructors' motives for knowledge sharing.

Aspect	Item	Average	t-value	Rank
Motives for sharing knowledge	I am willing to share knowledge because I can obtain achievements from it	4.26	35.79***	3
	I am willing to share knowledge because I can obtain happiness from it	4.27	37.76***	2
	I am willing to share knowledge because I can develop research interests	4.55	29.73***	1
	I am willing to share knowledge because I can obtain assistance from colleagues in the near future	4.17	41.36***	6
	I am willing to share knowledge because I can reduce distance with colleagues	4.24	38.30***	4
	I am willing to share knowledge because I can expand interpersonal relationships	4.06	26.24***	7
	I am willing to share knowledge because I can generate more ideas	4.23	38.44***	5
	I am willing to share knowledge because I can obtain praise from others	3.99	23.40***	8

Table 3: Item analysis of instructors' incentives for sharing knowledge.

Aspect	Item	Average	t-value	Rank
Incentives for sharing knowledge	I am willing to share knowledge if I can obtain the joy of growth	4.42	37.99***	2
	I am willing to share knowledge if I can obtain a sense of achievement	4.48	39.08***	1
	I am willing to share knowledge if I can lower my workload	4.35	36.45***	3
	I am willing to share knowledge if knowledge sharing can be evaluated for continuous learning	3.56	7.26***	10
	I am willing to share knowledge if knowledge sharing can be considered for hiring and evaluation	3.62	7.63***	9
	I am willing to share knowledge if knowledge sharing can increase salary	3.56	7.26***	10
	I am willing to share knowledge when better environments are provided (such as network platform and related equipment)	4.19	25.39***	5
	I am willing to share knowledge when seeking a leader's support	3.80	12.08***	7
	I am willing to share knowledge to obtain colleagues' support	3.80	12.17***	7
	I am willing to share knowledge if I can obtain the chance to study abroad	4.20	25.39***	4
	I am willing to share knowledge if I can obtain public praise	3.81	12.19***	6

Table 4: Item analysis of the situation for instructors with regard to knowledge sharing.

Aspect	Item	Average	t-value	Rank
Situation for knowledge sharing	The school's information software is too old to use	3.51	4.55***	3
	The school's information hardware is too old to use	3.30	2.78***	6
	The school does not provide good care and maintenance of its equipment	3.14	1.46	7
	There is insufficient cooperation between colleagues	3.09	1.07	8
	The teaching load is too heavy to share knowledge with others	3.72	13.60***	2
	The administrative duty is too heavy to share knowledge with others	3.49	7.61***	4
	The research workload is too heavy to share knowledge with others	3.80	15.77***	1
	There are too many school activities for instructors to share knowledge with others	3.32	3.948***	5
	The relationship between colleagues is very distant	2.58	-7.390***	10
	Colleagues prefer individual work rather than cooperating with others	2.98	-1.000	9
	Issues related to individual job security and promotion make colleagues unwilling to share knowledge	2.30	-6.974***	12
	Leaders (department heads) do not take knowledge sharing seriously	2.18	-11.268***	13
	Issues related to personal intellectual property rights make colleagues unwilling to share knowledge	2.48	-5.291***	11

were *I am willing to share knowledge because I can obtain others' praise*, *I am willing to share knowledge because I can expand interpersonal relationships* and *I am willing to share knowledge because I can obtain assistance from colleagues in the near future*. As a result, in terms of motives of sharing knowledge, instructors of colleges and universities contribute the most to internal motivation.

The incentives to share knowledge by information management instructors obtained a medium-to-high consensus. Notably, *I am willing to share knowledge if I can obtain a sense of achievement* obtained the highest consensus, while *I am willing to share knowledge if I can obtain the joy of growth* and *I am willing to share knowledge if I can obtain the chance to study abroad* were ranked as second and third among all the items. Conversely, the lowest items were *I am willing to share knowledge if knowledge sharing can be evaluated for*

*continuous learning*, *I am willing to share knowledge if knowledge sharing can increase salary* and *I am willing to share knowledge if knowledge sharing can be considered for hiring and evaluation*. As a result, in terms of the incentives for knowledge sharing, instructors at colleges and universities prefer activity incentives the most and material incentives the least.

