

Stage Model for Knowledge Management

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Abstract

This study develops an integrated management framework for building organizational capabilities of knowledge management (KM). The framework consists of four major management objects: organizational knowledge, knowledge worker, knowledge management process, and information technology. Based on the framework, this study proposes a stage model of organizational knowledge management encompassing Initiation, Propagation, Integration, and Networking stages. Each of the four stages is differentiated in terms of its management goals, activities, and characteristics of the management objects. To validate the proposed stage model, we conducted a latent content analysis of 21 knowledge management case reports. While the results do not validate the time sequence of each stage, they do reveal meaningful clustering of distinct case organizations in different knowledge management implementation stages.

1. Introduction

As knowledge emerges as the primary strategic resource for firms in the 21st century, researchers and practitioners strive for clues on how to accumulate knowledge resource effectively and manage them for competitive advantages. The flourishing interests on knowledge management (KM) have recently led to a deluge of organizational knowledge initiatives in the business world [11][57]. According to the recent industry survey (GartenrGroup, 1999), 90 percent of the 811 large enterprises in North America and Europe are aware of knowledge management and most will have some activity underway in the 1999-2000 period [21]. Typical approaches of those initiatives were using information technologies for managing organization-wide knowledge resources [11][39][48]. Building a knowledge management system with internet technologies or creating a knowledge repository system with database technologies are most common.

While this technology-based approach for knowledge management enables the firm-wide integration and utilization of corporate knowledge resources (mostly in the form of explicit knowledge), often researchers focus more on the creation and sharing of knowledge resources, emphasizing the role of organizational culture and motivation of individual knowledge workers [36,15,47]. Therefore, before embarking on a knowledge management

project, firms need to assess their organizational subsystems and available resources to identify the most context-sensitive knowledge management strategies for their firms.

This study introduces a conceptual framework of knowledge management that can be used to help firms conduct such assessment. For more in-depth understanding of the knowledge management life cycle within an organization, a four stages knowledge management model is proposed and validated with multiple case data.

2. Organizational Capability and KM

The fundamental question in the field of strategic management has been how organizations gain and sustain their competitive advantages. In the traditional approach, attractiveness of industry selection and establishment of competitive advantage over rivals were major questions of organizational capability of competition [10][40]. However, with increasing uncertainty and dynamics of business environments, focus of the strategy research has shifted from the structure-conduct-performance paradigm to the internal resources of organizations as a key determinant of competitive advantage [2][17][52]. Grant (1991) notes that this shift reflects dissatisfaction with the static, equilibrium framework of the traditional approaches and leads to a more internal perspective called the 'resource-based view of firms.

The resource-based view of firm suggests organizational resources and capabilities as the principle sources of competitive advantage and its sustainability [7]. According to the approach, there is a distinction between resource and capability. Corporate resources such as capital equipments, skills, patents, and money are basic inputs into gaining and sustaining competitive advantage. Organizational capability is the capacity of a firm in acquiring and utilizing its resources to perform some tasks and activities for its competitive advantage [17]. That is, while resources are the primary source of a firm's capabilities, capabilities are the main source of its competitive advantage.

The research interest on organizational capabilities has been recently expanded by the knowledge-based view [28] [18][44][50]. According to this perspective, organizational knowledge such as operational routines, skills or know-how are the most valuable organizational

resources and its strategic management capability is the most significant source of organizational competitive advantage in the increasingly more dynamic and rapidly changing environment. Based on the knowledge-based perspective, many theorists have suggested various types of organizational capabilities as the primary role and essence of organizations as shown in table 1.

