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### Factors Influencing the Use of Knowledge Management Systems: A Case Study of the Manufacturing and Service Sectors in Thailand

Kanyarat Kamprom<sup>1</sup>, Youdthachai Lertworaprachaya<sup>2</sup> and Chalernsak Lertwongsatien<sup>3</sup>

<sup>1</sup> Rajamangala University of Technology Thanyaburi, Thailand, E-mail: [kanyarat\\_k@rmutt.ac.th](mailto:kanyarat_k@rmutt.ac.th)

<sup>2</sup> Rajamangala University of Technology Thanyaburi, Thailand, E-mail: [youdba@rmutt.ac.th](mailto:youdba@rmutt.ac.th)

<sup>3</sup> Ministry of Finance, Bangkok, Thailand, E-mail: [lertvc@mof.go.th](mailto:lertvc@mof.go.th)

**Abstract:** A growing interest in knowledge management system is rapidly changing use of knowledge management systems in organizations. Knowledge management consists of three core components including the user, management, and technology. Information technology plays a crucial role in knowledge management systems (KMS) both in the production and service sectors of business.

The aim of this study was to investigate the factors that influence the use of KMS in organizations, especially in the manufacturing and service sectors. The second objective was to study behavior of users of KMS in their organization. Furthermore, the aim was to examine the results of applying the Unified Theory of Acceptance and Use of Technology (UTAUT) in organizations. The study population universe was KMS users who are members of the Thailand Productivity Institute, or approximately 107,386. These persons are executive managers and employees, and a sample of 400 was randomly selected for this research. Data were collected using self-administered questionnaires and personal interviews. The data were collected during July to September 2016. Approximately 43 per cent (172 out of 400) of the questionnaires were returned. Interviews were conducted with users of KMS, both in the manufacturing and service sections of the THAI Catering Department (Don Mueang), CAT Telecom Public Company Limited, TOT Public Company Limited and Virtual Link Solutions Co, Ltd. (Vlink) during November to December, 2016. The data were interpreted using the structural equation model (SEM). The partial least square (PLS) regression was used to assess relation, accuracy and reliability of collected data and ability to test the hypotheses.

The results show that 59.6 per cent of effort expectancy affected KMS intention while 50.6 per cent of behavior usage had an effect on KMS intention. Only 33.7 per cent of the facilitation condition directly affected behavior usage. In conclusion, factors which affect KMS usage were performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention and behavior usage. The facilitation condition and KMS intention which directly affected behavior of users was the mediator of the model.

**Keywords:** Technology acceptance model, Theory of planned behavior, Unified theory of acceptance and use of technology, knowledge management systems.

## **1. INTRODUCTION**

Knowledge management (KM) is a crucial system which improves the productivity and the decision-making of an organization. The knowledge management system (KMS) encompasses the process of acquiring, selecting, arranging, sharing and implementing received information in order to effectively apply important information. However, there are several factors which influence the use of KMS. The objectives of the present study were to identify factors which affect the use of KMS in organizations as well as to understand behavior of KMS users. Furthermore, we also study the results of using the Unified Theory of Acceptance and Use of Technology (UTAUT) in organizations. UTAUT was proposed by Venkatesh *et. al.*, 2003 as reviewed previously (Ref). Factors that influence behavioral intentions consist of expectation in performance (performance expectancy), expectation of effort (effort expectancy), and the influence of social factors (social influence). Moreover, there are a number of parameters that directly relate to usage behavior such as sex, age, experience and the voluntary use. The relationship between factors and parameters may influence the effectiveness of KMS usage in organizations. The present study hypothesized that performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intention will have a positive influence on KMS usage.

In order to achieve the goals of this research the data were collected from KMS users who are members of Thailand Productivity Institute. The designated sample included 400 executive managers and employees. The methodology of investigation was quantitative research using a self-administered questionnaire and qualitative research using a personal interview. The quantitative data were collected during July to September 2016. In-depth interviews were conducted during November to December, 2016, with users of KMS both in production and service sections of THAI Catering Department (Don Mueang), CAT Telecom Public Company Limited, TOT Public Company Limited and Virtual Link Solutions Co, Ltd. (Vlink). The data were interpreted using the structural equation model (SEM). The partial least square (PLS) regression was used to assess relation, accuracy and reliability of collected data and ability to test the hypotheses.

Approximately 43 per cent (172 out of 400) of the questionnaires were returned and analyzed. The results showed that there were significant, positive relationships between performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention and behavior usage. Effort expectancy had an effect on KMS intention while performance expectancy and social influence had no effect on KMS intention. Facilitating conditions and KMS intention directly influenced behavior usage. Effort expectancy influenced behavior usage through KMS intention as the mediator of the model.

## **2. THEORETICAL BACKGROUND**

### **2.1 Model of Information Technology (IT) Adoption at the Individual Level**

There are many theories used in IT research (Hart and Dowell, 2010). The most used theories are the technology acceptance model (TAM) (Davis *et. al.* 1989), the theory of planned behavior (TPB) (Ajzen, 1991), and the UTAUT (Venkatesh *et. al.*, 2003). Researcher will develop only the TAM, TPB and UTAUT, because they are the only ones that are at the individual level.

## 2.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT was proposed by Venkatesh *et. al.* (2003) and has eight possible models based on theoretical research. Most ignore the applied research model as an alternative. Therefore, there is a need to develop a model to explain the adoption of technologies of each party under a unified theory that is based on relationships and depictions of various factors, from eight theoretical and field use, with the adoption of technology in individual sectors (such as entertainment, telecommunications, banking and public administration) using behavioral intentions/behavior as primary variables (Ajzen, 1991).