Instructors of information management showed negative consensus on the items: *Issues related to individual job security and promotion make colleagues unwilling to share knowledge*; *Leaders (department heads) do not take knowledge sharing seriously*; *The relationship among colleagues is very distant* and *Issues related to personal intellectual property rights make colleagues unwilling to share knowledge*. Among the positive consensus items, instructors agreed that *The research workload is too heavy to share knowledge with others*

is the strongest barrier to sharing knowledge and *The school's information software is too old to use* is the second strongest barrier to the sharing of knowledge. To sum up, according to the results, instructors of colleges and universities agreed most that time and space limitations, as well as insufficient information equipment, made the knowledge sharing transition more difficult than others.

#### Analysis of Variance

A one-way ANOVA and independent t-test were used in order to explore the difference between instructors' backgrounds and the four aspects of knowledge sharing. The results are elaborated on below.

The age factor of instructors generated significant difference regarding the behaviour, motives and incentives aspects of knowledge sharing. Specifically, instructors aged from 30-39 significantly differed from those aged from 40-49.

A significant difference was found regarding all aspects of knowledge sharing among instructors with different educational backgrounds. Instructors with Doctorates showed a significant consensus on the aspects of behaviour, motives and incentives than those instructors who had master's degrees. In terms of the situation aspect of sharing knowledge, instructors with master's degrees encountered a higher level of barriers than instructors with Doctorates. The results can be explained that instructors with Doctorate degrees might have received more advanced education and obtained more knowledge than instructors with master's degrees. Thus, those Doctorate holders may be more willing to share their knowledge with others as needed.

There was a significant difference detected regarding the seniority of teaching and the sharing of knowledge. Junior instructors tended to be more willing to share knowledge on the aspects of behaviour, motives and incentives of knowledge sharing than senior instructors. In terms of the situational aspects of sharing knowledge, instructors with a seniority of 5 to 10 years tended to be more willing to share knowledge with others than instructors with a seniority of less than five years. In addition, instructors with a seniority of under five years tended to be more willing to share knowledge than those with a seniority of over 10 years. These results can be explained in that instructors with less than five years of seniority are likely to solve trouble and issues by consulting with senior instructors when they encounter problems in a new teaching environment.

Instructors from different institutes obtained statistically significant consensus on the three aspects of knowledge sharing except for the incentive aspect. Public school instructors obtained a higher level of consensus on the aspects of behaviour and motives than for private school instructors. In terms of the situation aspect of knowledge sharing, private school instructors tended to have more barriers to sharing knowledge than did instructors at public institutions. The possible reason for this result could be that private school instructors have less equipment, resources and support than public school instructors, thus generating higher barriers to the motives and behaviour of knowledge sharing.

Instructors with different job titles and positions showed statistically significant differences for each aspect of knowledge sharing. In terms of behaviour and the situation

aspects of knowledge sharing, assistant professors showed broader different viewpoints than lecturers. In addition, lecturers showed broader and different viewpoints than associate professors. In terms of the motive aspect of knowledge sharing, lecturers displayed greater motivation than assistant professors and associate professors. In terms of the incentive aspects of knowledge sharing, lecturers commented that they encountered more barriers to sharing knowledge than assistant professors, while assistant professors identified there to be more barriers to sharing knowledge than associate professors.

The marital status of instructors did reach statistically significance differences regarding the aspects of behaviour, motive and situation of knowledge sharing but not the incentive aspects. In addition, married instructors registered higher consensus on the behaviour and motives of knowledge sharing than single instructors. In terms of the situation aspect of sharing knowledge, single instructors encountered more barriers than married instructors.