From the above literature, we can deduce the following implications. First, organizations will need to acquire critical knowledge externally as well as building them internally. Cohen and Levinthal (1996) emphasized the absorptive capability to recognize the value of new, external information, assimilate it, and apply it to commercial ends for organizational innovative capabilities. Kogut and Zander (1992) also defined organizational capability as the combination capability of internal and external learning. Second, the final goals of knowledge management is to gain competitive advantages and sustain them by producing new products or service or enhancing organizational processes in terms of speed, quality and costs [25][44]. Grant (1996a) argued that, since production requires the application of many types of specialized knowledge, the primary role of an organization is the integration of knowledge. Third, the strategic role of an organization should reflect the dynamic view of organizational capabilities [19][52] because knowledge management is a continuous managerial activity adapting to the changes of market needs.

Table 1. Organizational capability of KM

Authors	Views	Capability
Nonaka ('94)	The creation capability of knowledge by introducing the knowledge conversion model and the spiral model.	Knowledge Creation
Grant ('96a)	Organizational capability as the knowledge integration and its ability to perform repeatedly a productive task for creating values on its outputs.	Knowledge Integration
Kogut & Zander ('92)	Organizational ability to learn new skills from the combination of internal and external learning.	Knowledge Combination
Cohen & Levinthal ('96)	An absorptive capability as an organization's ability to recognize, assimilate it, and apply.	Knowledge Absorptive
Quinn et al.('96)	Leveraging capability of managing organizational knowledge according to the changes of environment.	Knowledge Leveraging
Badarcco ('91);	Organizational ability to learn or acquire its needed knowledge from other organizations	Knowledge Links

Based on the definitions in table 1 and their implications, we suggest that the organizational capability in knowledge management forms from accumulating, managing, and utilizing organizational knowledge for sustainable competitive advantage. The accumulation of organizational knowledge can be achieved through the acquisitions of knowledge from external sources and internal creation. The major management activities are

integrating and reconfiguring them according to the environmental changes.

3. Organizational efforts for KM

Knowledge management is not simply a matter of assembling groups of learning teams or installing an electronic document management system. Rather, it is a management paradigm shift involving people and other resources such as organizational structure, culture, information technologies, etc [19][37][53].

As candidates of 'something' to be managed, various components have been identified in the knowledge management literature. The most commonly mentioned components are knowledge itself [31][50][58], management process [57], knowledge worker [47][37], trust-based human relationship [8] [23] [29], information technologies [11][39][48], knowledge-oriented culture [12][15], flexible organizational structure [22][44], performance measures and rewards [30][38][51] etc.

However, considering all of them as target management objects will be difficult since some of them are not only too broad or vague but also too complex to manage. For example, trust-based relationship as an organizational culture includes many other management constructs such as leadership management, empowerment, incentives, and is frequently viewed as the final management goal or objective [23]. The performance measurement and reward systems and organizational structure are also generally considered as means of organizational culture management [24]. Therefore, we propose that four management objects -organizational knowledge, knowledge worker, knowledge management process and information technologies- should be accumulated and managed as strategic organizational resources.

The current growing organizational initiatives around the four management objects can be explained with an integrated framework as in figure 1. Most organizational initiatives approached knowledge management both in managerial approaches and technical approaches [14]. The core managerial factors to influence knowledge workers include leaderships, empowerment, performance measurement and rewards, organizational structure, and organizational culture. Organizations can facilitate their knowledge management process by defining procedures and rules and, if necessary, by making a team to facilitate the process. For the knowledge capability of individual knowledge workers, organizations can establish a self-learning program or a career path program to improve the quality of their human resource. Many organizations already have their own knowledge typologies for the focused and systematic management of organizational knowledge content [56]. Many of them also have developed a knowledge repository system with search engines, index and directory services. More recently,

knowledge management systems are introduced with diverse communications channels, knowledge editor/viewer and knowledge discovery tools.