The UTAUT theory helps to identify factors that influence behavioral intentions, and is composed of three aspects:

1. expectations in performance (Performance expectancy)
2. expectations on effort (Effort expectancy) and
3. the influence of social factors (Social influence) as the condition that facilitate usage habits.

Four analytical parameters are defined as, sex, age, experience, and voluntary use. There is an important link in the act (Conjunction) model theory which provides a theoretical perspective. The relationship between the factors and parameters/variables according to UTAUT is shown in Figure 1.

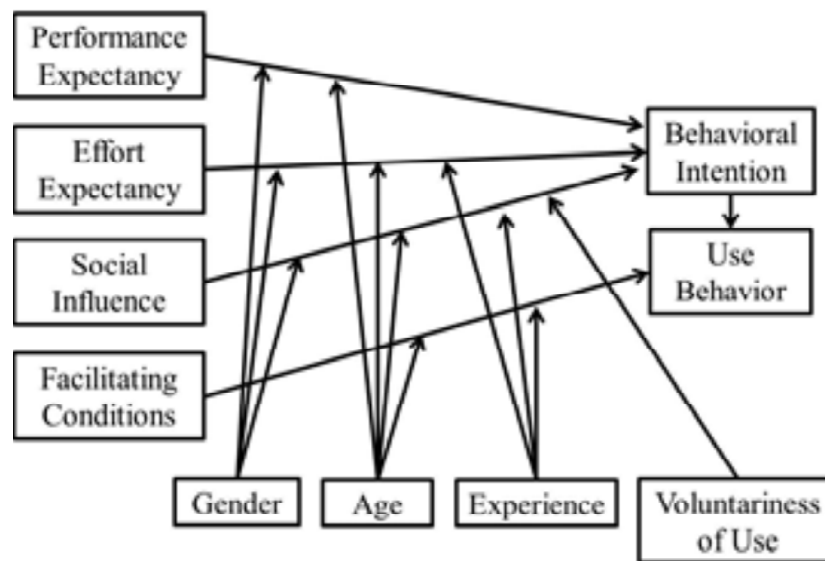


Figure 1: The model factors in the relationship between UTAUT (Venkatesh *et al.*, 2003)

The relationship between behavioral intention/behavior is influenced by three main factors except in conditions that facilitate its use which has a direct influence on spending habits for the parameter. A variable model is an extension and expansion of the main factors responsible for the four sides of the intention to influence usage behavior across four key areas.

However, the model can forecast UTAUT recognition technology efficiency. The variable is an extension model that can increase the forecast accuracy even more. However, recent research shows that there is only a small number of factors under the main factor and no field parameters/variables have been used in most

of the research. Therefore, there is a need to develop and expand the scope of theories to find key factors that can be used to cover education in the context of technology users by focusing on consumers (Consumer technology use). The group has invested a lot in these individuals such as new technology application and the target group of the service. A different emphasis between the conditions of use of technology within business organizations of employees (UTAUT) and the condition of the consumer technology (UTAUT) are modified UTAUT or UTAUT2.

### **2.3 Knowledge Management Systems (KMS)**

In general, KMS are IT that enables organizations to manage effective and efficient knowledge. In this study we use the KMS definition by Alavi and Leidner (2001). They defined KMS as

“...an organizational systemic and specified process to acquire, communicate and organize information for the explicit knowledge and tactics of employees to increase effectiveness and productivity...”

In general KMS would not differ from other information systems in terms of content and activities by users. KMS consists of hardware, software, people, and organizational environment.

The KMS review from the organizational IT usage is next discussed, followed by review of UTAUT applications. Then, the researcher will discuss both academic and practical approaches regarding effort expectancy, performance expectancy, facilitating conditions and social influence, followed by the behavior of use and behavioral intention of the organizational application of KMS.

## **3. METHODOLOGY**

### **3.1 Research Design**

This research combines qualitative and quantitative research. The target population and samples were obtained from organizations in Thailand including education, government, private sector, and financial institution. A structured questionnaire and interviews were used to collect data. Data were also collected from the chief information officers (CIO) and end users of the organizations. The close-ended questionnaires were sent to KMS users by sampling the name lists of the selected organizations. The questionnaire consisted of the indicators with a five-point Likert scale, ranking from 1 (strongly disagree), 2 (quite disagree), 3 (slightly disagree), 4 (neither agree nor disagree) and 5 (slightly agree). The overall of research design is explained in the following sections.

#### **3.1.1 Population and Sample**

This study was interested in the KMS usage of organizations in Thailand gained from the Office of Knowledge Management and Development (OKMD). The population for the study consists of the current end users in both manufacturing and service sectors in Thailand. The organization samples consist of two sectors as showed in Table 1.

The Structure Equation Model (SEM) as proposed by Kline (2003) is sensitive to sample size. In the current study, the population universe is 107,386 while a sample size of 400 end users was prescribed. This study used the partial least square (PLS) path modeling, with sample size meeting the SEM conditions.

**Table 1**  
**Population subgroup**

No.	Population Subgroup (N)	Sector (n)	Population	Sample
1.	CAT Telecom Public Company Limited	Service	6,403	24
2.	TOT Public Co., Ltd.	Service	16,498	61
3.	Kasikornbank Public Co., Ltd.	Service	21,614	81
4.	Bank For Agriculture and Agricultural Co-operatives	Service	19,288	72
5.	Siam Cement Public Company Limited	Manufacturing	34,901	130
6.	PTT Exploration and Production Public Co., Ltd.,	Manufacturing	2,208	8
7.	Sermasuk Public Co., Ltd.	Manufacturing	6,105	23
8.	Dynasty Ceramic Public Co., Ltd.	Manufacturing	369	1
Total		107,386	400	

Source: Annul Report year 2015.

