Factors Affect Knowledge Management System On Rural Credit Bank At West Java Province

Heri Fathurahman
B. Yuliarto Nugroho
Business Administration Study Program,
Department of Administration Science,
Faculty of Social and Political Sciences,
University of Indonesia
Depok, West Java, Indonesia
heri_fathurahman@yahoo.com
nugroho_yuliarto@yahoo.com

Abstract

Rapid changes in the field of knowledge management (KM) have to a great extent resulted from the dramatic progress in the field of information and communication technology (ICT). ICT allows the movement of information at increasing speeds and efficiencies, and thus facilitates sharing as well as accelerated growth of knowledge. ICT has provided a major imputes for enabling the implementation of KM applications, it has made it possible to develop KM applications that best leverage improved mechanism by deploying sophisticated technologies.

In this study we focus on the applications that result from the use of the latest technologies used to support KMS. In this study we try to analysis how do rural credit banks at west Java using ICT for KM in gaining competitive advantage and what are success factors that influence KMSs.

Key words: *knowledge management systems (KMSs), Information Communication Technology (ICT), Competitive Advantage*.

Introduction

Society has recognized the value of knowledge for centuries. Intellectual reflection on knowledge has been pursued for as long as records of human activities are available. It has been studied by philosophers and has been practiced for centuries. However, the terminology of knowledge management was not widely used until the middle of the nineties (Chaw et al., 2003). In the twenties, the characteristics of the business environment have change. The increasing globalization of business, leaner organizations, products and service convergence and vast development of technology implied that the issues of more efficient and effective operation of an organization's knowledge assets have become more important than ever before (Davenport & Prusak, 1998). Drucker (1999) fittingly warned us years ago that those who wait until this challenge indeed becomes a "hot" issue are likely to fall behind, perhaps never to recover. As Drucker (1995) has predicted, knowledge has become the key economic resource and the dominant source of competitive advantage today.

This evident that few big business that already practiced knowledge management are the ones that top *Fortune* 500 and the few small one stop the *Inc. 100 Hot Companies to Watch* list. According to a survey by Covin et al. (1997), top executives of both Canadian Financial Post 300 firms and US Fortune 500 firms view knowledge resources as critical for organizational success. Moreover, most executives (87 percent) define their organization's business as knowledge-intensive according to a survey by Ernst & Young (Ruggles, 1998). However, it is only recently that companies have finally realized the important of managing their organizational knowledge for competitive advantage, hence, searching for knowledge management best practices all over.

Knowledge management is a broad subject with many facets ranging from databases to patents, from the internet to the mentor, from coldly technical to warmly personal concepts. The idea of managing knowledge is recent, but he language used to describe it is still in its infancy (Shaw, 1999). The process and terminology associated with knowledge management often sounds abstract. However, it is concrete, practical and profoundly important (Leonard-Barton, 1995). Based on the review of the literatures presented by many academics and practitioners, it can be concluded that there is not yet a common consensus on the definition and concept of knowledge management (Earl, 1999) despite a great deal of interest on the subject. Defining knowledge yield different dimensions and meaning (Salleh & Goh, 2002). For example, management information systems researchers and practitioners tend to define knowledge management as an object that can be recognized and controlled in computer-

based information systems. Management researcher, on the other hand, address knowledge as processed based on individual and organizational competencies such as skills and know-how (Davenport & Prusak, 1998; Nonaka & Takeuchi, 1995, Sveiby, 1997, Winter, 1998). Thus different perspectives on the concepts of knowledge can lead to different definition of knowledge management.

