An Empirical Study of the Acceptance and Use of Knowledge Management Systems in Taiwanese Insurance Industry
Chih-Yao Wang[*], Taiwan [1], Jung-Chi Pai, Taiwan[2]

[1]Graduate Institute of Business Management in Service Industry, Takming University of Science and Technology, Taiwan

[2]Dept. of Business Administration, Takming University of Science and Technology, Taiwan

Email of Contact Author: chihyao0502@hotmail.com

Abstract

The main purpose of this study is to explore the acceptance and use of knowledge management systems by survey method. Furthermore, the proposed research model is built on the basis of unified theory of acceptance and use (UTAUT). Data has collected by a questionnaire survey sent to the employees of insurance industry who have the experiences in using knowledge management systems in Taiwan. The implications of the findings for practice are discussed. Moreover, this study will provide a valuable reference for business managers who are initiating or conducting the implementation of knowledge management systems in the knowledge-based economy era, and for researchers interested in the acceptance and use of e-business applications.

Keywords: Knowledge management systems, Unified theory of acceptance and use (UTAUT), Insurance industry

1. Introduction

With the rapid progress of internet applications and information technology, e-business has gradually become the focus that enterprises pay attention to in knowledge-based economies. Many enterprises have implemented innovative e-business systems such as enterprise resource planning (ERP), customer relationship management (CRM), knowledge management (KM), and supply chain management to enhance competitiveness. The development and application of knowledge management systems has been considered as an important issue for researchers and practitioners. Additionally, the financial industry is one of the most important industries in Taiwan with significant contributions to economic growth, and to which the insurance industry is part of. According to the statistical analysis of Directorate General of Budget, Accounting and Statistics, Executive Yuan, Taiwan, at the end of 2010 the total assets of the insurance industry had reached 11.03 trillion NTD, accounting for all financial institutions to assets ratio was 24.55%, indicating their critical importance. Knowledge management systems have been studied extensively in previous research. The development and applications of knowledge management systems have received growing attention from a conceptual and technical perspective. Empirical studies relating to the acceptance and use of knowledge management systems from a unified theory of acceptance and use (UTAUT) in insurance industry has been paid little attention.

This study explored the acceptance and use of knowledge management systems with survey methods. The proposed research model was built on a unified theory of acceptance and use (UTAUT). Questionnaire survey was conducted on employees of insurance companies with experiences using knowledge management systems in Taiwan. The managerial implications of the findings were discussed, and the results were provided as references for business managers that are initiating or conducting the implementation of KMS in knowledge-based economies, and for researchers interested in the acceptance and use of e-business

applications.

This study used UTAUT to explore the acceptance and use of KM systems in the insurance industry. The aims of this paper are threefold:

(1) Understanding the insurance industry status with knowledge management systems.

(2) Analyzing variables with UTAUT and reorganizing key factors affecting user acceptance for newest information technologies and realizing user behavioral intention by employing KM systems.

(3) Providing valuable references for businesses that intend to implement or upgrade to e-business systems in the future.

2. Literature review

2.1 Knowledge management systems

Knowledge management can be defined as organizational ''efforts designed to (1) capture knowledge; (2) convert personal knowledge to group-available knowledge; (3) connect people to people, people to knowledge, knowledge to people, and knowledge to knowledge; and (4) measure that knowledge to facilitate management of resources and help understand its evolution'' (O'Leary, 2002). Knowledge management means a systematic knowledge management process or procedures (Hsu, 2009). KM can be seen as a means of developing organizational effectiveness and competitiveness with an approach for identifying, capturing, creating, and applying knowledge to improve competitiveness through new innovative KM strategies (Grizelj, 2003). KMS focus on bringing together explicit knowledge that exists in an organization, the knowledge that can be easily documented and shared (Sambamurthy and Subramani, 2005). Knowledge management system for the organization of knowledge management information systems are related to the future use of information technology support for organizational knowledge innovation, storage retrieval, transfer and application of the system. The main objectives must include: 1) the coding and sharing of best practices; 2) the creation of corporate knowledge directories; and 3) the creation of knowledge networks.