### 3.1.2 Instrument

The framework for this study was developed from theories and concepts related to the workplace. The design of this study at individual level was based on qualitative and quantitative approaches. The qualitative approach in this study was the in-depth interviews of CIO in use of KMS. The quantitative approach was the self-administered questionnaires for KMS users in the organization. The first part of the questionnaire asked about demographic information of the participants and CIOs. The second part of the questionnaire contained questions about the UTAUT to KMS usage. The questionnaire adapted 31 items of the survey from Venkatesh *et. al.* (2003) as well as 38 items of the survey from Kijsanayotin *et. al.* (2009) based on five dimensions with a 5-point Likert-scale. The questionnaire was translated into the Thai language, and all parts of the questionnaire were validated by experts in human resources and management. Finally, a pre-test was implemented to assess reliability.

### 3.1.3 Pre-test

The pre-test used a small experimental design. The data were collected from a small group for testing and improving the quality, accuracy and efficiency of the instrument.

### 3.1.4 Reliability Analysis

Reliability is defined as the boundary to which the questionnaire, test, observation or any measurement procedure produces the same results on repeated trials (Cooper and Schindler, 2003). The internal consistency reliability is related to the scope that the items on the test or the instrument are measured for the same thing. If the individual items are highly correlated with each other, the researcher could be confident that the instrument has high reliability on the entire scale. The instrument in this study consists of the indicators which measure performance expectancy, effort expectancy, social influence, and facilitating conditions factors. There is a five-point Likert scale rating, ranking from 1 (strongly disagree) to 5 (slightly agree). Hence, the coefficient alpha (Cronbach, 1951) was applied. Ho (2006) proposed that the value of Cronbach's alpha should be above 0.80.

### **3.2 Data Collection**

The data were collected during July to September 2016. Approximately 43 per cent (172 out of 400) of the questionnaires were returned. Interviews were conducted with users of KMS, both in the manufacturing and service sections of the THAI Catering Department (Don Mueang), CAT Telecom Public Company Limited, TOT Public Company Limited and Virtual Link Solutions Co, Ltd. (Vlink) during November to December, 2016.

### **3.3 Data Analysis**

The data analysis began by rechecking for completion of the questionnaires collected from the subjects. The final recheck of usable questionnaires was performed, and missing or incomplete sets of data were excluded from the analysis. Only complete questionnaires were analyzed. Researchers used descriptive statistics to describe main features of the sample including frequencies, mean, variance, and standard deviation.

The research model was applied using the partial least square (PLS) path model which evaluates the measurement model and the structural model related to the associated constructs. The measurement model was part of the research model which portrays the relationships between a construct and its associated manifest variables (measurement items). The PLS path model analyzes and interprets data in two stages: (1) assessment of the measurement model by examining the reliability and validity of the composite of items measuring each construct, and (2) assessment of the structural model. The interpretation sequence aims to ensure that we have reliable and valid measurement of constructs before drawing conclusions regarding the relationships among those constructs. In the current study, PLS path modeling was used for model analysis to predict factors that influence IT acceptance and IT use. We also evaluated the reliability and validity of the measures of the constructs in the model and estimated the relationships among these constructs.

## **4. RESULTS**

### **4.1 Normal Distribution of Data**

Normal distribution of sample was assessed by considering skewness and kurtosis. The skewness ranged from  $-1.475$  to  $3.000$  with standard error of skewness of  $0.472$ . The value of kurtosis ranged from  $-1.776$  to  $2.697$  with standard error of kurtosis  $0.918$ . Therefore, the requirement for a normal distribution was satisfied. Furthermore, the results of exploration by using histogram with normality curve found that all of variables were normally distributed (Figure 2).

### **4.2 Demographic Data Summary**

This section presents the demographic information of the sample comprising gender, age, status, education, work experiences, position, type of the organization and number of employees (Table 2).

The majority of respondents were female (62.5 per cent) with age 40 years or older (62.5 per cent). The marital status was single for 54.2 per cent. The majority had a Bachelor's degree (79.2 per cent), and work experience was 10 years or more (75.0 per cent). The positions of division head and operations officer accounted for 50.0 per cent. All organizations in this study were in the service sector, and nearly all had more than 1,000 employees (95.8 per cent) (Table 3).