Instructors with different numbers of children also showed statistically significant differences on the four aspects of knowledge sharing. In terms of the behaviour aspects of knowledge sharing, instructors with two children showed a higher consensus than instructors with one child. And instructors with one child showed higher consensus than for those instructors with no child. Instructors with no children showed higher consensus than for instructors with more than three children. In terms of the motives of knowledge sharing, instructors with two children displayed higher consensus than instructors with one child. Instructors with one child registered higher consensus than instructors with no child. Instructors with no child showed higher consensus than instructors with three children. Finally, in terms of the situations of knowledge sharing, instructors with no child encountered more barriers than instructors with one, two and three children.

The locations of instructors reached the statistically significant differences on the other three aspects of knowledge sharing except for the incentive aspect. As a result, instructors from rural and county areas revealed higher consensus on the behaviour and motive aspects of knowledge sharing than instructors in urban and city areas. In terms of the situations of knowledge sharing, city instructors felt there were more barriers to sharing knowledge than rural instructors.

Administrative duties caused instructors to perform differently on the four aspects investigated. Instructors without administrative duties showed higher consensus on the aspects of behaviour, motive and incentive of knowledge sharing than instructors with administrative duties. In terms of the situation aspect, instructors with administrative duties encountered more barriers to sharing knowledge than instructors without administrative duties. A possible explanation for this phenomenon may be that instructors with administrative duties tended to be too busy to share knowledge with their colleagues, resulting in the lower consensus on the behaviour and motives of knowledge sharing.

#### Correlation Analysis

A Pearson product moment correlation coefficient was used to explore the correlation between the four aspects of information management instructors' knowledge sharing; this is shown in Figure 2.

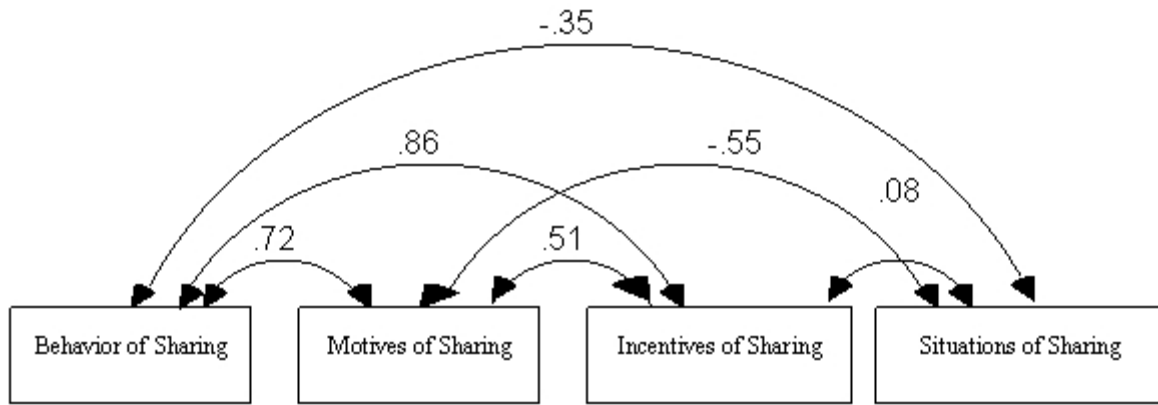


Figure 2: The correlation chart of the four aspects.

### Path Analysis

In this section of the article, the authors seek to explore the influence and effects of the motives, incentives and situations of knowledge sharing regarding the behaviour of knowledge sharing. The researchers assumed that the motives of knowledge sharing may influence the behaviour of knowledge sharing; specifically that activity incentives, material incentives and social incentives might influence the motives and behaviour of knowledge sharing. In addition, to this the insufficient information equipment, as well as time and space limitations, could influence the motives and behaviour of instructors' knowledge sharing. The model of the path analysis is shown in Figure 3.

