

Development of Efficient Knowledge Management Composite Indicators

Jiracha Vicheanpanya Onjaree Natakatoong, Ph.D. and Vicharn Panich, M.D., M.S.

ABSTRACT

*The purpose of this study are to analyze the indicators and variables of efficient knowledge management, to study executive and expert opinions in regard to efficient knowledge management for Thailand, to propose a composite indicators of efficient knowledge management for Thailand, and to develop and validate the measurement model of efficient knowledge management. The research methodology was mixed methodology (Two Phase Study); the first phase was qualitative method, and the second phase was quantitative method. Qualitative method consisted of three steps. The first step was to carry out a content analysis from the reviewed literature and secondly, in-depth interview with knowledge management managers from 4 organizations. The last step was to conduct a focus-group interview of 10 knowledge management managers and experts so as to identify variables related to efficient knowledge management in Thailand. Data analysis was evaluated via the inductive method and content analysis. Four key indicators found were: 1) **Context indicator**; indicators related to economic, political, social and technology. 2) **Input indicator**; indicators related to Human and Organizational. Human indicator related to individual, knowledge management team, and leadership level. Organizational indicators relate to vision/ mission/goal/strategy, value / belief systems / organizational culture, information technology and communication, motivation and rewarding, and evaluation system. 3) **Process indicator**; indicators related to human development, and organizational management such as change management, communication, training and learning, and knowledge management activities and processes. 4) **Output indicator**; indicators related to human capital, and organizational capital such as work process improvement, new knowledge/product/services, and relationship.*

Keywords

Indicator, Composite indicators, Knowledge management, Knowledge management composite indicators.

1.0 Research Background

In the 21st century society, it is generally accepted that the new important resource of organization is “knowledge”, an intangible asset, in addition to other existing resources such as human, money, raw materials, and machines. This is particularly true in a knowledge-based and economy society. Knowledge has become an invaluable resource for all business organizations. For this reason, the development of new knowledge to create a competitive advantage and strength is crucial for the national development process. The knowledge-based and economy society requires more competition in terms of knowledge and wisdom. From this perspective, the science of management is continuously researching to create knowledge and to manage it to assist organizations to enhance their potentials, skills, knowledge of its staff, as well as using it as a base in terms of cost, process, and productivity, and as an innovation for driving competition, building advantages, and developing organization and society. Organizations then becomes a key mechanism in the world of competition that the optimum benefits can be yielded when that organization is equipped with potential and efficient personnel.

How to develop and maintain a competitive advantages over a long period of time has becomes a big problem for many organizations. The success of an organization in the hands of a few competent personnel will decline in strength when these people resign or leave the organization. It is challenge for organizations to turn personal knowledge into corporate knowledge and to develop an organizational culture with the tools, processes, systems, and structures that encourage continuous learning and sharing of knowledge and information among employees for the purpose of making better decisions. The implementing of systems and practices to increase the sharing of knowledge and information throughout an organization is becoming increasingly important. These are some of the issue of knowledge creation and knowledge management.

In our 21st century business environment, the science of knowledge management is persistently on demanded by both public and private sectors, as it becomes a process or tool used for adding value to the

respective organization and personnel. The knowledge management does not only mean management of knowledge, but it also involves strategic planning to improve efficiency and opportunity of organization by turning “knowledge” into “tangible yields.” It is evident that the global trend or phenomenon will pay more attention to knowledge management processes to create maximum efficiency and effectiveness for the operation of organization. The emphasis of knowledge management processes is to acquire, store, retrieve, utilize, transfer/ distribute/share, and create new knowledge. (Sveiby,2003; Wiig,2003; Kucza,2001; Probst & Others, 2000; Trapp,1999; Marquardt,2002)

The organization environment is changing rapidly. These changes have two dimensional effects on organizational structure and its personnel. Firstly, according to Beckman (1997), the prospective organization will arrange for the new organizational structure to incorporate the so-called “Center of Expertise” that have the responsibilities to create, research, and manage the knowledge warehouse as well as setting standards, methods, and practices in respect of knowledge management. Secondly, the personnel of the prospective organization will be knowledge workers who use their knowledge to create the work of quality. This group of people will become the powerful new generation of organization and labor market as a result of their possession of specific knowledge and skills. Based on the study carried out by Davenport and Prusak (1998), there are four groups of personnel involving with knowledge management: (1) knowledge-oriented personnel;(2) knowledge management specialist; (3) knowledge project manager; and (4) chief knowledge officer. Consequently, it is evident that the prospective organization will consist of proficient personnel equipped with knowledge and usage thereof on the principle of “knowledge and learning.”

