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CRITICAL SUCCESS FACTORS FOR KNOWLEDGE MANAGEMENT IMPLEMENTATION IN LIFE INSURANCE ENTERPRISES

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ABSTRACT

This study investigates the critical success factors for knowledge management implementation via empirical surveys among Taiwan's life insurance enterprises using structure equation modeling. We find that individual characteristics, knowledge management characteristics and organizational characteristics significantly affect knowledge management implementation. Environments significantly influence knowledge management characteristics and organizational characteristics. Information technology infrastructure significantly affects knowledge management characteristics. This study provides directions for future research and practical implications for the life insurance business in having knowledge management into place.

JEL: D83, M10

KEYWORDS: Critical Success Factor, Knowledge Management, Structural Equation Modeling, Life Insurance

INTRODUCTION

The knowledge spillover engaged in a business or personal relationship with a party in the same or similar industry can often encourage innovative activity (Sarit and Aaron, 2012). The nature of knowledge has been described as "justified true belief" (Nonaka and Takeuchi, 1995). Knowledge, originating from creativity, individual experiences and organizational learning, appears in written documents and in the routines, tasks, processes, rules and values that shape an organization (Bhagat et al., 2002).

Zheng et al. (2010) suggest that practices of knowledge management (KM) are context-specific and can influence organizational effectiveness. Managing knowledge effectively can provide businesses with several competitive advantages, including average level of KM, service quality improvement, cost and time reductions, strengthened relationships among colleagues and quicker knowledge creation (Su and Lin, 2006). Liao et al. (2011) advocate that KM plays an essential role in organizing and utilizing important knowledge available to decision makers wherever and whenever it is necessary. Huang (2011) suggests that the implementation of KM has a positive and significant influence on organizational performance. KM is referred to manage the corporation's knowledge through a specified process for acquiring, organizing, sustaining, applying, sharing and renewing the knowledge of employees to enhance organizational performance and create value (Alavi and Leidner, 2001). In this study, KM is defined as the creation, extraction, transformation and storage of the correct knowledge and information in order to design better insurance policy, modify action and deliver results for both the employees and organizations in the life insurance business (Horwitch and Armacost, 2002).

Critical success factors (CSFs) refer to the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department, or organization (Alazmi and Zairi, 2003; Rockart, 1979). CSFs are the crucial factors or parameters required for ensuring the continued success of an organization (Ranjan and Bhatnagar, 2008). Hsu et al. (2013) propose that CSFs represent those managerial areas that can bring a competitive edge to operational performance. As KM encompasses a wide range of perspectives, the successful implementation of KM is dependent on several critical factors. Stankosky et al. (1999) propose a 4-pillar KM model, in which leadership, organization, technology and organizational learning are identified as the four CSFs for successful KM operation. Leadership is suggested as the most important to drive values for knowledge creation and sharing hence cultivating the business strategy. Organizational structure and culture are necessary to be considered before initiating KM in the workplace. Technology works as a vehicle to allow the flow of knowledge in the organization. Creating a learning community is necessary for promoting any KM initiatives (Stankosky, et al., 1999). McDermott and O'Dell (2001) recommend that the approach, tools and structures to support knowledge sharing should match the style of the organization and networks since the channel of sharing knowledge should be built on the existing networks that people use in their daily work.

The life insurance business in Taiwan has been developing rapidly in the last decades and playing an important role in Taiwan's financial industries. The total asset of the life insurance industry up to 2013 was NT$ 16.5 billion or 28.41% of the total assets of financial institutions in Taiwan. The premium income of Taiwan's life insurance industry in 2012 was US$ 72,521 million and ranked top 9 globally (Taiwan Insurance Institute, 2013). It is important to convey the knowledge and services to the customers via employees and associated departments in the life insurance enterprises, and thus the life insurers should apply KM to accumulate core knowledge, build corporate intelligence and gain competitive advantages (Huang et al. 2011).

Little attention has been paid to address the CSFs for implementing KM in the life insurance sector. Therefore, the research questions are as follows: (i) what are the main factors for KM in the life insurance sector? (ii) what are the primary KM activities in the life insurance sector? and (iii) what are the relationships between these factors and KM activities in this context? To address the research questions, we initially reviewed the literature on KM and relevant empirical studies extensively, and conducted empirical surveys with a preliminary qualitative field study among the life insurance enterprises in Taiwan.