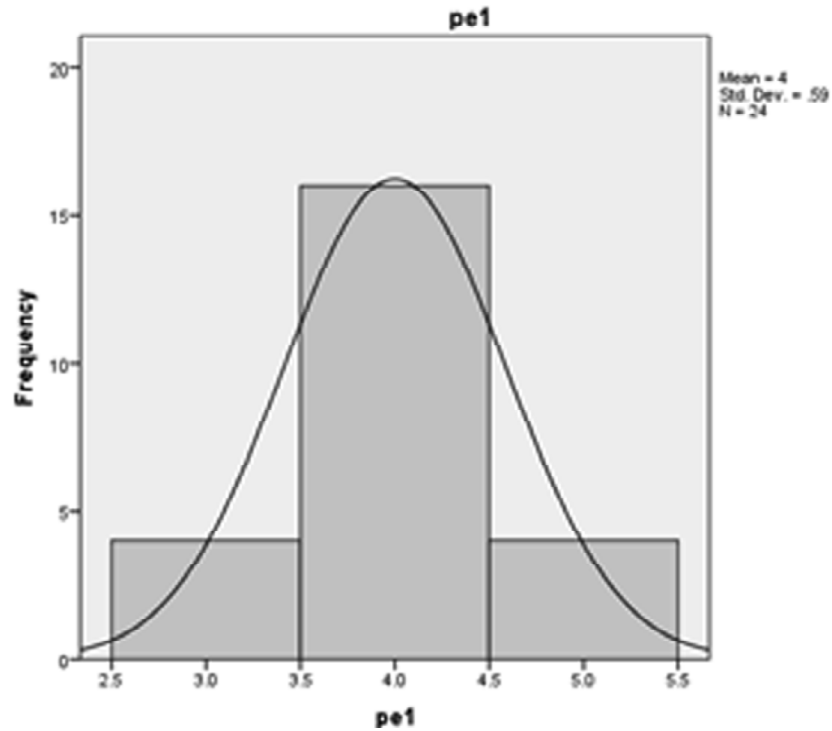


Figure 2: Normal distribution of collected data

Table 2  
Summary of Respondent's Demographics

Characteristics	Frequency	Per cent
Total	24	100.0
<i>Gender</i>		
Male	9	37.5
Female	15	62.5
<i>Age (years)</i>		
22-25	3	12.5
26-29	1	4.2
30-35	4	16.7
36-40	1	4.2
40 or older	15	62.5
<i>Marital status</i>		
Single	13	54.2
Married	10	41.7
Divorced	1	4.2

Contd. table 2

<i>Characteristics</i>	<i>Frequency</i>	<i>Per cent</i>
<i>Total</i>	24	100.0
<i>Education level</i>		
Lower than Bachelor's degree	1	4.2
Bachelor's degree	19	79.2
Master's degree	4	16.7
<i>Doctoral degree</i>		
<i>Work experience (years)</i>		
Less than 1	1	4.2
1-3	3	12.5
4-5	1	4.2
6-10	1	4.2
11 or more	18	75.0
<i>Position</i>		
Division head	12	50.0
Operations	12	50.0
<i>Type of organization</i>		
Financial		
Services	24	100.0
Real estate and construction		
Technology and communication		
<i>Number of employees</i>		
300 or less		
More than 300 but not over than 500		
More than 500 but not over 1,000	1	4.2
1,000 personnel or more	23	95.8

KMS usage in the organizations for more than five times per week accounted for 41.7 per cent. Duration as a member in the KMS for more than 12 months accounted for 66.7 percent. Access of KMS for recording data 1-4 times a month accounted for 58.3 per cent. Finally, the use of the KMS search for information more than 5 times per week accounted for 41.7 per cent of the sample.

### 4.3 Result of the Constructs

This section presents the descriptive statistics of the six constructs of the research model including performance expectancy, effort expectancy, social influence, facilitating conditions, behavioral intention and behavior usage.



**Table 3**  
**Summary of KMS using behavior in the organization**

<i>Characteristics</i>	<i>Frequency</i>	<i>Per cent</i>
<i>Total</i>	24	100.0
<i>Frequency of use of KMS per week</i>		
Less than 1 time	8	33.3
1-2 times	6	25.0
3-5 times		
More than 5 times	10	41.7
<i>Duration as a member in the KMS (months)</i>		
1-5	2	8.3
6-10	5	20.8
11-12	1	4.2
More than 12	16	66.7
<i>Accessing the KMS to record content (times per month)</i>		
1- 4	14	58.3
5-8	2	8.3
8-12	1	4.2
13 or more	7	29.2
<i>Using KMS to search for information (times per week)</i>		
Less than 1	7	29.2
1-2	7	29.2
3-5		
More than 5 times	10	41.7

#### **4.3.1 Results of performance expectancy**

This part presents the descriptive statistics including mean and standard deviation of the first construct which, performance expectancy, (Table 4).

The mean score for using the KMS as a benefit for regular work was 4.00. Using the KMS to increase work effectiveness and efficiency had a mean score of 3.96. Using the KMS to help accomplish work faster scored 3.92.

#### **4.3.2 Results of effort expectancy**

Means and standard deviation of the second construct are shown in Table 5.

The mean score of KMS effort expectancy was 4.00 in terms of accurate and complete content. The mean score for the KMS in using easily understandable language that is grammatically correct was 3.96. The mean score for the KMS as having credible information content and is easy to use was 3.79.

**Table 4**  
**Mean and standard deviation of performance expectancy**

<i>Characteristics</i>	$\bar{X}$	<i>Standard Deviation</i>
<i>KMS (Performance expectancy)</i>		
1. Using KMS has benefits for your regular work	4.00	.590
2. Using KMS helps you accomplish work faster	3.92	.654
3. Using KMS increases the work effectiveness and efficiency	3.96	.624
4. Using KMS increases the work progress opportunities	3.92	.717

**Table 5**  
**Mean and standard deviation of effort expectancy**

<i>Characteristics</i>	$\bar{X}$	<i>Standard Deviation</i>
<i>KMS (Effort expectancy)</i>		
1. KMS has the accurate and complete content	4.00	.659
2. KMS has the benefit content, interesting and being a source of knowledge	3.79	.658
3. KMS uses the easily understandable language which is grammatically correct	3.96	.624
4. KMS can search for the content as required	3.8	.565
5. KMS has the credible information content	3.79	.588
6. Learning the methods of KMS usage is easy for you	3.79	.721
7. KMS is easy for you and you are skillful in using it	3.79	.721
8. You found that KMS in the organization is easy to use	3.79	.588

### 4.3.3 Result of social influence

The social influence had the maximum mean score item (3.92) as follows: “The authority in the organization affected your KMS use behavior.” The item that had an intermediate score was “Your organization supports the use of KMS in all units” which had mean score of 3.88. The “Top executives of the organization gain benefits from using KMS” had a minimum meanscore of 3.67 (Table 6).

