

KNOWLEDGE MANAGEMENT DEVELOPMENT PROCEDURE AND ITS INTRODUCTION PLAN FOR CONSTRUCTION COMPANY

Ji yun Lee ¹, Young woong Song ², and Yoon ki Choi ²

¹ Research Assistant, Dept. of Architectural Engineering, Soongsil University, Seoul, Korea

² Assistant Professor, Dept. of Architectural Engineering, Soongsil University, Seoul, Korea

ABSTRACT : Knowledge has been considered one of the important elements that determine our future. Competitive power of an enterprise has also been transformed from labor, capital, and technology-oriented to knowledge-oriented. Current construction environment is experiencing overall decrease of number of construction contracts due to opening of domestic construction market and economic slump, problems on methods of receiving orders/bidding, and change of costumers' attitude, which intensify competition, therefore many companies consider adopting knowledge management to secure their competitive power. However, there are difficulties in adopting knowledge management and increasing the use by establishing management plan, Performance Measurement, and knowledge maintenance system in reality. Therefore, this study is to provide assistance to successful realization of knowledge management by suggesting development plan of knowledge management that enables knowledge management more efficient with certain goals.

Key words : knowledge management, core factor, Procedure strategy

1. INTRODUCTION

1.1 Background and Objective of the Research

Current construction environment is experiencing full opening of construction market, overall decrease of number of construction contracts, problems on methods of receiving orders/bidding, and increase of diverse costumers' needs, which intensify competition. Competitive power of enterprise has also been transformed from labor, capital, and technology-oriented to knowledge-oriented which creates new additional value. This recent change awakens construction industry in which men with technology and experience are the important resource of management to realize the necessity of knowledge management. Construction companies are trying to make effort to make progress through continuous growth and competitive superiority by knowledge management, and some of the large construction companies adopt knowledge management, and have already made considerable amount of investment. However, there are difficulties in adopting knowledge management and increasing the use by establishing management plan, Performance Measurement, verification and knowledge maintenance system in reality. Therefore, this study is to provide assistance to successful realization of knowledge management by suggesting development procedure and introduction plan of knowledge management that enables knowledge management more efficient with certain goals.

1.2 Range and Method of the Research

This study is to suggest successful development plan for knowledge management by drawing core factors from companies adopt knowledge management. Core factors of knowledge management were analyzed by strategy, objective, operating team, motivating, and Performance model through case studies on some of the large companies, and development procedure with 10 steps was suggested.

The methods of this study are described below.

- 1) Studying concept and necessity of knowledge management based on existing literature.
- 2) Studying core factors through current status and cases of knowledge management in large construction companies.
- 3) Suggesting development procedure with 10 steps for realizing knowledge management in construction industry.

2. PRELIMINARY STUDY

2.1 Definition of knowledge management

Knowledge management, in a broad sense, is a paradigm that covers overall management, a principle that affects all components of a company including organization, personnel, culture and infrastructure, a creator of new knowledge and values, and a manager of created and distributed knowledge. Table 1 shows the concepts of knowledge management studied based on preceded studies by theorists of knowledge management.

Table 1. Definition of knowledge management

Researcher	Definition
Malhotra	Embodiment of systematic process for synergic integration of data processing of information technology and creative and innovative ability
Wiig et al	Creating intelligent action to achieve company's growth and success or maximizing value of intellectual property of a company
Nonaka & Konon	A process that creates new knowledge and distributes it to the entire system and regenerates it in a form of a product, service, and system.
Ruggles	An approach to add or create values by actively utilizing know-how, experience, and decision in/outside the organization.

2.2 Necessity of knowledge management in construction industry

The necessity of knowledge management is emphasized to strengthen viability in global environment, in other words, to meet the dire need to strengthen competitive power.

First, the value of intangible property became more important than that of tangible property.

Second, the number of employees with knowledge moving to other companies due to downsizing or reform has been increased.

Third, the infrastructure for investment on information technology and knowledge management has been established.

Fourth, as a result of improvement of costumers' sensibility by external knowledge sources, costumers' knowledge, accumulated by costumers use products and services for a long period of time, has been adopted to knowledge management, which enables production to meet costumer's needs.

Fifth, core strength of a company should be created to secure competitive superiority and additional value of products and services should be increased.

3. CASE OF KNOWLEDGE MANAGEMENT IN CONSTRUCTION COMPANIES AND CORE FACTORS

3.1 Case of knowledge management in construction companies

The table 2. shows cases of domestic construction companies that adopted knowledge management.

As shown in tablet 2, establishment of knowledge management, strategy/objective, operating group, program for introduction, motivating, etc. are prominent, however, items such as evaluation guarantee system, Performance Measurement model, management index, relationship management are not yet fully recognized.

3.2 Core factors of knowledge management in construction industry

In order for successful knowledge management, universal core elements can be summarized as followed based on cases, mentioned earlier, of construction companies that adopted knowledge management.

First, CEO's will and belief on knowledge management CEOs of each company adopted and used knowledge management because they understood the nature of construction industry, recognized the necessity of knowledge management, and had solid will and belief on management innovation.

Second, necessity of development strategy of knowledge management Establishing strategy and taking step-by-step of the plan by knowledge management operating team are required.

Third, necessity of knowledge maintenance system Construction companies conduct knowledge management through KMS associations with existing corporate portal systems by the means of efficient and systematic management and usage of scattered knowledge.