In Thailand, the awakening of organizational change and knowledge management had swept into public, private, and community sectors. The public sector realizes the importance and needs of knowledge management to the effect that the Royal Decree Concerning Principles and Methods of Good Governing B.E. 2546 was issued to outline the official conduct evaluation in four dimensions: strategic effectiveness, quality of service, official conduct efficiency, and organizational development. For the latter, it is important that government agencies can reflect its readiness for organizational changes in the following evaluated subjects: 1) knowledge management; 2) information management, and 3) change management. In the meantime, the private sector is committed to create working environment that encourage self-learning and self-development among its staff. The information technology is adopted to use as a tool that enables knowledge creation, storage, and distribution intended to encourage its staff to learn, exchange, and accumulate knowledge to such an extent that they can create new knowledge or innovation deemed as invaluable assets necessary for competition or best practices that leads to efficient and effective work process of organization. For the community sector, the Knowledge Management Institute (KMI) is established to drive knowledge management process within our society by working with diversifying members with an aim to drive Thailand to the knowledge-based and learning society.

From this phenomenon of knowledge management application in Thailand, it can be concluded that a majority of Thai organizations are in the initiative stage of knowledge management that have various models, e.g. single model and composite model while the measurement process is identified without giving much in details. However, the relevant officer finds it important to measure knowledge management efficiency, which corresponds to the statement “If we cannot measure, we cannot manage.” The reason for increasing awareness to measure knowledge management is due to the fact that the results may give rise to efficient corporate development and improvement. In addition, it can be used to assess whether the work in progress is consistent with the corporate goals. However, the measure of knowledge management is subtle and complicated. The results thereby can be infiltrated into any parts of organization. So, it is quite troublesome to sift the results gained from knowledge or knowledge management. Even a successful organization in the area of knowledge management has to spend time conducting research on knowledge creation and knowledge management.

(Boondee Boonyakij, et al. 2004). The most challenging and difficult question to be answered is what kind of methodology should be used by the organization to measure the knowledge management efficiency. In recognition of the importance and high demand of such knowledge in Thai organizations, the researcher is interested in improving such knowledge by integrating two major concepts: indicator development and knowledge management framework and model. The Indicator development will be used to indicate status, nature, and performance as well as to define policy-making, planning and management, performance monitor, and categorization of development efficiently. (Jongsathityu and Pinmanee,1986; Kanjanawasi,1994; Viratchai, 2003). While the knowledge management framework and model will focus on 16 international and 3 local models, it is expected that the research findings will benefit the organization that adopt the application of knowledge management in terms of indicators for efficient knowledge management in the organization. These indicators can also be used to define policy-making, planning and management, and performance monitoring in connection with efficient knowledge management.

2.0 Reviewed Literature

Based on the reviewed literature concern with 19 knowledge management frameworks and models, the researcher would like to present nine elements thereof (Wiig,1993;Nonaka,1994; Leonard-Barton,1995; APQC, 1996; Arthur and APQC,1996;Choo,1996;Petrash,1996;Szulanski,1996;Alavi,1997; Sveiby,1997; van der Spek and Spijkervet,1997; Holsapple and Joshi,2002; Lai and Chu,2002; Bhatt,2003; Siam City Cement Co.,Ltd., 2003; Xerox Corporation,2004; Electricity Generating Authority of Thailand,2004; Foundation for Thailand Productivity Institute,2004; Knowledge Management Institute,2004)

2.1 Knowledge Management Vision

Knowledge management vision relates to the expected results gaining from knowledge management required to be align with the organization direction or vision and can be linked with organizational strategies. The underlying importance is that the corporate goals must be communicated to its staff in all levels.

2.2 Foundation relates to:

- Learning strategy; an approach, process, or method of learning management for all functions and levels of organization to create learning opportunity with continuous improvement of learning system.
- Learning management system; a systematic collection, retention, control, and distribution of information throughout the organization under the same standard.
- Technical learning center; a source of collection and sorted filing system coupled with database that is easily accessible and available for prompt use to enable the circulation of knowledge and learning within the organization.
 - Management responsibilities relates to leadership, determination, and enthusiasm of manager.
 - Expert panel is consisted of personnel, inside and outside teamwork equipped with specific expertise and career with classification of skills. Their responsibilities are to collect, refine, develop, and transfer knowledge and skill, as well as giving advice how to solve problems arising from corporate activities upon request is made by inside and outside personnel.
 - Learning behavior is an expression or action that leads to the change of recognition and thinking frame to attain the desired goals.

2.3 Transition and Behavior Management relates to:

- Strongest support by senior manager as well as their consistent and continuous participation in activities.
- Establish teamwork to arrange plans and activities.
- Define critical success factors (CSF) for corporate knowledge management.
- Senior manager must be a role model in terms of knowledge sharing.
- Create learning environment within the organization, that facilitates trial and error process and implementation of initiatives.

2.4 Communication

The knowledge management communication must take into account the following three factors: contents, target groups, and channels of communication.

