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## **To establish the criterion in the evaluation of the performance for KM project**

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**Summary:** *Today many enterprises' main profit gradually relies on the innovation, which should be established on the knowledge management. Therefore, when organizations administrate the project of knowledge management, they are usually according to their own constitution and adapting themselves to the external environment. However, the cost of executing the project of knowledge management is always high, and to build up a set of effective criterion to realize the achievement of the project is significant. This research bases on the key success factors of the KM project and applies to the Analysis Hierarchy Process to calculate the importance of each criterion to establish an authentic evaluation model to the KM project.*

### **1. Introduction**

The third revolution caused by information technology: knowledge revolution begins to influence the society nowadays. The key factors to create value and wealth change from natural resources and technical tools to knowledge itself, the companies which can create value based on knowledge will be the essential component in the new economic era. Peter Drucker has proposed that knowledge will substitute land, labor, capital and equipment to be the main production tool, knowledge intense industry will become the main stream in the future, at that time, knowledge is the crucial driving force for

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escalating the production capacity and the key factor of the economic growth. Benjamin Franklin ever said that: knowledge has the highest ROI. Therefore, to achieve higher performance, it is very important for companies to know how to manage, apply, integrate, cooperate, and share knowledge effectively.

Information technology makes creating and applying knowledge effectively to be the key factors of economic growth. Knowledge economy also means that using knowledge capital as the production factor, after innovating continuously, creating value and wealth from company to nation. From this point of view, knowledge plays an important role those days. How to exploit information technology appropriately to manage and innovate knowledge and to operate it in the business environment effectively to make profit is the main topic in knowledge management. Companies can promote knowledge sharing, increase competition capabilities, accelerate innovation and lower operating cost through knowledge management, besides, it also can reduce the loss when employee leave his job.

Today knowledge management is a top issue to be concerned by each organization. Many companies has paid much attention to technology application, organization design, knowledge segmentation, knowledge sharing culture and stimulation policies to build wonderful system for knowledge management. However, professional knowledge scale and business culture are different by each organization, it's significant to choose one appropriate knowledge management project. Since each of them cost much to the company, it's necessary to establish one evaluation method to measure the achievement of the KM project, moreover, it can be used to examine it has achieved the target set before of not. This research applies the key success factors of the KM project as a start point; use AHP to analyze the importance of each criterion to set an effective evaluation system for knowledge management project.

## **2. Concept Development of the Knowledge Management**

Knowledge management is not a new concept, in 90's Peter Sange in MIT has proposed the importance of learning organization in his book; it was the first sign of knowledge management. Master of management Peter Drucker also pointed out the only way for enterprises to maintain the competitive advantage in the long term in 21 century is to innovate, and it depends on the accumulated knowledge in the company and the appropriate use of it, therefore, effective innovation comes from knowledge management. Nowadays the development of information technology and internet speeds up the reservation and share of the knowledge and makes it more convenient to execute knowledge management.

Here, knowledge is defined as the useful information which can assist with a person to a group to create intelligence and value. Knowledge management is one process to create, classify, memorize,

share and renew knowledge to produce real value through information technology. Knowledge management project is one explicit plan for organization to implement knowledge management and can be attributed to several types. However, there are three managerial targets of it are consistent: to establish knowledge data base, to modify the channel of obtaining the knowledge and to improve culture and environment.

There are many articles has explained the significance and installation process of the knowledge management systems, but it's just one course included in knowledge management. Until now, topics relative to the KM project performance evaluation and criteria establishment are still few. MAKE™ in USA has provided eight evaluation standards, management consultant company has brought up the expected effects of implementing knowledge management, including qualitative effect: the capability to deal with a contingency and quantitative effect: quality escalation, speed acceleration and cost reduction.

KMAT(Knowledge Management Assessment Tool) is applied to evaluate the influencing result after executing knowledge management in the company, based on four motivated factors in knowledge management: leadership, business culture, IT, performance evaluation, then add managerial process of knowledge management to investigate form two aspects: practice achievement and importance to obtain one figure with four dimensions. Besides, in the white book of knowledge management, defined performance index as knowledge-profit index, this is the ratio between the sum of tangible and intangible profit earned by knowledge management and the total cost spent on the installation of KM project, put more emphasis on monetary based evaluation.

APQC (American Productivity & Quality Center) accentuated each stage in the process of KM installation; the assessment will be judged by different requirements. The first stage is to promote the advantage of knowledge management, the second stage is to measure the difference between rate of progress and business culture, the third stage is to evaluate the escalation of the company efficiency, the forth stage is to weight the accommodation, the fifth stage is to examine the enhancement of the organizational competition capability, and also provides thorough analysis about the requirements in the installation process.