The results of the path analysis show that:

- The motives and behaviour of knowledge sharing are significantly positively correlated. The higher the motives of knowledge sharing, the more that the behaviour of knowledge sharing occurs. The results also show that the activity incentives of the incentive aspect of knowledge sharing had a significant level of prediction. As a result, instructors of colleges and universities preferred activity incentives for knowledge sharing behaviour, indicating

that they had a strong tendency of a sense of achievement and self-growth;

- The correlation coefficient was -0.352, indicating that the higher situation of knowledge sharing, the higher were the barriers to knowledge sharing and the lower the behaviour of knowledge sharing, and vice versa. In addition, the results show that time and space limitations, as well as insufficient information equipment, may indirectly influence the behaviour of knowledge sharing;
- The motives and behaviour of knowledge sharing for college and university instructors achieved a significant correlation. The higher were the motives for knowledge sharing, the higher was level of knowledge sharing behaviour. Also, the predictions of the motives of knowledge to the behaviour of knowledge sharing also obtained support.

### CONCLUSION

- In terms of the behaviour of knowledge sharing, *I will present personal research outcomes in public as needed* achieved a higher consensus;
- In terms of the sharing motives of instructors, the item *I am willing to share knowledge because I can satisfy my research interests* obtained the highest consensus;

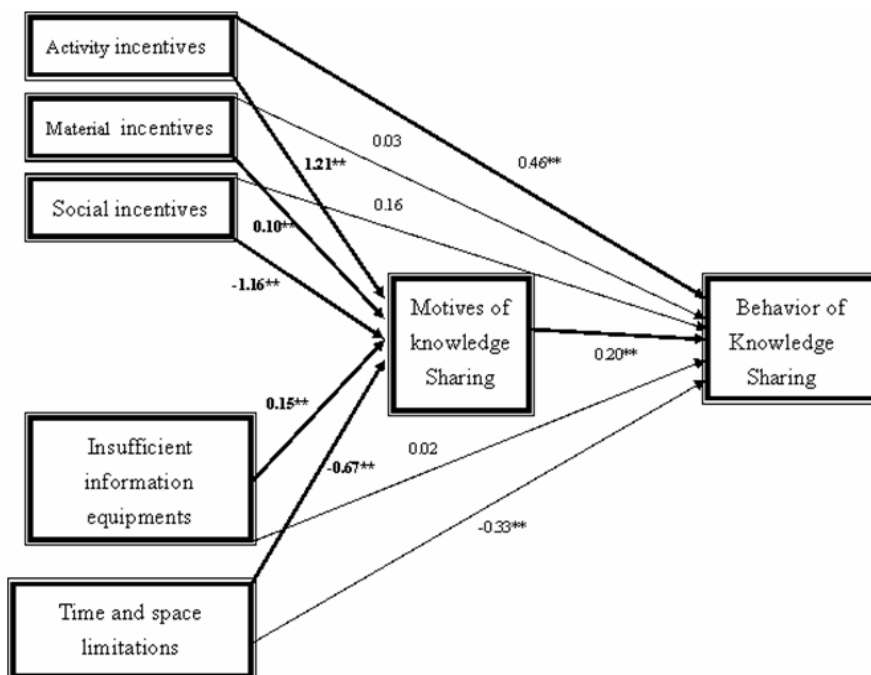


Figure 3: The model of path analysis.