2.2 Unified theory of acceptance and use of technology (UTAUT)

For past studies, technology acceptance model (TAM) (Davis, 1986) was used to analyze a variety of acceptance behavior of information technology. Due to its high level of reliability, various empirical studies had been greatly improved. In 2000, Venkatesh and Davis proposed the newest theory of TAM: The TAM 2 research scheme. In 2003, Venkatesh, Morris and other scholars offered the UTAUT, linking up theory of rational action (TRA), technology acceptance model (TAM), motivational model, theory of planned behavior (TPB), theory combined with TPB and TAM, model of PC utilization, innovation diffusion theory and social cognitive theory. Within the UTAUT, there are four major dimensions, such as performance expectancy, effort expectancy, social expectancy and facilitating expectancy. The structure of UTAUT theory is shown in Figure. 1.
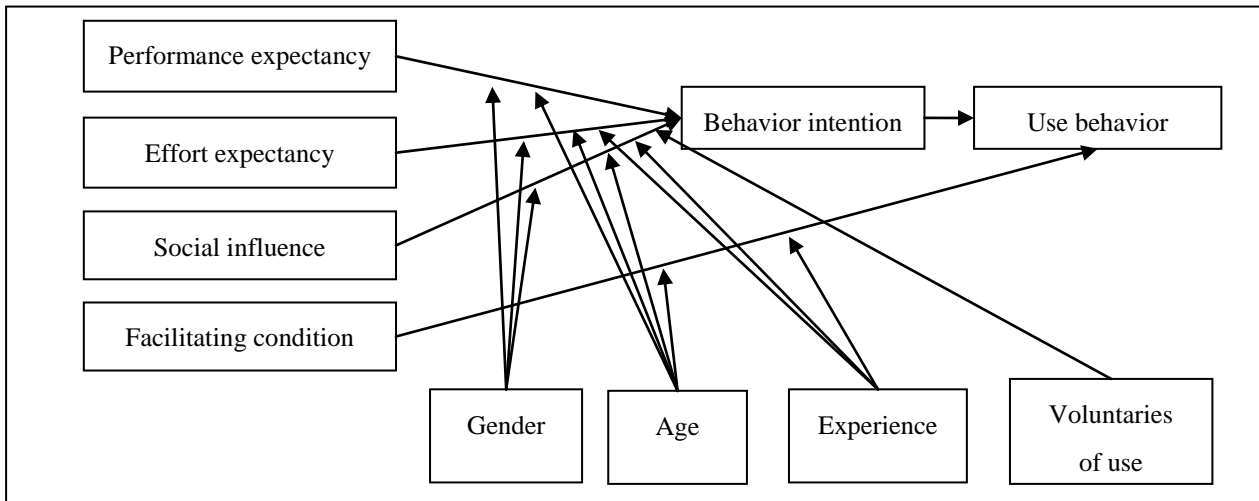
Figure. 1. Unified theory of acceptance and use of technology (source: Venkatesh et al., 2003).

Researchers of information technology have developed many sophisticated theoretic frameworks on how and why people were willing to adapt to the latest information technology.

3. Research models and hypotheses

This research employed the UTAUT theory, as proposed by Venkatesh, Morris, Davis, and Davis (2003), as main basis of the study. We aim to explore and make the empirical study on cause-and-effect relationship for: Performance expectancy, effort expectancy, social expectancy, Facilitating condition, in relations to insurance behaviour with intention of using the knowledge management system. The research model can be given in Figure.2.
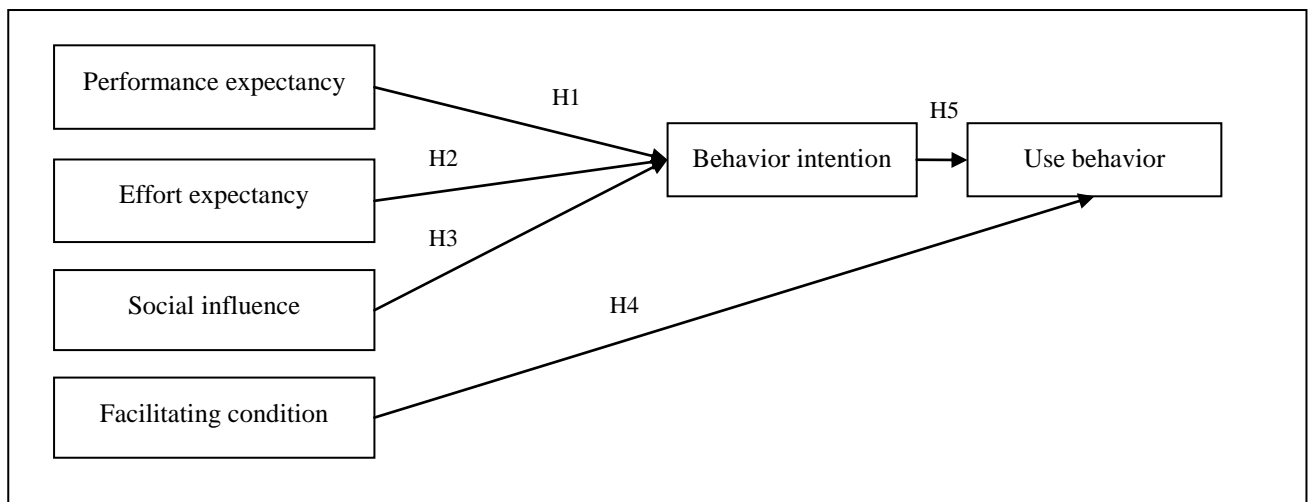