Fourth, necessity of establishing culture for using knowledge management Knowledge management still tends to be considered one of the knowledge maintenance systems. Knowledge activity includes creating, sharing, utilizing, and

Table 2. Cases of domestic construction companies that adopted knowledge management

Division	A company	B company	C company	D company
strategy/objective	-Customer management height	-Synergy creation through knowledge public ownership	-Field problem solution ability maximization	-Competitive power and productivity enhance
operating group	CKO, TFT	CKO, TFT	TFT	-CKO, TFT
Introduction system	-Knowledge contest -Knowledge DB holding amount measurement	-Seminar through groupware -Forum holding -Education credit irrigation	-Knowledge expert champion -Knowledge mileage -Company workshop	-my skill system -Best Practice
Motivation/culture	the personnel system reflected, an award	an award	studying abroad, seminar	In preparation
Performance Measurement model	nothing	nothing	nothing	nothing

measuring, and utilizing is the most important activity of all. Knowledge management is possible only when culture that respects and shares the value of personal, and organizational knowledge is formed.

Lastly, evaluation guarantee system for knowledge management. Rewards for knowledge activity such as mileage system for knowledge, prize, promotion, education, and training opportunity encourage initiative participation for knowledge sharing and vitalize knowledge creation.

4. DEVELOPMENTAL STAGES FOR KNOWLEDGE MANAGEMENT



Figure 1. Knowledge Management Development Procedure

Step-by-step development required for knowledge management is as followed. The followings are descriptions on main concepts and important matters by steps.

1)Strategy

The first step of establishing knowledge management system is to clarify the role of knowledge management to establish company strategy. Strategy means guidance to realize knowledge management. Knowledge management without losing overall direction can be achieved only when actualized application of knowledge management is established.

2)Management Index

It would be convenient if the goal of knowledge management could be defined in numerical value, however, due to the nature of knowledge management, it is defined in a form such as declaration of vision. It is ideal to measure the effect of knowledge management in financial perspective, however, it is not easy. Therefore, recording is helpful even if it is a case. In addition, by using a method such as a balance sheet, measuring non-financial element with financial element should be considered.

3)Evaluation Guarantee

Evaluation and reward system on knowledge are very important elements to settle knowledge management. Problem of construction industry is that knowledge stays inside the head instead of being shared within a system while the industry requires well-experienced technicians with high-end knowledge. After completion of the project, information should be recorded and introduction of management index should be set forth beforehand for accurate Performance Measurement.

4)Knowledge Maintenance System

Although project is planned and conducted by a group of people, the people and knowledge tend to disappear after the project is complete. To settle the culture of knowledge management within a company, a person or a team in charge of knowledge management is required. The person/team promotes culture of knowledge management in the company and maintains rules and techniques of knowledge management.

5)Knowledge Management Index

Measuring index that measures relationship between knowledge management and business accomplishment by detailed leading indicator should be developed. Performance measuring index should be set considering unique nature of each company to apply knowledge management. Although knowledge seems permanent, it can change from knowledge to data, therefore quality management and reward for its use may increase accomplishment at work. Unless the result of accomplishment in knowledge is measured, rationalization of knowledge management itself would be impossible.

6)Visualization

It can't be started unless the person in relationship fully understands. Especially in most of the cases, top management team doesn't fully understand current status. Information should be interacted in real time between the headquarters and the site. Overall knowledge management can't be possible without close interaction

7)Program, 8)Project

Innovation of process, adoption of IT, and salary system are included in this step. If there were a program to establish knowledge maintenance system, multiple projects would achieve this goal. Single program requires multiple projects such as projects for information technology, knowledge base, reward system/knowledge evaluation, etc.

9)Relationship Management

This is to form a common ground among members. To draw members' support, relationships should be visualized and management to plan and perform communication is needed. In addition, to lead knowledge management, CEO should present leadership with will and belief. Members' recognition on knowledge management and culture for sharing knowledge are essential elements to vitalize knowledge management and lead it to success.

10)Application

Once knowledge management is on the track, it is necessary to monitor progress of knowledge management and related items, and recheck direction of the management.

5. CONCLUSION

21st century will be a society of knowledge. Advanced corporations in advanced countries are adopting so-called knowledge management such as creation, distribution, accumulation, and evaluation of knowledge. A result of a survey on current status of knowledge management in some of the large construction companies showed that there are difficulties in maintenance plan, Performance measurement, verification, knowledge maintenance establishment and administration, etc. In addition, this presented core factors of knowledge management in construction industry. Therefore,

this study suggested 10 steps of development for adopting and applying knowledge management, which include strategy, management index, evaluation guarantee, knowledge management system, knowledge management index, visualization, program, project, relationship, and application. Although knowledge management was introduced to construction industry later than to other industries, hopefully this study helps to secure national competitive power by knowledge management.

REFERENCE

- [1] Business School at Waseda Univ., "Introduction to Management of Technology" Korea Industrial Technology Association, 2004
- [2] Jang-Gyu Lee et 6, Development and counterplan of global information society, Nanam Publishing, 2003
- [3] Hong Lee et 1, Core success factors of adopting knowledge management, The Knowledge Management Society of Korea, 2003
- [4] Ju-Hee Lee et 1, Success factors of projects of knowledge management companies and strategies, The Knowledge Management Society of Korea, 2002
- [5] Sang-Hoon Kim, Understanding of KMS and case study on construction industry-Ssangyong, 2003
- [6] Yang-Hwi Lee, An observational study on theoretical background of knowledge management and application, Graduate school of Business Administration at Gyeongsang Univ., 2004
- [7] Young-Su Kim et 2, "Knowledge management model of Korean companies", SERI(Samsung Economic Research Institute), 1999, p249