However, in the simplest term, knowledge management means exactly that: management of knowledge. It can be extended to management of organizational knowledge for creating business value and generating a competitive advantage. It consists of the processes required to effectively manage knowledge. It is a systematic, explicit and deliberate building, renewal and application of knowledge to maximize a firm's knowledge-related effectiveness and returns from its knowledge assets (Wiig, 1997). Knowledge management is essential for enterprises to determine where they are going and for organizational survival in the long run, given that knowledge creation is the core competency of any organizations (Leonard-Barton, 1995). It is a key requirement to future successful enterprises and is rapidly being recognized by firms to be of major strategic importance (Dyer, 2000). Refers to Chong & Choi (2005) and Salleh and Goh's (2002) definition of knowledge management where it is a process of leveraging knowledge as means of achieving innovation in process and products/services, effective decision-masking, and organizational adaptation to the market for creating business value and generating a competitive advantage to organizations. If the above statement is true, then it is extremely important that an efficient knowledge-intensive process must be established to meet the demands of improved enterprise performance (Quinn et al., 1996).

Knowledge management systems (KMSs) are seen enabling technologies for an effective and efficient KM. However, up to date the term KMS has often used ambiguously. What does it take to build a successful KMS? Knowing the essential success factors is useful as it provides researchers and practitioners with the basic requirements for building a successful KMS. What is KM or KMS success? The literature does not provide a consensus on this, although two concepts of success can be identified. The first considers KM or KMS a success if knowledge use through the initiative or system improves the organization's ability to compete. The second considers KM or KMS a success if the KM processes implemented through the KMS are implemented effectively (Jennex, & Olfman, 2004) in Schwartz, 2006). Both success concepts imply that the KMS has to be used. Therefore, KM and KMS success factors are those factors that encourage or help users to use the KMS to effectively perform KM functions.

What is a KMS? Alavi and Leidner (2001) define KMSs as "IT based systems develop to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer, and application". Maier (2007) expanded on the IT concept for the KMS by calling it an ICT system that supports the functions of knowledge creation, construction, identification, capturing, acquisition, selection, valuation, distribution, retention, maintenance, refinement, evolution, access, search, and application. Stein and Zwass (1995) define an organizational memory information system (OMIS) as the processes and IT components necessary to capture, store, and bring to bear knowledge created in the past on decisions currently being made. Jennex and Olfmand (2004) expanded this definition by incorporating the OMIS into the KMS and adding strategy and service components to the KMS.

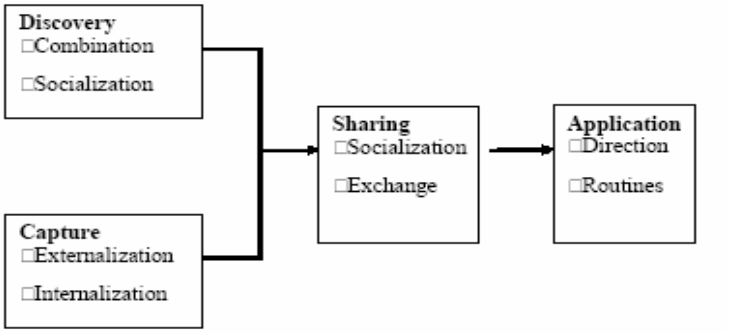
Knowledge Management Systems (KMSs)

Polanyi's (1967) distinction between explicit and tacit is the heart of most KM papers. These constructs follow in that explicit knowledge is knowledge about things, and tacit knowledge is associated with experience. Nonaka (1994) identified four ways of managing knowledge: combination, socialization, externalization, and internalization. Of the seven KM subprocesses presented in figure 1, four are based on Nonaka, focusing on the ways in which knowledge is shared through the interaction between tacit and explicit knowledge. New explicit knowledge is discovered through combination, wherein the multiple bodies of explicit knowledge (and/or data and/or information) are synthesized to create new, more complex sets of explicit knowledge. Therefore, by combining, reconfiguring, recategorizing, and recontextualizing existing explicit knowledge, data, and information, new explicit knowledge is produced. In the case of tacit knowledge, the integration of multiple streams for the creation of new knowledge occurs through the mechanism of socialization. Socialization is the synthesis of tacit knowledge across individuals, usually through joint activities rather than written or verbal instructions. Externalization involves converting tacit knowledge into explicit forms such as words, concepts, visuals, or figurative language (e.g., metaphors, analogies, and narratives; Nonaka & Takeuchi, 1995). It helps translate individual's tacit knowledge into explicit forms that can be more easily understood by the rest of their group.