Figure. 2. Research model.

According to pre-set research purpose and the relationship of each dimension in the research model, the authors intend to propose following hypotheses in order to conduct the empirical study. The authors use the UTAUT to explore how the ''Behaviour Intention" of KMS will be affected by three dimensions of ''Performance Expectancy", ''Effort Expectancy" and ''Social Expectancy". Finally, the determination of whether ''User Behaviour" will be influenced by ''Behaviour Intention" and ''Facilitating Condition".

Venkatesh et al.(2003) suggested that "Performance expectancy (PE)" refers to the extent to which the user believes that usage of new technology or systems can enhance work performance. In this study, the system explored is the knowledge management system, which classifies knowledge within the enterprise, such as the content of education and training and experiential knowledge, in order to construct a comprehensive organizational database, in turn, achieving knowledge sharing and feedback. In other words,

it explored the usefulness sensed by users through using knowledge management systems in enhancing work performance. Davis (1993), Venkatesh et al. (2003), Bruner II and Kumar(2005), and Chiu & Wang (2008) suggested that when the usage of information technology can enhance some behaviors or work performance, there would be higher acceptance of information technology. Thus, this study argues that when employees in the insurance industry believe that usage of the knowledge management system would enhance their work performance, it would strengthen their usage intention of the knowledge management system.

H1: Performance expectancy significantly and positively affects behavioral intention.

Venkatesh *et al*.(2003) suggested that "Effort expectancy (EE)" refers to the personal degree of ease when using the new system. According to Venkatesh *et al*. (2003) and Chiu & Wang et al.(2008), when little personal effort is exerted in learning the type of information technology to be used, there is higher acceptance of such information technology. Thus, when employees in the insurance industry think the knowledge management system is easy to operate, they would have higher intention to use the knowledge management system. This paper argues when employees in the insurance industry believe that there is a low expectation for efforts in using the knowledge management system, they would have higher intention to use it. Other studies have shown that there is an interference effect of gender, age, and usage experience in the effort expectancy of the behavior intention in using information technology (Venkatesh & Morris, 2000; Lynott & McCandless, 2000; Venkatesh *et al*., 2003; Anderson et al., 2008).

H2: Effort expectancy significantly and positively affects behavioral intention.

Venkatesh *et al*.(2003) suggested that "Social influence (SI)" refers to the extent to which an individual perceives other important people believe that the individual should use the new system. Agarwal and Prasad(1997), Venkatesh et al. (2003), and Chiu & Wang (2008) found that when users perceive that the new system is easy to learn and operate, they would have higher acceptance for such information technology. Thus, this study argues that when employees in the insurance industry believe there is high social influence in using the knowledge management system, they would have higher intention to use the knowledge management system.

H3: Social influence significantly and positively affects behavioral intention.

According to Venkatesh *et al*.(2003), "Facilitating conditions (FC)" refers to the extent to which an individual believes that existing technology or organizational framework, and related equipment can support usage of the new system. When the users believes that they have the ability to use the new information technology or system, and when there are more related resources, they would use it to a greater extent and more frequently (Taylor & Todd, 1995; Venkatesh *et al*., 2003; Chiu & Wang, 2008). Thus, this study argues that when employees in the insurance industry perceive that they are able to use the knowledge management system, and when they have higher understanding for the system, it would affect whether they would actually use the knowledge management system in the course of work.