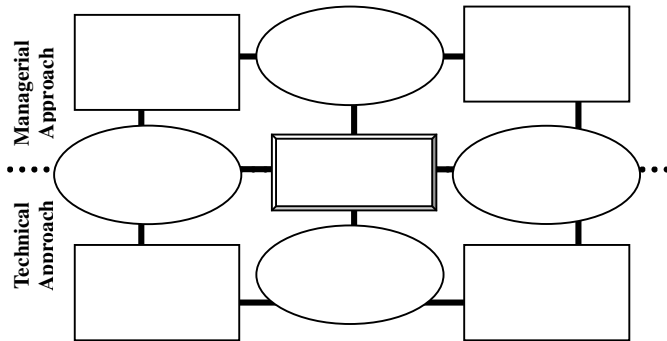


Figure 1: Objects and Organizational Approaches

4. A Stage Model of KM Implementation

This study combines perspectives of the life cycle theory and teleology to explain the process of building organizational capability of knowledge management. The overall progress of stages is based on the life cycle theories adopting organic growth as a heuristic device to explain the changes of organizational behaviors and its progression as a process. However, each stage is defined in this study by applying a teleological perspective. The teleological approach views organizational development and change as a cycle of goal formulation, implementation, evaluation, and modification of goals based on what was learned by the entity [54].

From such perspective, we propose that organizational

capability of knowledge management grows through the following four stages; Initiation, Propagation, Integration, and Networking. The stages in the life cycle theory are sequential in nature and hierarchical in progression [45][54]. In addition, most theorists have noted that knowledge management, as a management process, requires overall changes in individual and organizational behaviors [11][36]. Therefore, each stage of the suggested model can be seen as a necessary precursor of the succeeding stages.

The teleology perspective is basically based on the purposeful social construction among individuals within an organization [54]. Based on the literature of organizational development [45][46], we assume that the management goals and managerial actions will change from initiation to the networking stage. That is, the management goals of organizational knowledge management will change from creating readiness to the change of knowledge management, propagation of the change, and integrating the changes both internally and externally. The managerial actions to achieve the management goals are summarized in figure 2. Consequently, organizational capability for knowledge management, including both the accumulated organizational knowledge and level of organizational capability, grows in S curve, like the Nolan's stage model [16].

4.1. Initiation Stage

The first stage is an initiation stage in which organizations start to recognize the importance of organizational knowledge management and prepare for

	Initiation	Propagation	Integration	Networking
Goals	Preparation for Enterprise-wide knowledge management efforts	Infra-building and Activation of knowledge activities	Integration of knowledge management efforts to organizational outcomes	Linking knowledge management to external partners
Organizational Actions	<ul style="list-style-type: none"> Disseminate the needs of knowledge management Assess current problems of knowledge management Make and share the visions and goals of knowledge management Make a long-term knowledge management plan Conduct benchmarks or pilot projects 	<ul style="list-style-type: none"> Set up a preliminary knowledge management process Build a reward systems Develop HRM programs (education, career path, recruiting) Develop a knowledge typology Build a knowledge managementS with a knowledge base Conduct events to activate knowledge activities 	<ul style="list-style-type: none"> Evaluate the effectiveness of knowledge Scan the changes of environmental needs Monitor and control knowledge management activities Define and focus on core knowledge areas Disseminate best practices of knowledge management 	<ul style="list-style-type: none"> Analyze internal and external knowledge management efficiency Make knowledge alliances with partners Share knowledge management visions and goals with partners Link knowledge management with partners' Facilitate & manage inter-organizational knowledge sharing and collaborations

Figure 2: Stages of organizational knowledge management development

the enterprise-wide knowledge management efforts. Environmental pressures such as rapidly changing socioeconomic and technical factors, globally increasing competition, and changing customer demands for knowledge-intensive products or services enforce the implementation of knowledge management [13][34][42].

The major issue of strategic management in this stage will be how to make its organization prepare for the enterprise-wide knowledge management initiative. Many theorists suggest that an organizational strategic change is generally realizable when organizational collaboration and strong commitments from all organizational members are acquired [24][26]. Especially, knowledge management is a social activity requiring voluntary involvement of individuals [37][24]. A strong commitment and voluntary involvement of organizational members can be acquired when they share the same vision and goals [26]. Consequently, organizations should clearly specify shared visions and goals of knowledge management and disseminate them over whole organization through diverse communication channels.