ASTD (American Society for Training & Development Conference) observed the progress of the KMS development in several companies such as Pricewaterhouse Cooper, put emphasis on the discussion about the method to exchange the culture between the enterprises, discovered six essential factors as followed: manager's support, objective-oriented knowledge management strategies, professional KM personnel, the stimulation of attendance motivation, continuous communication and broadcast, and measurement of the achievement, the more enterprises can attain, the more possibility of creating the knowledge sharing culture successfully.

Besides, Pr. Davenport proposed two-stages theory in knowledge management in 1999, conferred how to employ IT technology to create excellent performance in doing business and discussed the

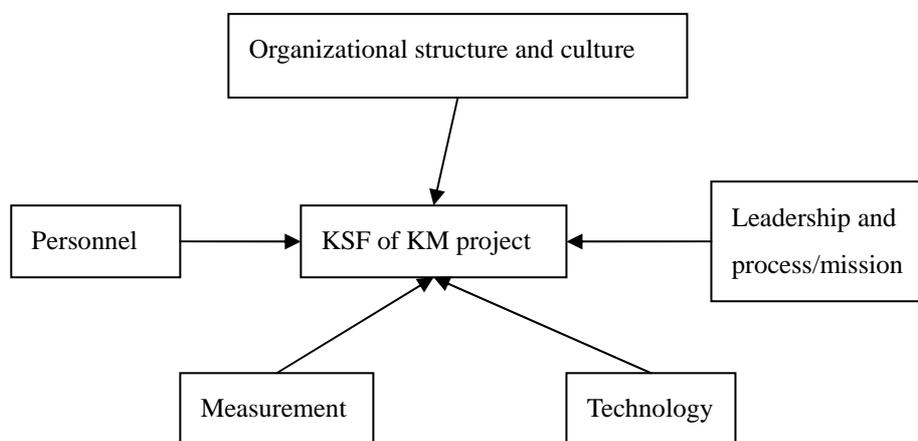
relationships among internal information, knowledge in the enterprises and eco-environment in the book “information ecology”, he also proposed that the most important element in knowledge share and creation is personnel, therefore, companies shouldn’t always focus on the information technology.

This research put emphasis on the key success factors in knowledge management, apply AHP to measure the importance of each criterion to facilitate enterprises catch the essential elements when implement the KM project and also can help to evaluate the performance of the achievement in the future.

### 3. Selection of criteria

In the research, we apply Diamond model (Leavitt 1964) and the key success factors of knowledge management (Arthur Anderson 1996), generalize seven effect elements such as process/mission, personnel, organization structure, leadership, culture, measurement and technology and integrate these elements with the key success factors proposed by Working Knowledge (Thomas H. Davenport, Laurence Prusak 1999), such as knowledge-driven culture, technique, organization structure, attitude from manager, economic effects or industrial value, organizational policy, clear eyesight and phraseology and knowledge structure. There are five dimensions in the figure 1.

**Figure 1 Five dimensions for KSF of KM project**



And there are many criteria can be sorted from these five dimensions:

Personnel factor: It’s important for employees to have positive attitude toward knowledge obtaining. If your workers are smart, curious about knowledge and always willing to explore something new, it’s will be helpful to execute knowledge management in the company. The attribute “capability of knowledge” includes the professional knowledge used for job and the capability to make use of information technology. Moreover, if the workers have commitment to their company, it’s easier for them to feel the sense of achievement and be willing to share their experience with other colleagues.

Organizational structure and culture factor: The relationship between the performance of knowledge management and organizational structure and culture apparently exists. Therefore, to form a culture which can facilitate implementing knowledge management is required; for example, make policies to encourage the creation of idea, invention, contribution, share, challenge, record and learning. Besides, it's significant that the objective of the KM project is indifferent with the organizational one, if they are not the same; it's possible to neglect the performance resulted form the KM project. Moreover, to have a database of the knowledge is essential in building various channels of knowledge share and increasing the achievement of the KM project.

Leadership and process/mission factor: The leader for KM project just like a conductor in a philharmonic society, except having deep comprehension of customers, production and service quality, meanings of knowledge management, he should have explicit vision and goal, make good policies to implement the knowledge management. In the aspect of process/mission, if the objective is not clear enough, it may cause the misunderstanding and lead the organization to the wrong direction. However, if the steps of KM project are not described in detail or the system of duty is unwell-designed, will let knowledge management can not be realized.