The next section presents the literature review with previous research. The next section presents research methods. Followed are data analysis and results in which measurement model and the structural model assessments are presented. Finally, discussions and conclusion with limitation and future research directions are presented.

LITERATURE REVIEW

The implementation of KM encompasses the managerial efforts in activities of acquiring, creating, storing, sharing, diffusing, developing, and deploying knowledge by individuals and groups (Zheng et al., 2010). KM processes, including acquisition, conversion, application, and protection, along with a knowledge infrastructure of technology, structure and culture are identified as critical organizational capabilities that would positively and significantly influence the organizational effectiveness (Gold et al., 2001). Shin et al. (2001) propose a KM value chain, consisting of four major activities: knowledge creation, knowledge storage, knowledge distribution and knowledge application. Holsapple and Singh (2001) identify a knowledge chain model which comprises the primary activities, such as acquisition, selection, generation, internalization and externalization, and the secondary activities (e.g., leadership, coordination, control and measurement).

Yang (2004) reports that most of the life insurance enterprises in Taiwan focus on information technology (IT) in implementing KM, and the life insurers should employ the concept and applications of innovation in putting KM into place. Grover (1993) indicates that environment factors (e.g., industry variables and customer demands) influence the adoption of new systems. Industrial and environmental influences are one of the four major determinants in system diffusion (Belassi and Fadlalla, 1998). Holsapple and Joshi (2000) point that, environmental influences, such as fashion, markets, competition, as well as governmental, economic, political, social and educational climate, play important roles in the success of KM in organizations.

Ajzen and Fishbein (1980) indicate that the demographic variables, such as socioeconomic status, education and personality trait, are the external variables of behaviors. Kwon and Zmud (1987) identify individual differences factors, including job tenure, cosmopolitanism, education and role involvement, as the main forces to successfully introduce technological innovations into organizations. Lo (2003) verifies that individual background variables, including age, education, position and tenure, significantly influence the user's satisfaction and performance in Taiwan's life insurance context.

Technology is identified as one of the main infrastructure capabilities in KM as technology can effectively integrate the previously fragmented flows of information and knowledge (Gold et al., 2001). Alavi and Leidner (1999) propose that managers' ascription of KM merge to two IT perspectives: the characteristics of information (e.g., readily accessible information, actionable information and reducing the overload of information) and various information systems, including data mining, data warehouses and decision-making tools. Chiu (2004) suggests that the functional characteristics of the system affects the users' perceived usefulness and perceived ease of use in the life insurance sector.

Davenport (1996) posits that "KM requires knowledge managers" as the high-level principles to manage knowledge effectively. Successful KM programs require motivational schemes and some arm-twisting from senior executives (Davenport and Glaser, 2002). Alavi and Leidner (2001) emphasize that knowledge transfer channels are the focal element in transferring knowledge. Directives (e.g., rules and procedures), organizational routines (e.g., coordination patterns and interaction protocols) and self-contained task teams for solving problems in situations of task uncertainty are proposed to be the three primary mechanisms for knowledge integration to create organizational capability (Grant, 1996).

Rogers (1995) suggests that organizational characteristics, such as size and structure, will influence the innovativeness of an organization. It is crucial that the organizational structures are designed for flexibility so that they encourage sharing and collaborating knowledge across boundaries within organizations (Gold et al., 2001). Although new technologies can be the more efficient means of knowledge creation and transfer, in the absence of an explicit strategy to better create and integrate knowledge, systems which facilitate communication and knowledge sharing have only a random effect at best (Alavi and Leidner, 1999).

Chait (1999) emphasizes that cultural realities act as barriers or enablers for KM. A knowledge-friendly organizational culture is proposed as one of the most important conditions leading to the success of KM initiatives in organizations (Davenport and Prusak, 1998). Gold et al. (2001) signifies that organizational culture could be the most significant hurdle to effective KM. KM projects should have the aim to develop a knowledge-intensive culture by encouraging and aggregating behaviors such as knowledge sharing (as opposed to hoarding) and proactively seeking and offering knowledge (Davenport and Prusak, 1998). Alavi and Leidner (1999) sustain that the culture of teamwork and knowledge sharing is one of the important KM capabilities needed in organizations.