Furthermore, knowledge management is not an easy task, requiring a long-term time period and significant organizational resources such as human power, capital and managerial efforts [11][42]. Therefore, organizations need to make a long-term plan for organizational change into a knowledge management paradigm strategically and systematically. Building a special team for initiating the knowledge management and acquisition of the needed human resources and budget are prerequisite activities. Doing benchmarks or pilot projects to collect critical information or experiences is also recommended here before launching the enterprise-wide efforts.

4.2. Propagation Stage

The propagation stage is a stage where organizations start to invest in building their knowledge infrastructure to facilitate and motivate knowledge activities such as creating or acquiring, sharing, storing, and utilizing. Since organizations have already prepared for their knowledge management initiatives in the previous stage, the real enterprise-level efforts for knowledge management can start from here.

The main concerns of organizational managers at this stage are how to build the knowledge infrastructure efficiently and how to expand the knowledge activities. In the early part of this stage, organizations build organizational and technical knowledge infrastructures (e.g., [11]). The organizational infrastructures are measurement and reward system (e.g., [51]), human resource management such as training and education, promotion, recruiting policies (e.g., [44]), flexible organizational structure (e.g., [37]), steward or guidance oriented leadership [55][49]. Additionally, a complete knowledge management process is defined and applied

enterprise-widely at this stage, including the related rules and policies as well as a management team. An integrated organizational typology of knowledge is also created at this stage.

Building a technical infrastructure implies using information technologies, especially communication and database technologies, to facilitate and support the knowledge management activities ([14], 1994). The most popular and common approach is implementing a knowledge management system or knowledge repository system to help organize the enterprise-wide knowledge resources [39][48].

4.3. Integration Stage

Integration stage is the stage where organizational knowledge activities are institutionalized as daily activities over the whole organization. Management focus is placed on the integration of organizational knowledge and knowledge activities. As all organizational members become familiar to knowledge activities, the level of knowledge activities and knowledge accumulation will be the highest.

The key management concern of this stage is how to integrate the diverse and distributed organizational knowledge and leverage them to organizational products, services, or processes. Since the final outputs, products or services, of organizations are generally produced with various knowledge over the whole organization [18], integration of the diverse and distributed organizational knowledge is a critical management issue. One of the most commonly recommended ways is to define core knowledge areas and link them to people or key business processes. The quality and value concerns of organizational knowledge will carry higher weight at this stage. Moreover, as the organizational environment changes and the required knowledge also change [12][56], organizations should continuously monitor and control their organizational knowledge and its related activities to keep their product or services to the market requirements.

Though the integrity and effectiveness of knowledge and knowledge activities should be promoted by all organizational members, organizations will find it necessary to create a special expert group consisting of internal field experts. With the assistance of such experts, organizations can enhance the quality of organizational knowledge and assess the knowledge asset value more precisely.

4.4. Networking Stage

The final stage is an external integration stage where organizational knowledge is networked not only within an organization but also with external entities such as suppliers, customers, research firms, and universities. As more and more organizations initiate knowledge

management efforts, sustainability of competitive advantage from knowledge management becomes harder to come by. Generally, under the more severe competition, organizations usually concentrate its resources and executive time on, core activities where it can perform at the best-in-the-world levels [44]. Organizations at this stage will also start to focus their organizational efforts on specialized core knowledge and outsource other needed knowledge from outside.

Many scholars have emphasized learning or knowledge acquisitions as one of the major motives of strategic alliances [5][6][33][43]. There are also several case studies showing that high-tech industries such as biotechnology and pharmaceutical industry are already acquiring significant part of their needed knowledge through strategic alliances [1][3][20][41]. However, knowledge transfer among different organizations is not an easy task [5][18]. Nonaka (1995) noted that knowledge creation and transfer is based on the specific organizational context so that knowledge, especially for tacit knowledge, can not easily be created and transferred among organizations with different cultures, structures, and goals. Therefore, the key management issue of this stage is how to facilitate the knowledge transfer through external alliances.