H4: Facilitating condition significantly and positively affects user behavior.

Fishbein and Ajen (1975) indicated that "Behavior intention (BI)" refers to the intentions toward something determined by personal subjective determination of the pros and cons of a certain behavior. In this study, behavior intention refers to the intention of employees in the insurance industry to use the knowledge management system. Related studies have shown that if the users' intention to use some type of information technology is high, the usage frequency or number of times would also be high (Lynott & McCandless, 2000; Venkatesh & Morris, 2000; Venkatesh et al., 2003; Chiu & Wang, 2008).

H5: Behavioral intention significantly and positively affects user behavior.

4. Research methodology

4.1. Samples and data collection

Questionnaire survey was conducted on staffs of enterprises using KMS. A total of 500 questionnaires were distributed to insurance companies in Taiwan, and 300 valid samples were retrieved, with a valid return rate of 60%. All subjects were confirmed as possessing actual usage experience regarding knowledge management systems.

4.2. Measurement development

This study used original theoretic questions of UTAUT, which refer to the character of knowledge management system, as the basis. The questionnaire took into consideration of the ideas proposed by relevant school professors that are accredited with information management background and the opinions of industrial operators to develop the final questionnaire. Thereafter ideas and references being offered by industrial operators. Measurement items were based on a 7-point Likert scale, from strongly disagree (=1) to strongly agree (=7).

4.3. Pre-testing

When the initial script was designed, pre-test was conducted to avoid any vagueness or fuzziness in wording, which may affect the reliability and validity of the survey. The pre-test subjects included four professors of information management, three industrial supervisors who had used knowledge management systems, and four post-graduate researchers (Master's degree). After modifying unclear and grey areas of the questionnaire, a formal survey was conducted.

5. Results

5.1. Sample characteristics

Of the 500 questionnaires distributed, 360 were returned; an effective response rate of 72%. Regarding gender, male samples were the majority of total samples; the percentage of males was around 47%. For age distribution: 79% under 40 years old. Concerning education level, 64% was above university degree. From the vocational angle, 77.6% qualified with a six-to-ten year working experience. Concerning computer usage experience, those who have accumulated more than six years, occupied the most, at about 74.3%. Nearly half of the samples used KM system occasionally; amongst whom, those using no more than 5 h/week, the percentage was 65.3%. Having the habit of using KM system, within the past three years, showed up at 30.6%.

5.2 Reliability and Validity of Research Variables

Internal consistency (Cronbach's alpha) was calculated in order to assess the reliability of all constructs (refer to Appendix A). As shown in Table 1, the results in our study indicate that all the constructs are greater than 0.7 except the "use behavior" construct. The constructs are therefore considered to exhibit adequate reliability (Nunnally, 1978).

Factor analysis of the items comprising each construct determined the construct validity. Principal component factor analysis with VARIMAX rotation (refer to table 2) determined if all items measuring a construct cluster together, and selection of factors with eigenvalues greater than one. Subsequent analyses

did not cover items with loadings of less than 0.6 on any factor. Factor analyses results for independent variables confirm that each construct is distinct from other constructs.

Table 1. Reliability coefficient of research variables

Variables	Number of items	Cronbach's α
Performance Expectancy	4	0.86
Effort Expectancy	4	0.90
Social Influence	4	0.90
Facilitating Condition	5	0.79
Behavioral Intention	3	0.88
User Behavior	3	0.63

Table 2. Factor Analysis (Varimax Rotation)

Factors	Acronym	communalities	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
Performance Expectancy	PE1	.718	.848					
	PE2	.820	.906					
	PE3	.829	.911					
	PE4	.521	.722					
Effort Expectancy	EE1	.786		.833				
	EE2	.606		.899				
	EE3	.840		.862				
	EE4	.811		899				
Social Influence	SI1	.686			.887			
	SI2	.808			.779			
	SI3	.743			.916			
	SI4	.791			.901			
Facilitating Condition	FC1	.425				.652		
	FC2	.579				.761		
	FC3	.442				.665		
	FC4	.667				.817		
	FC5	.620				.788		
Behavioral Intention	BI1	.682					.826	
	BI2	.859					.927	
	BI3	.854					.924	
User Behavior	UB1	.585						.765
	UB2	.591						.769
	UB3	481						.694
Eigenvalue			2.889	3.043	3.037	2.733	2.395	1.658
Variance explained			72.222	76.086	75.918	54.657	79.838	55.260