Measurement factor: It's expensive to implement the KM project; therefore, it's important to know if it will bring goodwill or economic value to the enterprises. Even though it's hard to estimate the feedback in financial aspect, it's possible to measure the performance by the growth of relative program resources, the growth of the ratio of the knowledge application, the accepting degree over the whole organization or the linkage between the financial feedback and knowledge activities.

Technology factor: It's impossible for executing KM project successfully without the help of technology. In this factor, we concern about software and hardware when install the KM system.

Synthesizing the description mentioned above, the evaluation criteria include five aspects and 14 criteria, the details of which can be found in Table 1.

**Table 1. The Evaluation Criteria for Knowledge Management**

Objective	Attribute
Personnel	Identification toward business culture
	Attitude toward knowledge share
	Capability of knowledge
Organizational structure and culture	Agreement between KM project and organization culture
	Degree of knowledge structure
	Cannels for knowledge transfer
Leadership and process/mission	Manager's support
	Explicit objective
	Relative stimulation policy
	Clear responsibility

Measurement	Quantitative analysis
	Non-quantitative cost-benefit analysis
Technology	Equipment access
	Software installed

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#### 4. Determination of the Evaluation Criteria Weights

Since the criteria of KM project evolution entail diverse significances and meanings, we can not assume that each evaluation criterion is of equal importance. There are many methods that can be employed to determine weights (Hwang and Yoon 1981), such as the eigenvector method, weight least square method, entropy method, AHP, LINMAP (linear programming techniques for Multidimensional of Analysis Preference). The selection of method depends on the nature of the problem. To evaluate the performance of the KM project is both a complex and wide-ranging problem, so solution requires the most inclusive and flexible method. Since AHP method has the characteristics that it systematizes complicated problems, is easy to operate, and integrates most of the experts' and evaluators' opinions, this study selected AHP for the contrivance of weights.

AHP was first proposed by Thomas L. Saaty in 1971 (Satty 1977, 1980, 1982). For years it has been used in economic planning, and in several areas of social management sciences. This method decomposes complicated problems form higher hierarchies to lower ones. Furthermore, it also systemized the problem by employing the subsystem perspective endowed in the system. Based on the hierarchical structure of AHP, this study then establishes the evaluation structure for the evaluation of KM project in this way. The resulting structure is tri-tiered. The first hierarchy is the goal level, with KM project performance evaluation as its ultimate objective; the second hierarchy is the objective level, with its five evaluation aspects; the third one is the attribute level, with its 14 evaluation criteria.

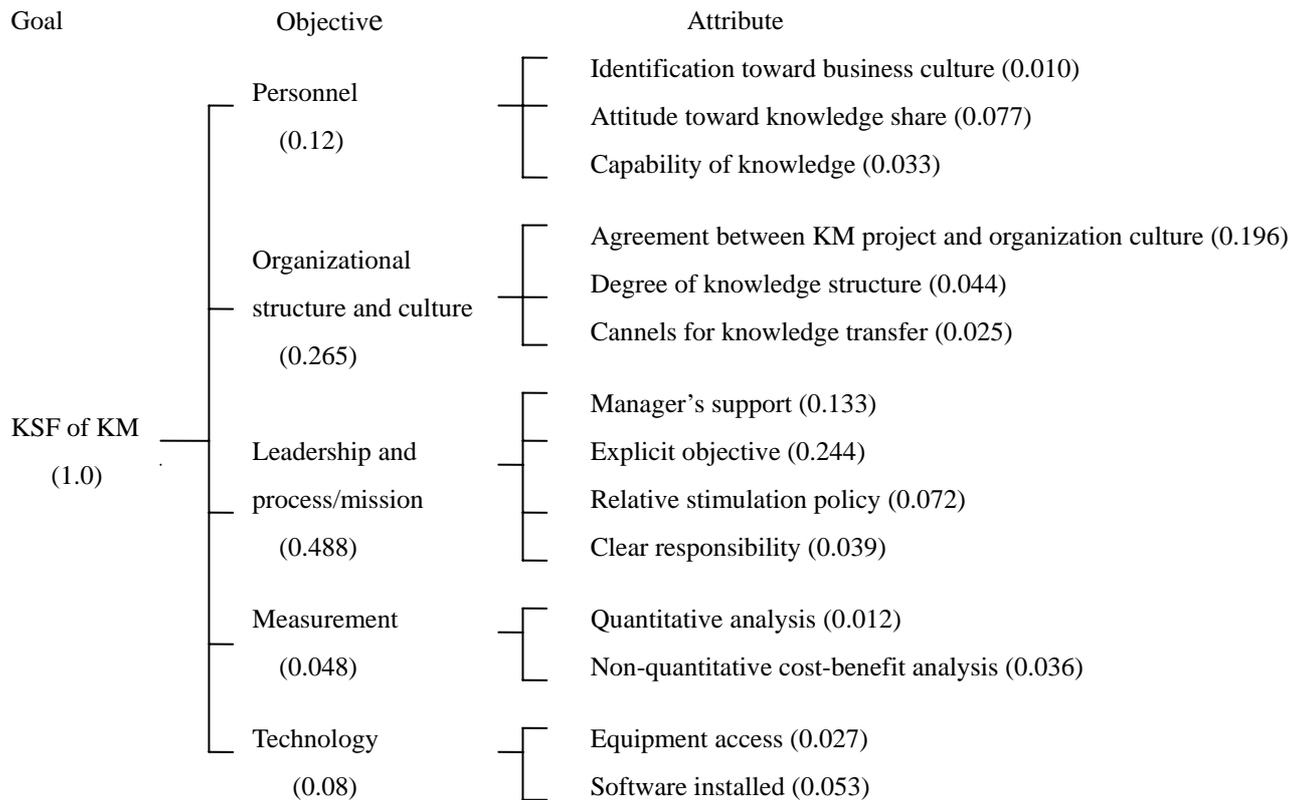
The AHP weighting is mainly determined by the decision-makers who conduct the pairwise comparisons, so as to reveal the comparative importance between two criteria. If there are  $n$  evaluation criteria, then while deciding the decision-making the decision-makers have to conduct  $C(n, 2) = n(n-1)/2$  pairwise comparisons. Furthermore, the comparative importance derived from the pairwise comparisons allows a certain degree of inconsistency within a domain. Satty used the principal eigenvector of the pairwise comparison matrix contrived by scaling ratio to fine the comparative weight among the criteria.