Successful knowledge alliances require managerial premises such as clear visions and goals, a wide range of possible alliances, collaborative activities, shared goals, trust-based relationship and so on [5]. The first actions by organizations are to find and evaluate a partner, and devise a form of the relationship. According to Badaracco (1991), partnerships through alliances for knowledge sharing should be based on a trust-based relationship. Additionally, the clear common visions and goals of alliances and specified contracts are key factors for the successful relationship. It will also be better for knowledge sharing among alliances to extend the managerial and application range of the existing knowledge management infrastructure. For example, they can motivate each other by extending reward systems and the scope of personnel rotations to members of their partner organization.

4.5. Characteristics of managerial objects

The characteristics of knowledge management objects will also change across different stages as shown in table 2. The configuration of organizational knowledge in each stage will change from existing knowledge to internally integrated and externally networked knowledge. Since knowledge is inherently created and resided by individuals [11][18][37], organizations need to start their efforts to collect existing individual knowledge into organizational knowledge [9][11][50]. After the collection, it will take a relatively long time interval for those organizations to gather new knowledge. This is true in that knowledge is created through plethora of individual

experiences and cognitive activities such as inference, analysis, and reflections.

The roles of knowledge workers will also change from a knowledge absorber to a knowledge coordinator. While a knowledge expert is a knowledge worker who has deep knowledge in a specialized area, a knowledge coordinator is rather a knowledge broker who has broad knowledge relationships [11]. As organizational members become familiar to knowledge activities through training and education, their knowledge capabilities and formal or informal human relationships will expand [8][23][29] and finally many of them will transform into knowledge brokers.

Additionally, the focused activity also changes from local knowledge acquisition to global sharing with knowledge partners [5] and the implementation scope of knowledge management process will expand globally. As organizations try to develop and improve their knowledge management system, it will also change from a closed system, such as a GroupWare, EDMS (Electronic Document Management System), and workflow system, to an enterprise-wide knowledge sharing system and, finally, to a global sharing system. The global knowledge sharing system allows all authorized individuals of the knowledge partners to access it at any time and from any place.

Table 2. Object characteristics of Stages

	Initiation	Propagation	Integration	Networking
Org'l K	Acquired	Created	Integrated	Networked
K-Worker	Absorber	Creator	Expert	Coordinator
KM process	Acquisition	Creation	Internal sharing	Global sharing
KMS	Closed	Isolated	Enterprise	Global

5. Validation: A Latent Content Analysis

Previous studies that proposed a stage model of organizational development and changes validated their models by testing the antecedents and consequences of strategic changes. While some of them utilized large samples and statistical methods, others conducted a set of in-depth case studies spanning several years [32]. Though a large sample cross-sectional study can not explain the causes and results of the process and a small sample longitudinal study is in short of generalizability, both methodological approaches in organizational change theories are mostly focused on organizational events or strategic actions [46][54]. Therefore, we tested our proposed stage model with multiple cases by checking their organizational management goals and managerial actions for knowledge management. If empirically supported, we may argue that the suggested stage model

would constitute a distinct context for managerial focuses and actions.