Note: only factor loadings greater than 0.6 are show

5.3. Hypothesis Testing

The hypothesized relationships depicted in research model were testing using linear regression analysis. As predicted by H1, performance expectancy is non-significant and not positively affecting behavioral intention (b = 0.94, thus, no influence on intention). As predicted by H2, effort expectancy shows a significant and positively affect on behavioral intention (b = 0.22, P < 0.001); consequently, H2 is supported. H3 is also supported since Social Influence shown a significant positive affect on behavioral intention (b = 0.38, p < 0.001). As predicted H4, facilitating condition significantly and positively affect user behavior (b = 0.16, p < 0.001). Moreover, H5 behavioral intention significantly and positively affect user behavior (b = 0.45, p < 0.001).
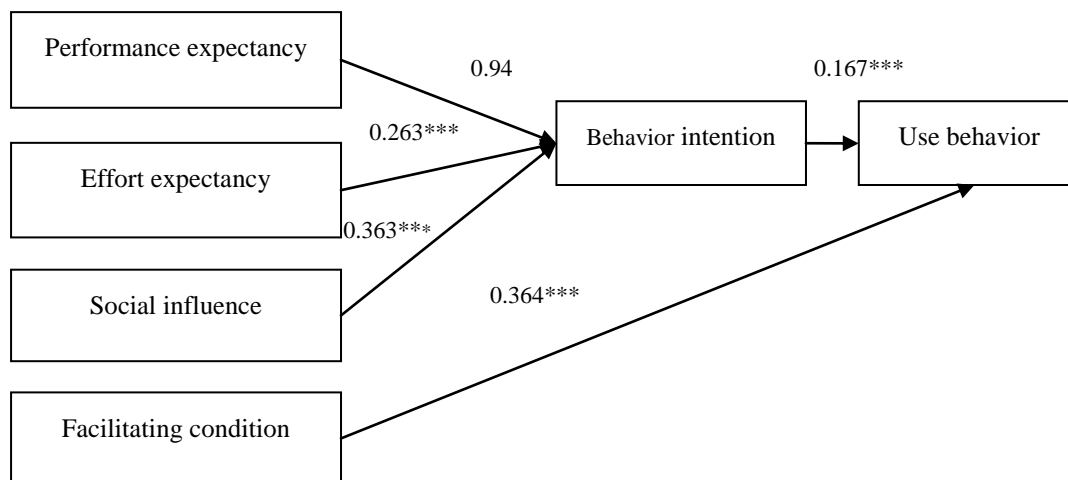
Note: * p<0.05, ** p<0.01, *** p<0.001

Figure. 3 Results of Hypothesis Testing

6. Discussion and Conclusions

In past studies, performance expectancy has shown positive influence on user's behavioral intention. However, the insurance industry does not concur with any positive effects of using the KM systems. The reason could be, that by using the KM systems, one can only handle issues concerning sales and operations, nevertheless, the same system dawns no apparent effect regarding performance merit bonus or promotion matters. Hence, it has no influence on performance expectancy.

In the KM system, effort expectancy has shown positive effect on user behavior. If staff members feel that the KMS is easily learned and operated, their willingness to employ it will be enhanced. From the empirical study, it was also found that staff members, when feeling the KM system is easily learned and operated, will also sense the system being able to assist them regarding better job performances.

In the KM system, social expectancy showed positively effects on user behavior. From the empirical study, it can be found that the KM system will be easily accepted by enterprises when someone with power and authority from within the company, strongly advocate to conduct use of the KM system.

From the result shown in the empirical study, the facilitating condition has positive influence on actual usage. If staff were well trained and educated whilst the enterprise is implementing the KM system, it will positive effect of KMS use. For other enterprises who had developed their own KM systems, behavioral intention there of has obviously been enhanced, since there were internal system engineers and educators, who could have quickly handled any technological problems.

Although the authors conducted the empirical study by using the UTAUT theory, the original variance in the theory was not explored in this research; thus, it might have influenced final effects. For future researches, the authors could also combine with other theory, or expand research scope, in order to experience with broader references and directions. This research using the insurance industry as the subject; for future researches, the authors can use another industry, which can be explored and compared, in order to determine whether differentiations exist between technology acceptance and behavioral intention.

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