**Figure 2. The Hierarchical Structure of KM Project Evaluation**

### 5. Empirical Analysis

This study selected several managers who work for companies in Taiwan which had applied knowledge management project and professors in the management department in the university as its evaluation object. The evaluators conducted pairwise comparisons of the importance of various KM project evaluation criteria in the questionnaire. According to the formulated structure of KM project evaluation, the weights of the objective hierarchy and attribute hierarchy can be analyzed. Weights were obtained by using AHP, then the average weights (Figure 3) were derived and the weights of all the evaluators evened out after the consistency verification. Evaluators consider leadership and process/mission (0.488) to be most important in the KM project evaluation, then organizational structure and culture (0.265), personnel (0.12), technology (0.048), and measurement (0.048). The results indicate that company should first focus on the process of implementing knowledge management.



**Figure 3. The Weight Structure of KM Project Evaluation. () The Number in it Represents the Weight of Each Hierarchy.**

As for the attribute hierarchy, what is deemed most important by evaluators is to have one explicit objective (0.244) for the project; this may reflect the fact that to describe every step in detail is necessary since it can be taken as the promise of realizing knowledge management. Explicit objective was followed in importance by agreement between KM project and organization culture (0.196), manager's support (0.133), attitude toward knowledge share (0.077), relative stimulation policy (0.072) and software installed (0.053). The less important criteria are the identification toward business culture (0.010) and quantitative analysis (0.012).

## 6. Conclusions

To executive KM efficiently, companies should pay more attention on the leadership and process, organizational structure and culture. In each criteria, explicit objective, the support offered by the managers, agreement between KM project and organization culture, employees' attitude toward knowledge share, application of technological system, and the choose of the software should be taken into consideration. Many managers concern it's not necessary to describe every detail of the KM

process; however, it is the wrong attitude. Since the establishment of each stage of the process is one important promise of executing. Moreover, it's also a method to assure the clear objective, if it is neglected, the project will end up with failure because of the wrong direction when the leaders do decision making only depends on their intuition. Also, the key of success is the managers who should have the correct concept of knowledge management, ability to create the beneficial culture environment and optimistic attitude toward it.

This research through papers reviewed and induced five key success factors, aim to discuss the important titles when company applies knowledge management project and expect to propose a effective evaluation method to facilitate measuring the real benefits which comes form it. As for the mathematic method, the research only applies AHP to obtain the weights between the criteria. Since one assumption in AHP is independence exists between criteria, for the future research, it should be more concerned about the dependence between the criteria and ANP can be adopted to have more precise weights. Besides, it's possible to distribute questionnaires to the employees in different managerial level in the company, the point of view from different groups should not be neglected since KM project will result some different impact to all of the workers in the organization. Their opinions could be crucial success factors when applying the KM project.

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