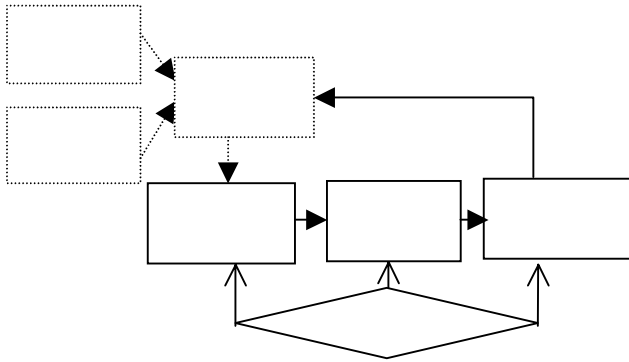


Figure 3: A research framework for validation

As you can see in figure 3, the research framework is based on an assumption that the changes in management goals are caused from the organizational recognition of environmental changes and its current status of knowledge management. That is, if an organization recognizes the environmental changes or problems of current knowledge management status, it will change its knowledge management goals. Based on the changed management goals, the organization will conduct different managerial actions to align its strategic goals with environmental needs or target status [46]. Finally, characteristics of the management objects will be affected by the managerial actions. Based on this research framework, we developed the following propositions for the preliminary empirical study.

Proposition 0: *Four distinct stages will exist over the life cycle of an organization's knowledge management implementation process*

Proposition 1: *There may be a temporal progression among stages from initiation to networking stage*

Proposition 2: *The managerial goal of knowledge management is related to the checklists of managerial actions in the same and previous stage*

Proposition 3: *The managerial actions are related to the changes in characteristics of management object.*

5.1. Methodology and sample

We conducted a content analysis for the 21 organizations with secondary data. The content analysis is a technique of making inferences in a systematic, objective, and qualitative from secondary data to measure or observe variables of interests [27]. It is generally applied to available materials such as archival records, documents, live reportage, newspaper articles, and so on, as sources of research data, especially produced for a particular research problem. The content analysis is adopted in this study to overcome the limited explainability of the cross-sectional study and the limited

generalizability of the longitudinal study. It was also difficult to collect a large sample with enough information covering all knowledge management stages because knowledge management is a relatively new management paradigm.

We collected 10 Korean and 11 international cases as materials for the content analysis. The 10 Korean cases were selected among the 200 or so in Korea, case reports written by the executives, who registered for the 4-month Chief Knowledge Office education program. The other 11 cases were sourced from Harvard Business School Publications, other articles or papers, and from the internet web sites such as Ernst & Young and APQC. We select the 21 cases based on their quality by examining whether they cover enough details of the enterprise-wide efforts for knowledge management.

5.2. Data Collection and Analysis

The materials of a content analysis can be analyzed, based on either manifest or latent contents [4]. While the manifest content analysis is to count the number of the visible and surface content, the latent content analysis is to find the underlying meaning of the contents. We chose the latent analysis because the cases were written with different purposes and perspectives by different authors, and the focused areas of each case were different.

In the content analysis, researchers can guarantee objectivity by carrying out their analyses according to explicit rules that enable different investigators to obtain the same results from the same messages or documents [35]. That is, in a systematic content analysis, inclusion or exclusion of a specific content should be done according to consistently applied criteria of selection. This requirement eliminates the analyses in which only the materials supporting the investigator's hypotheses are examined. To minimize the evaluation variations, we developed the checklist of management goals, managerial actions, and characteristics of management objects in each stage as shown in the appendices A, B and C from two rounds of expert evaluations.

For the reliability of the validation, this study used three evaluators who have enough research backgrounds and understanding of knowledge management. Each evaluator was provided the cases and checklists with determined policies and rules of the evaluation. To assure the consistency of evaluation, the evaluators were guided to focus first on explicit facts and then use their inferences.

6. Results and Discussions

6.1. Temporal progression of stages

The temporal progression of the proposed knowledge

management stages could not be confirmed in most of the case firms of this study. It was because most cases were not written in the longitudinal approach to reveal the whole process in terms of chorological events of interest. Nevertheless, we found that the case of McKinsey & Company was relatively well matched with the temporal progression of stages we proposed.