Finally, internalization is the conversion of explicit knowledge into tacit knowledge. It represents the traditional notion of learning.

Figure 1. KM processes

(Source: Becerra-Fernandez, Gonzales, & Sabherwal (2004).



The other three of KM subprocesses – exchange, direction, and routines – area largely based on Grant (1996b) and Nahapiet and Ghosal (1998). Exchange focuses on the sharing of explicit knowledge and it is used to communicate or transfer explicit knowledge between individuals, groups, and organizations (Grant, 1996b). Direction refers to the process through which the individual possessing the knowledge directs the action of another individual without transferring to him or her the knowledge underlying the direction. This preserves the advantages of specialization and avoids the difficulties inherent in the transfer of tacit knowledge. Finally, routines involve the utilization of knowledge embedded in procedures, rules, and norms that guide future behavior. Routines economize on communication more than direction as they are embedded in procedures or technologies. However, they take time to develop, relying on constant repetition. (Grant, 1996a).

Other KM system characterizations present similar models to describe KM systems. For example, the acquire, organize, and distribute model (Schwartz, Divitini, & Brasethvik, 2000) uses a similar characterization to describe organizational memories. Comparing the two models, the acquisition process relates to how we collect knowledge from members of the organization or other resources, and it is related to the processes of knowledge sharing. Finally, the process of distribution relates to the ability to get the relevant knowledge to the person who needs it at the right time, and it is related to the process of knowledge application. Knowledge management systems utilize a variety of KM mechanisms and technologies to support the knowledge management processes. Depending on the KM process most directly supported, KM systems can be classified into four types: knowledge-discovery systems, knowledge-capture systems, knowledge-sharing systems, and knowledge-application systems (Becerra-Fernandez, et al., 2004).

Knowledge-discovery systems support the process of developing new tacit or explicit knowledge from data and information or from the synthesis of prior knowledge. Theses systems support tow KM subprocesses associated with knowledge discovery: combination, enabling the discovery of new explicit knowledge, and socialization, enabling the discovery of new tacit knowledge. Thus, mechanism and technologies can support knowledge-discovery systems by facilitating a combination and/or socialization. KM mechanisms that facilitate combination include collaborative problem solving, joint decision making, and the collaborative creation of documents. For example, at the senior-management level, new explicit knowledge is created knowledge could be a better understanding of the products and corporate vision. Mechanism that facilitate socialization include apprenticeships, employee rotation across area, conferences, brainstorming retreats, cooperative projects across departments, and initiation processes for new employees (Nonaka & Takeuchi, 1995).

Table 1. KM systems, subprocesses, mechanisms, and technologies

KM Processes	KM Systems	KM Sub-Processes	Illustrative KM Mechanisms	Illustrative KM Technologies
Knowledge Discovery	Knowledge Discovery Systems	Combination	Meetings, telephone conversations, and documents, collaborative creation of documents	Databases, web-based access to data, data mining, repositories of information, Web portals, best practices and lessons learned
		Socialization	Employee rotation across departments, conferences, brainstorming retreats, cooperative projects, initiation	Video-conferencing, electronic discussion groups, e-mail
Knowledge Capture	Knowledge Capture Systems	Externalization	Models, prototypes, best practices, lessons learned	Expert systems, chat groups, best practices, and lessons learned databases.
		Internalization	Learning by doing, on-the-job training, learning by observation, and face-to-face meetings	Computer-based communication, AI-based knowledge acquisition, computer-based simulations
Knowledge Sharing	Knowledge Sharing Systems	Socialization	See above	See above
		Exchange	Memos, manuals, letters, presentations	Team collaboration tools, web-based access to data, databases, and repositories of information, best practices databases, lessons learned systems, and expertise locator systems
Knowledge Application	Knowledge Application Systems	Direction	Traditional hierarchical relationships in organizations, help desks, and support centers	Capture and transfer of experts' knowledge, troubleshooting systems, and case-based reasoning systems; decision support systems
		Routines	Organizational policies, work practices, and standards	Expert systems, enterprise resource planning systems, management information systems

(Source: Becerra-Fernandez, Gonzales, & Sabherwal (2004).