DATA AND METHODOLOGY

This study initially identified the factors and associated variables affecting successful KM based on comprehensive literature review (Huang et al., 2011). The research modified the factors and variables via a qualitative filed study using content analysis (Berg, 2004). A questionnaire was developed based on the literature review and modification from the field study. The instrument items were measured on a seven-point (1-7) Liker scales, in which 1 indicated that the respondent strongly agreed with the statement and 7 indicated that the respondent strongly disagreed with the statement respectively. The questionnaire was pilot tested among 40 employees in a life insurance company and revised to ensure content validity. Finally, this study, via cross-sectional research approach, selected eight life insurance enterprises to be the participant organizations. Finally, this study undertook the main survey to 605 subjects among the life insurance enterprises in Taiwan. The main survey collected 362 valid responses (i.e., a 59.8% effective response rate).

A confirmatory factor analysis (CFA) was performed to specify the structure between observed indicators and latent constructs, and tested the validity of measurement model. Subsequently, structural equations among latent constructs were examined to test the conceptual structural equation model (SEM). The CFA and SEM procedures were conducted utilizing AMOS software.

RESULTS

Table 1 presents the demographic characteristics of the respondents in the main survey. The majority of them were in the age group of 31 to 40; only 0.6% of the respondents were 20 or below, 29.8% in 21 to 30 and 16.3% were over 41. Most of the respondents' educational background was bachelor (57.7%), followed by technical school (23.5%). 59.9% of the respondents had over five year's seniority, in which 21.5% had 5-10 year's seniority and 6.9% had seniority of more than 15 years.

Table 1: Demographic Characteristics

	Characteristics	No.	Percentage
Age	20 or below	2	0.6%
	21-30	108	29.8%
	31-40	192	53%
	41-50	58	16%
	51 or above	1	0.3%
Gender	Male	131	36.2%
	Female	229	63.6%
Seniority	Less than 2 years	77	21.3%
	2+ to 5 years	68	18.8%
	5+ to 10 years	114	31.5%
	10+ to 15 years	78	21.5%
	More than 15 years	25	6.9%
Education	High school	20	5.5%
	Technical school	85	23.5%
	Bachelor	209	57.7%
	Master degree or above	47	13.0%
Position	Office manager	94	23.5%
	Staff	277	76.5%

Table 1 presents the characteristics of the respondents who participated in the main survey. The subjects in the main survey comprised of 36.2% male and 63.6% female. 57.7% of the respondents' educational background was bachelor. Their positions were 23.5% office managers and 76.5% staff respectfully.

This study undertook CFA to confirm the factor loadings of the seven constructs (i.e., environments, individual characteristics, KM characteristics, organizational characteristics, IT infrastructure, cultural factor and KM implementation) and assess the model fit. The model adequacy was assessed by the fit indices suggested by Hair et al. (1998) and Jo¨reskog and So¨rbom (1996). Convergent validity of CFA

results should be supported by item reliability, construct reliability, and average variance extracted (Hair et al., 1998). As presented in Table 2, t-values for all the standardized factor loadings of items are significant ($p < 0.01$). Construct reliability estimates ranged from 0.45 to 0.77, which indicated a satisfactory estimation. The average extracted variances of all constructs ranged between 0.76 and 0.91, which exceeded the suggested value of 0.5. The measurements of these items are summarized in Appendix A. The results indicated that the measurement model had good convergent validity and thus the *proposed measurement model was reliable and meaningful to test the structural relationships among the constructs*.

Table 2: Convergent Validity

Construct	Item	Item reliability	Construct reliability	Average variance extracted
Environments	EI1	0.715	0.4896	0.7926
	EI2	0.763		
	EI3	0.672		
	EI4	0.643		
Individual Characteristics	IN1	0.616	0.5624	0.7916
	IN2	0.821		
	IN3	0.796		
KM Characteristics	KM1	0.807	0.6192	0.89
	KM2	0.754		
	KM3	0.852		
	KM4	0.822		
	KM5	0.689		
Organizational Characteristics	OR1	0.568	0.4477	0.7617
	OR2	0.691		
	OR3	0.78		
	OR4	0.618		
IT Infrastructure	IT1	0.833	0.6952	0.9012
	IT2	0.847		
	IT3	0.823		
	IT4	0.832		
Cultural Factors	CU1	0.835	0.7653	0.9071
	CU2	0.861		
	CU3	0.926		
KM Implementation	KP1	0.818	0.7482	0.8988
	KP2	0.834		
	KP3	0.938		

Table 2 presents the item reliability, construct reliability and average variance extracted of the CFA analysis. It indicates that t-values for all factor loadings of items are significant (p<0.01) and the construct reliability estimates are satisfactory. The average variances extracted are higher than the suggested value of 0.5.