Up to the early 1980s, McKinsey had prepared its organization towards knowledge-based competitiveness by investing in their consultants' skills and expertise, and defining the clientele sectors and center of competence. The full-fledge and enterprise-wide knowledge management effort in McKinsey was launched in 1987. After five months of an internal study, it decided to build a common database of knowledge, to hire a full time practice coordinator, to expand its hiring practices and promotion policies to create a career path for deep functional specialists. Accordingly, McKinsey not only developed the information systems such as Firm Practice Information System (FPIS), Practice Development Network (PDNet) and Knowledge Resource Directory (KRD) but also legitimized the role of a new class of consultants- "specialist" for specialized managerial and technical knowledge development. The organizational efforts of this period, called 'let 1,000 flowers bloom', had resulted in the original group of 11 sectors and 15 centers expanding to "72 islands of activity".

However, McKinsey recognized that there was a need to adjust the firm's knowledge development focus in 1991. Accordingly, the Clientele and Professional Development Center (CPDC) began integrating the diverse groups into seven sectors and seven functional capability groups led by teams of five to seven partners. Finally, they began to focus on a new theme-client impact and created a Client Impact Committee. It also developed multiple career paths for engagement directors and practice coordinators.

In late 1995, McKinsey planned to expand on the model of the McKinsey Global Institute, a firm-sponsored research center to develop other pools of dedicated knowledge resources protected from daily pressures and clients demands. It also established a Change Center and Operations Center to recruit more research-oriented people and link more effectively into the academic arena. Finally, McKinsey has a global practice network linked to not only global offices but also to the external resources such as MIT's Multimedia Lab., Theseus Institute, etc.

6.2. KM Goals, Actions and Object changes

The final result of the case evaluation is summarized in table 3. The cases ranged from K-1 to K-10 are Korean cases and others are foreign cases. The values of each row in the table are aggregated from agreements by at least two of the three evaluators'. The numbers of each shell in the columns of managerial actions are the total numbers of actions checked in the analysis. The contents in the

columns of management goals and characteristics of management objects report as the current status or progress of each case. From the above results, we may argue that there is a meaningful relationship between the management goals, managerial actions and the characteristics of management objects. Each case with a certain type of management goals tends to have the same status of progress checked in the managerial actions column. For example, 'K-1' case denoted as 'networking stage' in the column of management goals has relatively high score up to the integration stage (S3) in the columns of managerial actions. That is, this case received a relatively high score (8) in 'S2' (propagation stage) column, almost 80% of the total score, but low score (4) in 'S3' (networking stage), showing that the current status is just ahead of the integration stage. Additionally, most of the characteristics of management objects are consistently matched with each status of managerial actions. Most cases, denoted as 'Propagation' in the column of management goals, are denoted as 'created' (created knowledge) in the column of organizational knowledge.

However, there are some mismatches in the column of the characteristics of management objects. For example, while K-7, K-8, and K-1 are denoted as 'Initiation' in the column of management goals, the characteristic status of IT are 'Isolated', which means that an internet-base information system for knowledge sharing is already developed, and one action is checked in the S2 (Propagation stage), caused by the 'Isolated' system. This phenomenon supports the fact that most organizations are typically approaching their knowledge management initiatives by using information technologies [11][39][48]. Another mismatched cases are F-3 and F-4. Unlike the above cases, both show relatively lower status in the column of organizational knowledge, knowledge worker, and focused activity. This result may have been caused by the fact that both cases were in the state of shifting from Integration stage to Networking stage.

6.3. Korean vs International Cases

Through a discussion session with the three evaluators, we came across the following findings. First, the major rationales of knowledge management initiatives are different between the Korean and international groups.

While the motivation for knowledge management initiatives in most of the international cases could be found in the natural characteristics of an industry or competitive pressures, for the Korean firms, 'IMF crisis' of 1997 and 1998 seemed to have been the major motivation to implement knowledge management. During the IMF crisis, knowledge gap between Korea and other advanced countries was cited as the major culprit that contributed to the crisis. Second, there is also a significant gap in the progress of knowledge management between Korea and international firms. While most Korean firms