**Table 6**  
**Mean and standard deviation of social influence**

<i>Characteristics</i>	$\bar{X}$	<i>Standard Deviation</i>
<i>KMS (Social influence)</i>		
1. The authority in the organization affects your KMS use behavior	3.92	.654
2. The authority in the organization is important to your KMS use	3.83	.702
3. Top executives of the organization gain benefits from using KMS	3.67	.868
4. Your organization supports the use of KMS in all units	3.88	.741

#### 4.3.4 Result of facilitating conditions

The maximum mean item for facilitating conditions was “You have the necessary knowledge in using KMS” with a score of 4.00. The next highest score (3.96) was for “You have the necessary resources in using KMS.” The minimum mean item score (3.67) was for “You can give feedback and define the problems of the system operations via KMS” (Table 7).

**Table 7**  
**Mean and standard deviation of facilitating conditions**

<i>Characteristics</i>	$\bar{X}$	<i>Standard Deviation</i>
<i>KMS (facilitating conditions)</i>		
1. You have the necessary resources in using KMS	3.96	.806
2. You have the necessary knowledge in using KMS	4.00	.722
3. KMS cannot work together with other systems that you regularly use	3.5	.978
4. There is a team or unit that provides consultation on KMS for assistance on any system problems	3.79	.833
5. You can give feedback and define the problems of the system operations via KMS	3.67	.637

#### 4.3.5 Results of behavioral intention

The behavioral intention had seven variables including knowledge identification, knowledge creation and acquisition, knowledge organization, knowledge codification and refinement, knowledge accessing, knowledge sharing and learning. The maximum mean score (4.29) was for “Set up the intranet system network for knowledge searches about the organizational management.” The next highest score (4.25) was for “Set up an intranet system network to search for knowledge related to the laws, regulations, instructions and the operational guidelines of the organization.” The minimum mean score (2.50) was for “Arrange to have the online library to support the operational information” and “Arrange for the Community of practitioners (CoP)” (Table 8).

**Table 8**  
**Mean and standard deviation of behavioral intention**

<i>Characteristics</i>	$\bar{X}$	<i>Standard Deviation</i>
<i>Knowledge Identification</i>		
1. Set up the Intranet system network to search for the knowledge related to the laws, regulations, instructions and the operational guidelines of the organization.	4.25	.897
2. Set up the Intranet system network for knowledge searching about the organizational management	4.29	.859
3. Set up the Intranet system network for knowledge searching about the information that supports the organizational operations	4.21	.932
4. Set up the Intranet system network for knowledge searching about the experiences and skills of each departmental work in the organization	3.67	.917

*Contd. table 8*

<i>Characteristics</i>	$\bar{X}$	<i>Standard Deviation</i>
<i>Knowledge Creation and Acquisition</i>		
5. Assign the Chief of knowledge operation (CKO) and the committee to be responsible for the(KM) project	3.00	.885
6. Arrange a regular KM seminar in the work unit	2.87	.850
7. Arrange a regular training to increase knowledge	3.25	.676
8. Exchange the experience with experienced colleagues regularly	2.79	.833
9. Produce information to support the operations (information service)	3.12	.992
<i>Knowledge Organization</i>		
10. Process on the manner, instructions and operational guidelines in each work line	3.63	.770
11. Produce an operation manual for each work line	3.54	.884
12. Storing the information at the central information center and distribute the information on the Intranet system	3.75	.737
13. Providing a similar standard, fast and convenient information searches on Intranet system	3.62	.824
14. Always improve and update the information	3.54	1.021
<i>Knowledge Codification and Refinement</i>		
15. Arrange for the information of any work characteristics in each organizational department in the Intranet system	3.25	.608
16. Arrange for the operational guidelines to conform with the work characteristics in each department of the organization and always give the new launch	3.04	.806
17. Arrange for the information related to the characteristics of work in each department to support the operations	3.13	.850
18. Arrange to have an online library to support the operational information	2.50	1.103
<i>Knowledge accessing</i>		
19. Proving the KMS system to study	3.37	.824
20. People can access the Intranet system to search for the support information about the related tasks	3.42	.776
21. In the Intranet system, people can access the information as required	3.58	.717
22. Arrange for the knowledge exchanging activity for the organizational employees	3.00	.978
<i>Knowledge sharing</i>		
23. Arrange for the CoP(Community of practitioners)	2.50	.885
24. Provide the Web Board for knowledge exchange	3.38	1.096
25. Arrange the personnel to alternate their jobs to exchange the knowledge and working experiences	2.92	.776
26. Provide the knowledge to the personnel in the unit by the specialist of each aspect	3.04	.751
27. There are knowledge exchanges on each type of work on the Intranet system	2.75	1.032
<i>Learning</i>		
28. Bring the knowledge gained to develop the operational methods and suitable time in services provision	3.13	.797
29. Apply the knowledge gained to develop the operational works toward the effectiveness	3.13	.797
30. Apply the knowledge gained to develop the innovation for continual learning	3.00	.834
31. Apply the knowledge gained to develop the atmosphere for continual learning	3.00	.780

### 4.3.6 Result of behavior usage

The behavior usage had seven variables including attitude toward using technology, self-efficacy, anxiety, and usage behavior. The maximum mean score (4.00) was for “You can contact the KMS specialist in the organization to ask for help in case of any problem.” The next highest score (3.75) was for “KMS has the good working concept”, “KMS can help you work happily”, “You can work together with KMS”, “You have enough time to study and understand KMS use in the organization” and “You have the facilities that enhance for the working with KMS in the organization.”. The minimum mean score (2.29) was for “You have anxiety about using the KMS in the organization” (Table 9).