The knowledge management infrastructure is the foundation on which knowledge management resides. It includes five main components: organization culture, organization structure, communities of practice, information technology infrastructure, and common knowledge. Knowledge management is facilitated by organization's ICT infrastructure. While certain information technologies and systems are directly developed to pursue knowledge management, the organization's overall ICT, developed to support the organization's information-processing needs, and also facilitates knowledge management. The ICT infrastructure includes data processing, storage, and communication technologies and systems. It comprises the entire spectrum of the organizations information systems, including transaction-processing systems and management-information systems. One possible way of systematically viewing the IT infrastructure is to consider the capabilities it provides in four important aspects: reach, depth, richness, and aggregation (Evans & Wurster, 1999).

A successful KMS should perform well the functions of knowledge creation, storage and retrieval, transfer, and application. However, other factors can influence KMS success. Mandviwalla, Eulgem, Mould, and Rao (1998) summarized the state of the research and described several strategy issues affecting the design of a KMS. These include the focus of the KMS, the quantity of knowledge to be captured and in what format, who filters what is captured, and what reliance and/or limitations are placed on the use of individual memories. Additional technical issues affecting KMS design include knowledge storage and repository considerations, how information and knowledge is organized so that it can be searched and linked to appropriate events and use, and processes for integrating the various repositories and for reintegrating information and knowledge extracted from specific events. Some management issues include how long the knowledge is useful, access locations as users rarely access the KMS from a single location (leads to network needs and security concerns), and the work activities and processes that utilize the KMS.

Jennex and Olfman (2000) studied three KM projects to identify design recommendations for building a successful KMS. These recommendations include the following:

- Develop a good technical infrastructure by using a common network structure, adding KM skills to the technology support skill set, using high-end personal computer, integrating databases, and standardizing hardware and software across the organization.
- Incorporate the KMS into everyday processes and IS by automating capture.
- Have an enterprise-wide knowledge structure.
- Have a senior management support.
- Allocate maintenance resources for the OMS.

- Train users on the use and content of the OMS.
- Create and implement a KM strategy or process for identifying and maintaining the knowledge base.
- Expand system models and life cycles to include the KMS, and assess system and process changes for impact on the KMS.
- Design security into the KMS.
- Build motivation and commitment by incorporating KMS usage into personnel evaluation processes, implementing KMS use and satisfaction metrics, and identifying organizational culture concerns that could inhibit KMS usage.

Davenport, DeLong, and Beers (1998) studied 31 projects in 24 companies. Eighteen projects were determined to be successful, five were considered failures, eight were too new to be rated. Eight factors were identified that were common in successful KM projects. These factors are as follow:

- Senior management support.
- Clearly communicated KMS purposes and goals.
- Linkages to economic performance.
- Multiple channels for knowledge transfer.
- Motivational incentives for KM users.
- A knowledge-friendly culture.
- A solid technical and organizational infrastructure.
- A standard, flexible knowledge structure.

Cross and Baird (2000) propose that KM would not improve business performance simply by using technology to capture and share the lessons of experience. It was postulated that for KM to improve business performance, it had to increase organizational learning through the creation of organizational memory. To investigate this, 22 projects were examined. The conclusion was that improving organizational learning improved the likelihood of KM success. Factors that improved organizational learning include the following:

- Supporting personal relationships between experts and knowledge users.
- Providing incentives to motivate users to learn from experience and to use the KMS.
- Providing distributed databases to store knowledge and pointers to knowledge.
- Providing work processes for user to convert personal experience into organizational learning.
- Providing direction to what knowledge the organization needs to capture and learn from.