Table 3. Relationship among Goals, Actions, and Characteristics of Objects

Cases	Mgt Goals	Managerial Actions				Characteristics of Management Objects			
		S1(11)	S2(10)	S3(11)	S4(6)	Org'l K.	K. Worker	Focused Act.	IT
K-1	Integration	8	8	3	-	Core	Creator	Internal Sharing	Enterprise
K-2	Integration	8	6	3	-	Core	Creator	Internal Sharing	Enterprise
K-3	Propagation	7	4	-	-	Created	Creator	Creation	Isolated
K-4	Propagation	7	5	-	-	Created	Creator	Creation/Internal	Isolated
K-5	Propagation	7	3	-	-	Created	Creator	Creation	Isolated
K-6	Propagation	6	4	-	-	Created	Creator	Creation	Isolated
K-7	Initiation	8	1	-	-	Existing	Learner	Collection	Isolated
K-8	Initiation	7	1	-	-	Created	Creator	Collection	Isolated
K-9	Initiation	5	1	-	-	Existing	Learner	Collection	Isolated
K-10	Initiation	4	-	-	-	Existing	Learner	Collection	Closed
F-1	Networking	9	8	9	4	Networked	Coordinator	Global Sharing	Global
F-2	Networking	8	9	8	3	Networked	Coordinator	Global Sharing	Global
F-3	Networking	9	7	7	1	Core	Expert	Internal Sharing	Global
F-4	Networking	8	9	5	1	Core	Expert	Internal Sharing	Global
F-5	Integration	8	8	7	-	Core	Expert	Internal Sharing	Enterprise
F-6	Integration	9	8	6	-	Core	Expert	Internal Sharing	Enterprise
F-7	Integration	9	8	8	-	Core	Expert	Internal Sharing	Enterprise
F-8	Integration	8	8	3	-	Core	Expert	Internal Sharing	Enterprise
F-9	Integration	8	7	4	-	Core	Expert	Internal Sharing	Enterprise
F-10	Integration	7	6	2	-	Core	Expert	Internal Sharing	Enterprise
F-11	Propagation	7	5	-	-	Created	Creator	Creation	Isolated

were still in the stage of propagation or initiation, many international firms were in the integration or networking stage. This is quite natural since international firms started their knowledge management initiatives two to three years ahead of Korean firms. Third, while most Korean cases consider the knowledge management reward system as the most important means to motivate individuals for knowledge sharing, international cases do not seem to put as much emphasis on such reward system. This is also related to the difference in knowledge management maturity between Korean and international cases. In general, a reward system is most effective for changing people's behaviors in an early change stage. In a later, more mature stage, corporate culture, rather than a reward system, will play a major role in determining people's attitude and behaviors.

7. Conclusion

This study proposed an integrated management framework for knowledge management including management objects and organizational initiatives. It also proposed a stage model of organizational knowledge management and validated it with a secondary data analysis. For validation, we applied a latent content analysis with 21 published cases. To maintain the consistency of evaluation, we developed a set of checklists for management goals, managerial actions and characteristics of management objects in each stage.

While our study could not verify the temporal sequence in knowledge management implementation, each knowledge management stage could be identified with associated management goals and managerial actions. Contrary to our prediction, the characteristics of

knowledge management objects did not match well with the progression of knowledge management stages. This may have been due to the partial coverage of the knowledge management objects by the sample cases, many of which were written to emphasize a particular aspect of their knowledge management implementation processes. Despite the exploratory nature and use of the indirect validation method, this study contributes to the knowledge management research field by confirming the four distinct stages of knowledge management implementation. This study also helps knowledge management practitioners by providing a rich set of checklists to measure various knowledge management constructs.

This study has the following limitations that may be overcome in the future research. First, the suggested model was validated with a preliminary empirical study, a latent content analysis. Therefore, more solid empirical validations such as a cross-sectional survey study and a detail longitudinal case study should be conducted. Second, this study used the secondary data produced with different purposes and authors. Consequently, there may be a possible sample biases. Third, though we used the checklists and several rounds of discussions for evaluation, there is still a possibility of involving the investigators' personal subjectivity.

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