**Table 9**  
**Mean and standard deviation of behavior usage**

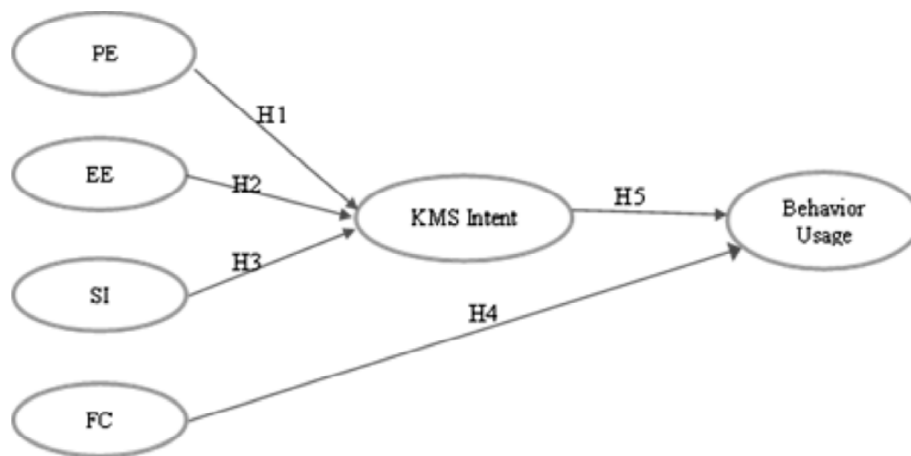
<i>Characteristics</i>	$\bar{X}$	<i>Standard Deviation</i>
<i>KMS (Attitude toward using technology)</i>		
1. KMS has the good working concept	3.75	.794
2. KMS can help your work becomes more interesting	3.58	.881
3. KMS can help you work happily	3.75	.847
4. You can work together with KMS	3.75	.794
<i>KMS (Self-efficacy)</i>		
1. You can operate or use KMS without previous learning	3.63	1.013
2. If there is no colleague or the specialist on KMS, you will be able to operate or work with KMS	3.67	1.007
3. You can contact the KMS specialist in the organization to ask for help in case of any problem	4.00	.659
4. You have enough time to study and understand KMS using in the organization	3.75	.676
5. You have the facilities that enhance working with KMS in the organization	3.75	.737
<i>KMS (Anxiety)</i>		
1. You have anxiety about using KMS in the organization	2.29	.999
2. You are afraid to lose a lot of information during the use of KMS especially by pressing the wrongkey	2.33	.917
3. You have hesitation to use KMS of the organization since you are afraid to make mistakes or unable to solve problems	2.33	.868
4. KMS will warn you about the work in case of any mistake in the system use	2.46	.884
<i>KMS (Usage Behavior)</i>		
1. You intend to learn to use KMS of the organization in the next 6 months	3.38	.770
2. You expect to learn to use KMS in the organization in the next 6 months	3.38	.770
3. You plan to learn to use KMS in the organization in the next 6 months	3.29	.806
4. In case that you used KMS of the organization, you tend to continue use it	3.58	.830
5. You cannot estimate the cost and benefit of using KMS in the organization before any time of usage	3.08	.929
6. You deliberately consider about the use of KMS in the organization before every time of usage	3.21	.588
7. You automatically learn to use KMS in the organization	3.67	.702

## 4.4 Hypothesis Testing Results

### 4.4.1 Research Questions

1. Does the performance expectancy influence KMS intention?
2. Does the effort expectancy influence KMS intention?
3. Does the social influence relation with KMS intention?
4. Does the facilitation condition affect behavior usage?
5. Does the KMS intention affect behavior usage?

From five research questions and reviewed literature, the four main constructs from conceptual framework are presented in Figure 3.



PE = Performance expectancy  
EE = Effort expectancy

SI = Social influence  
FC = Facilitating conditions

Figure 3: Conceptual Model/theoretical framework

The results of model in this study are presented in Figure 4 below.

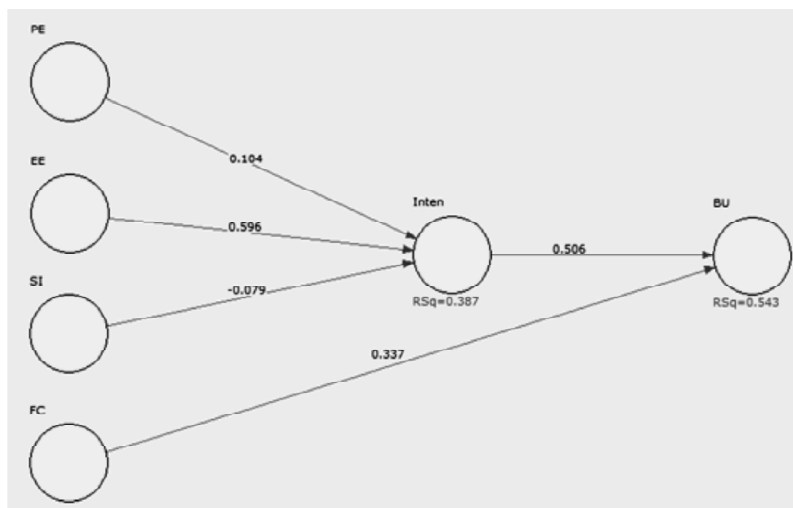


Figure 4: The results of testing structural model of theoretical framework

**H1:** There is a positive relationship between performance expectancy and KMS intention

The value of the *t*-test shows that the estimated coefficient value was 0.104, standard error (S.E.) was 0.048 with *t*-statistic (*t*-value) of 1.842 and *p*-value was 0.07, indicating that there was no positive relationship between performance expectancy and KMS intention. Consequently, it could be concluded that H1 was not supported.