The structural model was estimated with a maximum likelihood estimation method. The fit indices of the structural model are summarized in Table 3. The overall model indicated that $\chi^2 = 688.42$, d.f.=287, and was significant at p <0.001. Technically, the p-value should be greater than 0.05, i.e. statistically insignificant, to indicate that the model well fitted the empirical data. As the χ^2 value is very sensitive to sample size, it frequently results in rejecting a well-fitted model when sample size increases.

Therefore, in practice, the normed χ^2 (i.e. χ^2 /d.f.) has been recommended as a better goodness of fit than the value. In order to examine the model fit, this study used sample size dependent (rather than sample size independent) measures of goodness of fit. The χ^2 /d.f. ratio of less than 5 was used as the common decision rule of an acceptable overall model fit. The normed χ^2 of model was 2.399 (i.e. 688.42/287), indicating an

acceptable fit. Other indicators of goodness of fit were as follows: CFI=0.929, RMSEA=0.062, GFI=0.873, AGFI=0.844, NFI=0.885, NNFI=0.919 and SRMR=0.086.

Table 3: Fit Indices for Measurement and Structural Model

Fit indices	Recommended Value	Measurement Model	Structural Model
x^2/df	<3.0	1.465	2.399
CFI	>0.9	0.978	0.929
RMSEA	<0.08	0.036	0.062
GFI	>0.90	0.924	0.873
AGFI	>0.80	0.903	0.844
NFI	>0.90	0.933	0.885
NNFI	>0.90	0.973	0.919
SRMR	<0.09	0.035	0.086

Table 3 presents the fit indices for measurement model and structural model respectively. The model-fit indices should reach accepted standards before judging model fitness (Hair, et al., 1998). Table 3 shows that every model-fit index exceeds the recommended value proposed by previous studies.

Figure 1: Hypotheses Testing Results

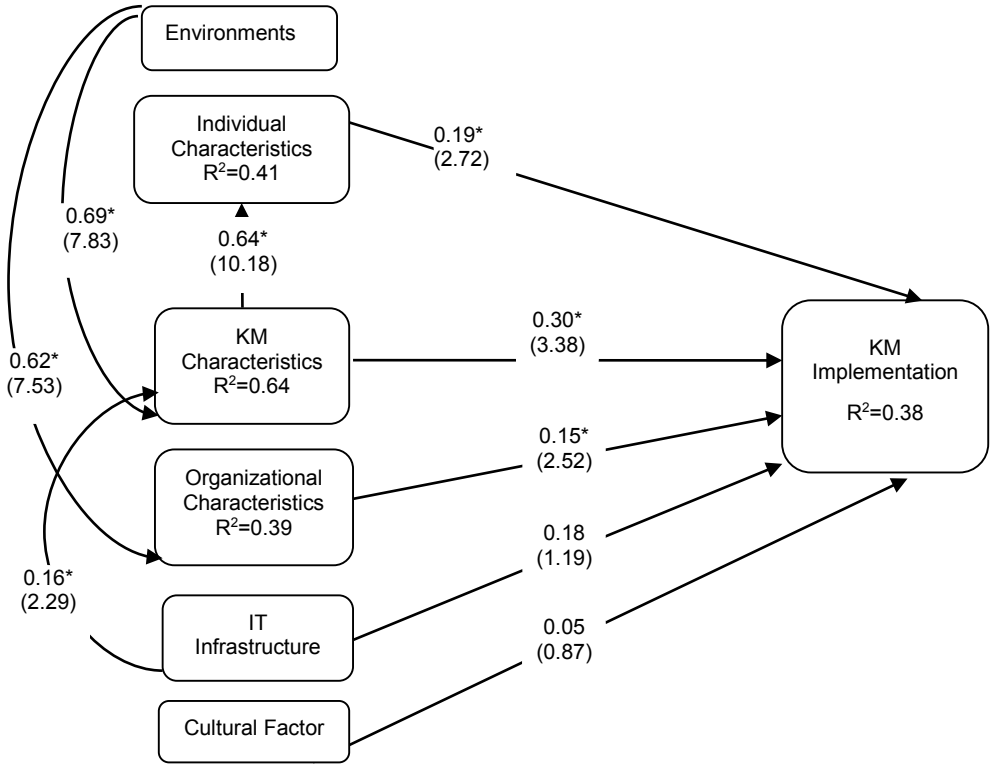

Figure 1 presents the properties of the casual paths, including the standardized path coefficients, path significance and variance explained by each path in the structural model. It is shown that environments significantly influence KM characteristics and organizational characteristics. IT infrastructure significantly affects KM characteristics. Individual characteristics, KM characteristics and organizational characteristics significantly affect KM implementation.