2.5 Training and Learning relates to:

- Prepare personnel in all levels to cope with knowledge management.
- Create understanding and recognition of knowledge management and sharing of knowledge within the organization.
- Facilitate corporate personnel to access training.
- Provide facilities to encourage self-learning.
- Encourage self-learning and team learning.

2.6 Knowledge Management Stages relates to:

• Four stages of knowledge transfer: (1) Initiation; (2) Implementation; (3) Ramp-up; and (4) Integration. The ramp-up stage is identified as the progressive implementation of knowledge while the integration is the stage that transferred knowledge becomes embedded in organizational routines and practices.

• Four stages of knowledge management: (1) Conceptualization will focus on the access to knowledge resources through research and knowledge category; (2) Reflection will assess knowledge formed during the stage of conceptualization, adjust the needs, and plan for improvement; (3) Action is a process to improve, develop, and distribute knowledge as well as integrate innovative knowledge together; and (4) Retrospection is the stage of results evaluation in comparison with old and new situations.

2.7 Knowledge Management Process relates to:

- Knowledge identification, knowledge survey and categorization process.
- Acquisition of knowledge, selection, classification, collection, organizing, indexing, knowledge codification and refinement.
- Knowledge distribution and transfer, sharing, application and adaptation, internalizing knowledge, use, development, create new knowledge, knowledge leverage, and knowledge retention.
- Knowledge management activities, i.e. initiation, generation, modeling, repository, distribution and transfer, use, and evaluation knowledge.

2.8 Knowledge Management Enables relates to:

• Resource as an internal factor that having an effect on organizational knowledge management, i.e. human, money, material and equipment, infrastructure, and information technology.

- Management factor that gives rise to organizational knowledge management, i.e. leadership, strategy, policy, corporate culture, values and norms, organizational adaptability, commitment to knowledge management, trust, colleague acceptance, working process, coordination, control, reward and incentive system, and measurement.
- Environment as an external factor that having an effect on organizational knowledge management, i.e. competition, technology, customer, market, distributor, government atmosphere, economic, political, social, and education climate.

2.9 Knowledge Management Measurement relates to:

- System or knowledge management activities measures, output measures, and outcome measures.
- Performance indicators includes: (1) Technical knowledge reflects creation and utilization of knowledge by corporate personnel. (2) Technical skill reflects performance, building and developing performance skills of corporate personnel. (3) Learning behavior-value awareness reflects performance in connection with building learning behavior of corporate staff and (4) Performance management review reflects the level of success whether the implementation of knowledge management is in consistent with policy and strategy defined by the management unit.
- Organizational knowledge that relates to human capital covering skill, knowledge, capability, attitude, idea, and belief of people in organization. Organizational capital relates to organizational structure, working process, administrative and computerized infrastructure, and corporate culture. Customer capital relates to customer and distributor relationship. Knowledge asset is consisted of product or service, patent, copyright, and training.
- Knowledge management results includes people results, customer results, key performance results, and society results.

3.0 Research Question

What is the indicators and variables of efficient knowledge management for Thailand?

4.0 Research Objectives

- 4.1 To analyze the indicators and variables of efficient knowledge management.
- 4.2 To study executives and experts opinions in regard to efficient knowledge management for Thailand.
- 4.3 To propose a composite indicators of efficient knowledge management for Thailand.

5.0 Research Method

This study is a qualitative research with following procedures:

5.1 Key informants

There are two groups of key informants as to indicators and variables of efficient knowledge management in Thailand:

- 5.1.1 Four executives who are direct responsibility for knowledge management of public and private sectors.
- 5.1.2 Ten Knowledge management experts with following qualifications: (1) Being an executive with minimum one year experience in knowledge management of public or private agencies; (2) Being a lecturer

with doctorate degree or holding minimum academic position as an associate professor; or (3) Being independent scholar with knowledge management experience of Thailand.

5.2 Instrument Used for Data Collection

The researcher uses semi-structure interview questions for depth-interview made with immediate executives responsible for organizational knowledge management as to indicators, variables, and best practices of efficient knowledge management in Thailand.

5.3 Data Collection

5.3.1 The dept-interview will be used with four immediate executives responsible for knowledge management of public and private sectors.

5.3.2 The focus group interview will be used with ten knowledge management experts.

5.4 Data Analysis

The researcher will rely upon content analysis and construct conclusion by inductive method.

6.0 Research Findings

The research findings reveal four indicators of efficient knowledge management as follows:

6.1 Context indicator is external environment that having an effect on knowledge management, i.e. economic, political, social, and technology indicator.

6.2 Input indicator for efficient knowledge management can be divided into: (1) human indicator, relate to individual, knowledge management team, and leaders; (2) organizational indicator, relate to vision/ mission/ goal/ strategy, value/belief system/organizational culture, Information technology and communication, motivation and rewarding and evaluation.