**H2:** There is a positive relationship between effort expectancy and KMS intention.

The value of the *t*-test showed that the estimated coefficient value was 0.596, standard error (S.E.) was 0.042 with *t*-statistic (*t*-value) of 15.67, and *p*-value was 0.000, indicating there was a positive relationship between effort expectancy and KMS intention at a significance level of 0.001. Therefore, it could be concluded that H2 was supported.

**H3:** There is a positive relationship between social influence and KMS intention.

The value of the *t*-test showed that the estimated coefficient value was -0.079, standard error (S.E.) was 0.037 with *t*-statistic (*t*-value) of 0.823, and *p*-value was 0.442, indicating there was no positive relationship between social influence and KMS intention. Consequently, it could be concluded that H3 was not supported.

**H4:** There is a positive relationship between facilitation conditions and behavior usage.

The value of the *t*-test showed that the estimated coefficient value was 0.337, standard error (S.E.) was 0.020 with *t*-statistic (*t*-value) of 4.49, and *p*-value was 0.000, indicating there was a positive relationship between facilitation conditions and behavior usage at a significance level of 0.001. Therefore, it could be concluded that H4 was supported.

**H5:** There is a positive relationship between KMS intention and behavior usage.

The value of the *t*-test showed that the estimated coefficient value was 0.506, standard error (S.E.) was 0.043 with *t*-statistic (*t*-value) of 14.16, and *p*-value was 0.000, indicating there was a positive relationship between KMS intention and behavior usage at a significance level of 0.001. Therefore, it could be concluded that H5 was supported (Table 10).

In conclusion, effort expectancy directly affected KMS intention while performance expectancy and social influence did not affect KMS intention. The facilitation conditions directly affected behavior usage, and KMS intention directly affected behavior usage. The facilitating conditions affected behavior usage while effort expectancy influenced behavior usage through KMS intention as the mediator of the model.

#### **4.5 Results of the in-depth Interviews**

In this study, the researcher conducted the interviews with the units that use the KMS system in their organization such as Virtual Link Solutions Co., Ltd., (V Link), Faculty of Management Science (Uttaradit Rajabhat University), Education service department (Uttaradit Rajabhat University) and the government sector. The interview results can be summarized as follows (Table 11).

Virtual Link Solutions Co., Ltd., (V Link) is the leader in the software provider business in alliance with IBM Thailand and Saba Software Co. To support the growth of the organization's business, V Link aims at internal enterprise solutions such as Enterprise Web Portal Solution, Enterprise e-Learning Solution,



**Table 10**  
**The results of hypothesis testing**

<i>Hypothesis</i>	<i>Coef.(S.E.)</i>	<i>t-value</i>	<i>p-value</i>	<i>Result</i>
H1 : There is a positive relationship between performance expectancy and KMS intention.	0.104 (0.048)	1.842	0.07	Not Supported
H2 : There is a positive relationship between effort expectancy and future intention	0.596 (0.042)	15.67	0.000**	Supported
H3 : There is a positive relationship between social influence and KMS intention.	-0.079 (0.037)	0.823	0.442	Not Supported
H4 : There is a positive relationship between facilitating and behavior usage.	0.337 (0.020)	4.49	0.000**	Supported
H5 : There is a positive relationship between KMS intention and behavior usage.	0.506 (0.043)	14.16	0.000**	Supported

*Note:* \*\* Significance level at *P-value* = 0.001

Enterprise Knowledge Management Solution, Enterprise Social Business Solution and Enterprise e-Form Solution. These respond to the needs of customers to improve effectiveness in management, effective costs management, information access, knowledge sharing, and communications within the organization. V Link uses mobile phone technology for the internal organization management and provides software that supports the mobile platforms. The researcher interviewed Mr.WuttichaiKohsakul, project executive and Mr. Waraporn Apirattanatrakul, project manager.

WuttichaiKohsakulobserved that, organizations willsucceed in knowledge management if there are good hardwareand software as well as skilled users. Moreover, the organizational environment and organizational culture are also crucial.

Waraporn Apirattanatrakul's opinion about the KMS in Thai organizations is that the factors creating successful knowledge management result from the persons who can drive and push from the executive level down to the users. Moreover, the difference in organizational characteristics such as the government sector seems to be driven harder compared to the private sector because of rules and regulationsin the government sector, resulting in delayed operations. Having a responsible unit in each organization helps to push the organization toward successful use of the KMS system. The information from the interviews indicate that the factors affecting KMS in the organization are having good tools and organizational environment.

In sum, there were significantly positive relationships among performance expectancy, effort expectancy, socialinfluence, facilitating conditions, behavioral intention and behavior usage. Effort expectancy had an effect on KMS intention while performance expectancy and social influence had no effect on KMS intention. Facilitating conditions and KMS intention directly influenced behavior usage. Effort expectancy influenced behavior usage through KMS intention as the mediator of the model.

## 5. DISSCUSSIONS, IMPLICATIONS AND LIMITATIONS

KMS has an impact on the effectiveness of KMS usage in organizations. Our results demonstrate that effort expectancy and facilitating conditions had positively affected use of KMS in organizations, both in