Figure 1 presents details regarding the parameter estimates for the model. Environments significantly affect organizational characteristics (γ1=0.62, t-value=7.53). Environments and IT infrastructure significantly affect KM characteristics (γ2=0.69, t-value=7.83; γ3=0.16, t-value=2.29). KM characteristics have significant effects on individual characteristics (γ4=0.64, t-value=10.18). Individual characteristics, KM characteristics and organizational characteristics significantly influence KM implementation (γ5=0.19, t-value=2.72; γ6=0.30, t-value=3.38; γ7=0.15, t-value=2.52).

The results reveal that individual characteristics, KM characteristics and organizational characteristics have direct effects on KM implementation. It indicates that individual characteristics, such as employees' innovativeness, work attitude and personality, play an important role in KM activities. In employing KM in the life insurance business, it is generally initiated by the organizations via recognizing the needs or problems, developing KM plans or projects, and transmitting the concept and value of KM (Rogers, 1995).

The items identified from the literature and filed study show that, KM schedule and guidelines, participation of the department representatives, knowledge transfer channel and reward of KM are substantial characteristics for successful KM, and KM characteristics are found to have direct effects on KM implementation and individual characteristics. It is also important for the managers to realize that organizational size, structure, strategy and policy have direct impacts on the implementation of KM. However, the impacts of environments on KM implementation are indirect through KM characteristics and organizational characteristics. IT infrastructure, which was identified as one of the main KM capabilities (Gold et al. 2001), indirectly affects KM implementation in this study. It implies that, although IT infrastructure is important in adopting KM, merely the efforts on IT are not enough. The benefits of KM should be well recognized with appropriate KM projects and support from top management.

CONCLUDING COMMENTS

Knowledge management has been recognized to be important in improving adaptability and gaining competitive advantages. However, little research is undertaken examining the CSFs for KM in the life insurance sector. This paper fills this gap via conducting a qualitative field study and quantitative surveys among Taiwan's life insurance enterprises. The collected data from the main survey were analyzed utilizing the techniques of Structural Equation Modeling. The results indicate that individual characteristics, KM characteristics and organizational characteristics have direct impacts on KM implementation. Environments indirectly influence KM implementation via KM characteristics and organizational characteristics. Information technology infrastructure indirectly affects KM implementation through KM characteristics.

This study contributes to the existing literature in that there has been little evidence found in exploring the CSFs and their relationships in affecting KM applications, particularly in the life insurance business. For life insurance enterprises, particularly those embarking on KM in Taiwan or elsewhere, this study presents the essential factors that should be taken into account to put KM into practice successfully.

As with any research, the specific service context and cross-sectional method of this study limit the interpretation of the findings. Some adjustments must be made to apply these results to other industries. However, this study provides directions for future research in exploring the CSFs for KM implementation. A comprehensive model with CSFS for KM and the effects of KM implementation on organizational performance can be investigated in future studies. Generalization of the current study would also need further examination in a broader region such as Asia or in the international setting.

APPENDIX

Appendix A: The Measurements of Items in Seven Constructs

Factor	Items	
Environments	EI1:	Industrial competition
	EI2:	Trend
	EI3:	Rules and regulations
	EI4:	High development of IT
Individual Characteristics	IN1:	Individual innovativeness
	IN2:	Work attitude
	IN3:	Personality
KM Characteristics	KM1:	Time schedule and guidelines
	KM2:	Participation of the department representatives
	KM3:	Knowledge transfer channel
	KM4:	Knowledge type
	KM5:	Reward for KM
Organizational Characteristics	OR1:	Size
	OR2:	Structure
	OR3:	Strategy and policy
	OR4:	Employee turnover rate
IT Infrastructure	IT1:	Software infrastructure
	IT2:	Compatibility
	IT3:	Function
	IT4:	Data updating and maintenance
Cultural Factor	CU1:	Team-work culture
	CU2:	Encouragement of asking for help
	CU3:	Encouragement of interaction with others
KM Implementation	KP1:	Identifying Knowledge
	KP2:	Sharing knowledge
	KP3:	Using knowledge

This table presents the measuring items of seven constructs in the measurement model.

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