- In terms of the incentives to engage in knowledge sharing, *I am willing to share knowledge if I can obtain a sense of achievement* obtained the highest consensus;
- In terms of the situation of sharing knowledge, *the research workload is too heavy to share knowledge with others* obtained the highest consensus on the aspect of barriers to knowledge sharing;
- Instructors aged 30-39 tended to be more willing to share knowledge in the four aspects than instructors who were aged 40-49;
- Instructors with Doctorate degrees contributed to the behaviour, motives and incentives of knowledge sharing more than instructors with master's degrees. In terms of the situation aspect, instructors with master's degrees tended to perform better than instructors with Doctorate degrees;
- The seniority of teaching played a key factor in influencing the behaviour, motives and incentives of instructors' knowledge sharing;
- Instructors at public colleges and universities tended to be more willing to share knowledge in the behaviour and motives aspects than instructors at private colleges and universities. In terms of the situation aspect, private school instructors perceived more barriers to sharing knowledge than their public institution counterparts;
- Instructors with different positions and titles showed different levels of consensus on the four aspects of knowledge sharing;
- Married instructors showed higher consensus regarding the behaviour and motives aspects of knowledge sharing. In terms of situation aspect, single instructors felt there were more barrier than did married instructors;
- The number of children of instructors was a key factor in the level of consensus concerning the aspects of knowledge sharing;
- Instructors in rural and county areas displayed higher consensus regarding the behaviour and motive aspects of knowledge sharing than instructors in urban and city areas. In terms of the situation aspect, city instructors felt there to be more barriers to sharing knowledge than their rural counterparts;
- Instructors without administrative duties showed higher consensus on the aspects of the behaviour, motive and incentive for knowledge sharing than instructors with administrative duties. In terms of the situation aspect, instructors with administrative duties encountered more barriers to sharing knowledge than instructors without administrative duties;
- The motives and behaviour of knowledge sharing were found to be significantly correlated. The motives of knowledge sharing further influenced the behaviour of knowledge sharing;
- The situation and behaviour of knowledge sharing were significantly correlated. The situation of knowledge sharing influenced knowledge sharing behaviour. The situation and behaviour of instructors' knowledge sharing were also found to be significantly correlated;
- The incentives and behaviour of knowledge sharing were significantly correlated. The motives of knowledge sharing also influenced the knowledge sharing behaviour of instructors.

## SUGGESTIONS

According to the results of the study, the following suggestions detailed below are proposed by the researchers.

Firstly, speaking of institutes, it is suggested that institutes should provide more support, environmental equipment and information technology, and especially renew information software such as the Internet network and database banks. Furthermore, the incentives provided by institutes influence the level of instructor's knowledge sharing. In order to increase the sharing of knowledge among instructors, institutes ought to establish an evaluation system for knowledge sharing.

A common difficulty encountered by instructors of information management with regard to knowledge sharing is that they were willing to share knowledge, but have no time to do so. In particular, instructors at colleges and universities have huge research and teaching workloads, and some even have to be in charge of administrative duties. Thus, leaders of institutes should offer more research and teaching support to instructors and reduce their administrative load to facilitate knowledge sharing behaviour.

In terms of instructors, due to the rapid establishment of information management departments in colleges and universities, instructors and graduates of these departments may encounter greater issues with regard to knowledge sharing. As such, instructors of information management should open their hearts to adjust themselves to establish a great environment that fosters knowledge sharing. They should seek to strengthen the action of knowledge sharing and individual abilities to enable the institute to sustainably move forward.

Finally, in terms of research, the influence of the characteristics of leaders and the decision making model on knowledge sharing, and the effects of instructors' knowledge sharing as well as the effects of knowledge on the school organisation's achievements need to be further examined and studied with quantitative research approaches.

## REFERENCES

1. Davenport, H.T. and Prusak, L., *Working Knowledge: How Organizations Manage What They Know*. Boston: Harvard Business School Press (1998).
2. Hendriks, P., Why share knowledge? The influence of ICT on motivation for knowledge sharing. *Knowledge and Process Management*, 6, 2, 91-100 (1999).
3. Chen, P.C., *On-Demand Knowledge Management Blueprint*. Taipei: Wu-Nan Culture Enterprise (2005).
4. Huang, H.W., Shih, H-Y., Huang, H.W. and Liu, C.H., Can knowledge management create firm value? Empirical evidence from the United States and Taiwan. *Business Review*, 5, 1, 178-183 (2006).
5. Wang, R.J., *The Theory and Application of Knowledge Management in Education*. Taipei: Wu-Nan Culture Enterprise (2002).
6. Randeree, E., Knowledge management: securing the future. *J. of Knowledge Management*, 10, 4, 145-156 (2006).