**Table 11**  
**Questions for the interview**

<i>Topic</i>	<i>Mr. Wuttichai Kobsakul</i>	<i>Miss Waraporn Apirattanakul</i>
The factors affecting KMS usage in the organization	<ul style="list-style-type: none"> <li>– Having the good tools</li> <li>– Internal organization environment</li> <li>– Organizational cultures</li> <li>– Thais non-preference for academic works</li> </ul>	<ul style="list-style-type: none"> <li>– There shall be the direct responsible unit</li> <li>– The executives and system users must recognize the crucial importance of the system</li> <li>– Enforcing the system use</li> <li>– Governmental units such as Finance Ministry, Uttaradit Rajabhat University, NBTC</li> <li>– Private units such as K-bank, PTTEP</li> </ul>
The results after KMS usage	<ul style="list-style-type: none"> <li>– Familiar with the system</li> <li>– Enforcement will lead to the resistance</li> <li>– Users consider it as adding to their workload</li> </ul>	<ul style="list-style-type: none"> <li>– New generation user will be able to learn and access information better because of familiarity with technology</li> <li>– Users consider the system difficult and complex</li> <li>– Unfamiliarity with the system</li> </ul>
Trend of KMS development	<ul style="list-style-type: none"> <li>– Social KM is about the study on human behavior such as using behavior, frequency, user analysis as well as the mimicking of human behaviors</li> </ul>	<ul style="list-style-type: none"> <li>– Mobile platforms develop the form of application to be easy to access at anytime and from anywhere to immediately respond to the user needs</li> </ul>

the productivity section and the service section. The results indicate that organizations are interested in using KMS and expect to effectively implement the important information for their organization. Facilitating conditions are also a crucial factor. Using high technology facilitates work, especially on data collection and communication. More importantly, effective knowledge management leads to accurate analysis of data. Furthermore, facilitation of using KMS helps the users easily access information and quickly implement the system. Therefore, the productivity and service sections of the organization should support their employees and pay more attention on improving the skills in using KMS more effectively. This is a crucial factor that leads to the success of the organization. Our results support Venkatesh *et. al.*, (2003) in that acceptance of technology and applying KMS related to behavior of users can impact three aspects including performance expectancy, effort expectancy, and social influence. Previous research indicated that performance expectancy and effort expectancy improved the process of KMS by acceptance and utilization of a technology resulting in the ability of competition with other business. We also agree with Lewellen *et. al.* (2014) and Fretwell *et. al.* (2014) which suggested that KMS is a key resource for storing and retrieving information that facilitates tasks and work routines. The movement of knowledge across individual and organizational boundaries into repositories and into organizational routines and practices is ultimately dependent on employees' knowledge-sharing behaviors. Knowledge management strives for effective capture and application of organizational knowledge, a valuable resource that is imperative in sustaining an organization. In an effort to better achieve knowledge management initiatives, consideration of factors influencing adoption and usage of KMSs are of great interest (Hester, 2010). The current study found a significant correlation between KMS and factors that influence the use of knowledge management.

The results of the in-depth interviews further confirmed that usage of KMS both in productivity and service sections support the gain of advantages over their competitors. To effectively implement KMS, the organizations require expertise and specialist teams that can provide advice about the system throughout the period of KMS usage. Therefore, factors which influence the technology relate to work problems as well as the improvement of organization.

The test of hypothesis H5 suggested that behaviors of users in the organization are important for knowledge management. Those behaviors include

1. the attitude on KMS technology,
2. the ability of using KMS,
3. the concern of using KMS,
4. intention behavior of KMS usage, and
5. the behavior of using KMS for making decisions in the organization.

Moreover, businesses are aware of using KMS for planning and organization of resources.

Venkatesh *et. al.* (2003) suggested that attitudes toward technology, self-efficacy, and anxiety were key indicators of behavior, feeling and response of KMS users. Understanding KMS in the organization indicates the confidence, ability, and skills of users. In addition, development of IT-based systems will support and enhance knowledge creation, application, transfer and storage/retrieval processes in the organization (Alavi and Leidner, 2001). The response from the head of knowledge management further confirms the importance of behavior of users. The organizations which had no policy of using KMS may adversely affect the behavior of employees and users. Some organizations have a negative opinion on using KMS, *e.g.*, that the system is complicated and is a burden on their time. Thus, the regulations of organizations are a crucial element that will drive the success of KSM usage in an organization.

There are several limitations on the use of KMS in organizations. Firstly, the KMS used in the organizations at present is not suitable for small and medium enterprise (SME). Importantly, the use of KMS requires high-cost technology in order to be an effective system. Lack of KMS specialists is also an important limitation in SME. Secondly, the policy on KMS in organizations is not clear because of the changes of management. This will lead to unstable KMS usage. The relation between KMS and the organizational culture is changing at present. The use of new developing software needs to be investigated in the future research to improve the efficiency of KMS usage in Thai organizations. Better understanding of KMS in organizations is a key element that will drive the development of the country in the future.

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## REFERENCES

- Ajzen, I. (1991), The theory of planned behavior. *Organizational behavior and human decision processes*, 50(2), 179-211.
- Alavi, M., and Leidner, D. E. (2001), Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS quarterly*, 107-136.
- Davis, F. D., Bagozzi, R. P., and Warshaw, P. R. (1989), User acceptance of computer technology: a comparison of two theoretical models. *Management science*, 35(8), 982-1003.
- Fretwell, C. E., Lewis, C. C., and Ryan, J. (2014), An Examination of the Role of Social Influence and Organizational Hierarchy on Knowledge Management System Usage.
- Hart, S. L., and Dowell, G. (2010), A natural-resource-based view of the firm: Fifteen years after. *Journal of management*, 0149206310390219.
- Hester, A. J. (2010), *A comparison of the influence of social factors and technological factors on adoption and usage of knowledge management systems*. Paper presented at the System Sciences (HICSS), 2010 43rd Hawaii International Conference on.
- Kijsanayotin, B., Pannarunothai, S., and Speedie, S. M. (2009), Factors influencing health information technology adoption in Thailand's community health centers: Applying the UTAUT model. *International journal of medical informatics*, 78(6), 404-416.
- Lewellen, M., Hooper, V., and Oliver, G. (2014), *The Impact of Knowledge Interpretation and Organizational Context on the Use of Electronic Recordkeeping Systems*.
- Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D. (2003), User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.