6.3 Process indicator can be divided into: (1) human development indicator, relate to individual, group, and leadership development; (2) organizational development indicator such as change management, communication, training and learning, and knowledge management activities and processes.

6.4 Output indicator is a consequence of knowledge management relate to human capital, and organizational capital such as work process improvement, new knowledge/products/services, and relationship.

7.0 REFERENCES

- Alavi, M. (1997) *KPMG Peat Marwick U.S.: One Giant Brain*. Boston: Harvard Business School Press.
- APQC. (1996) *Knowledge Management: Consortium Benchmarking Study*. Houston: American Productivity and Quality Center.
- Arthur, A. and American Productivity and Quality Center. (1996) *The Knowledge Management Assessment Tool: External Benchmarking Version*. APQC.
- Beckman, Thomas J. (1997) *A Methodology for Knowledge Management*. Banff, Canada: International Association of Science and Technology for Development (IASTED) AI and Soft Computing Conference.
- Bhatt, D. (2003) *EFQM Excellence Model and Knowledge Management Implications*. Available from: <http://www.eknowledgcenter.com/articles/1010/1010.htm>
- Boonyakij, B. et. al. (2004) *Knowledge Management: From Theory to Practices*. Bangkok: Foundation for

Thailand Productivity Institute.

- Choo, C. (1996) *An Integrated Information Model of the Organization: The Knowing Organization*. Available from: <http://www.fis.utoronto.ca/people/faculty/choo/FIS/KO/KO.html#contents>
- Davenport and Prusak. (1998) *Working Knowledge: New Organization Manage What They Know*. Boston: Harvard Business School Press.
- Holsapple, C.W. and Joshi, K.D. (2002) *Understanding Knowledge Management Solutions: the Evolution of Frameworks in Theory and Practice*. In Barnes, Stuart. (2002) *Knowledge Management Systems: Theory and Practice*. London: Thomson Learning, 222-241. Available from: [http://www.nelh.nhs.uk/knowledge management /km2/measurement.asp](http://www.nelh.nhs.uk/knowledge%20management/km2/measurement.asp)
- Jongsathityu, J. and Pinmanee, S. (1986) *Educational Indicators*. 2nd ed. Bangkok.
- Kanjanawasi, S. (1994) *Evaluation Theory*. Bangkok: Faculty of Education, Chulalongkorn University.
- Kucza, Timo. (2001) *Knowledge Management Process Model*. Available from: <http://www.inf.vtt.fi/pdf/publications/2001/p455.pdf>
- Lai, H. and Chu, T.H. (2002) *Knowledge Management: A Review of Industrial Cases*. Journal of Computer Information System 42(5): 26-39.
- Leonard-Barton, D. (1995) *Wellsprings of Knowledge*. Boston: Harvard Business School Press.
- Marquardt, M. (2002) *Building the Learning Organization*. New York: McGraw-Hill.
- Nonaka, I. (1994) *A Dynamic Theory of Organizational Knowledge Creation*. Organization Science 5(1): 14-37.
- Petrash, G. (1996) *Dow's Journey to a Knowledge Value Management Culture*. European Management Journal 14(4): 365-373.
- Probst, G., Raub, S and Romhardt, K. (2000) *Managing Knowledge: Building Blocks for Success*. Chichester: John Wiley & Sons.
- Sveiby, K. E. (1997) *The New Organizational Wealth*. Berrett-Koehler.
- Sveiby, Karl E. (2003) *A Knowledge-based Theory of the Firm to Guide Strategy Formulation*. Available from: [http://www.sveiby.com/articles/knowledge theoryoffirm.htm](http://www.sveiby.com/articles/knowledge%20theoryoffirm.htm)
- Sveiby, Karl E. (2003) *What is Knowledge Management*. Available from: <http://www.co-i-l.com/coil/knowledge-garden/kd/whwtiskm.shtml>
- Szulanski, G. (1996) *Exploring Internal Stickiness: Impediments to the Transfer of Best Practice within in the Firm*. Strategic Management Journal 17: 27-43.
- Trapp, Holger. (1999) *Benefits of an Intranet-based Knowledge Management System-Measuring the Effects*. Available from: <http://www.avinci.de/competence/publikationen/diplomarbeitholgertrapp.pdf>
- van der Spek, R. and Spijkervet, A. (1997) *Knowledge Management: Dealing Intelligently with Knowledge*. In Liebowitz, J. and Wilcox, L. (Eds.) *Knowledge Management and its Integrative Elements*. London: CRC Press.
- Viratchai, N. (2003) *Conceptual of Indicator Development*. Bangkok: Faculty of Education, Chulalongkorn University.

Wiig, Karl M. (2003) *Knowledge Management Has Many Facets*. Available from: <http://www.krii.com/downloads/Four KM Facets.pdf>