Table 2. KMS success factor summary

ID	Success Factor	Source
SF1	An integrated technical infrastructure including networks, databases/repositories, computers, software, KMS experts	Alavi and Leidner (1999), Barna (2002), Cross and Baird (2000), Davenport et al. (1998), Ginsberg and Kambil (1999), Jennex and Olfman (2000), Mandviwalla et al. (1998), Sage and Rouse (1999), Yu et al. (2004)
SF2	A knowledge strategy that identifies users, user experience-level needs, sources, processes, storage strategies, knowledge, and links to knowledge for the KMS	Barna (2002), Ginsberg and Kambil (1999), Holsapple and Joshi (2000), Jennex et al. (2003), Koskinen (2001), Mandviwalla et al. (1998), Sage and Rouse (1999), Yu et al. (2004)
SF3	A common enterprise-wide knowledge structure that is clearly articulated and easily understood	Barna (2002), Cross and Baird (2000), Davenport et al. (1998), Ginsberg and Kambil (1999), Jennex and Olfman (2000), Mandviwalla et al. (1998), Sage and Rouse (1999)
SF4	Motivation and commitment of users including incentives and training	Alavi and Leidner (1999), Barna (2002), Cross and Baird (2000), Davenport et al. (1998), Ginsberg and Kambil (1999), Jennex and Olfman (2000), Malhotra and Galletta (2003), Yu et al. (2004)
SF5	An organizational culture that supports learning and the sharing and use of knowledge	Alavi and Leidner (1999), Barna (2002), Davenport et al. (1998), Jennex and Olfman (2000), Sage and Rouse (1999), Yu et al. (2004)
SF6	Senior management support including the allocation of resources, leadership, and providing training	Barna (2002), Davenport et al. (1998), Holsapple and Joshi (2000), Jennex and Olfman (2000), Yu et al. (2004)
SF7	Measures established to assess the impacts of the KMS and the use of knowledge, as well as to verify that the right knowledge is being captured	Alavi and Leidner (1999), Davenport et al. (1998), Jennex and Olfman (2000), Sage and Rouse (1999)
SF8	A clear goal and purpose for the KMS	Ackerman (1994), Barna (2002), Cross and Baird (2000), Davenport et al. (1998)
SF9	A learning organization	Barna (2002), Cross and Baird (2000), Sage and Rouse (1999), Yu et al. (2004)
SF10	Easy knowledge use supported by the search, retrieval, and visualization functions of the KMS	Alavi and Leidner (1999), Ginsberg and Kambil (1999), Mandviwalla et al. (1998)
SF11	Work processes designed to incorporate knowledge capture and use	Barna (2002), Cross and Baird (2000), Jennex and Olfman (2000)
SF12	The security/protection of knowledge	Jennex and Olfman (2000), Sage and Rouse (1999)

(Source: Schwartz, 2006)

These studies provide several success factors. Table 2 lists the final set of success factors in rank order. Additionally, success factors SF1 through SF4 are considered the key success factors as they were mentioned by at least half of the success factor studies. Many of the above KMS success factors were identified through qualitative research with their importance established through bibliographical analysis. Many studies have been performed that have identified KM success factors. The summary of table 2 is a useful summary of success factors and their importance and is useful for researchers and practitioners. However, more research into KM and KMS success is needed. To be useful, the generated KMS success model needs to be quantitatively validated against a variety of organizations. This will improve the validity and general application of the model.

Knowledge activities in organizations have increased in significance over the past few years (Davenport & Klahr, 1998). In fact, knowledge has been proposed as the primary sources of wealth creation (Cole, 1998), and knowledge protections has been suggested as critical to generate and preserve competitive advantage (Porter-Liebeskind, 1996). Davenport an Prusak (1998) also note that the only sustainable competitive advantage a firm has comes form what it collectively knows, how efficiently it uses what it knows, and how readily it acquires new knowledge.

One of the few resources that can pass the VRIS test (valuable, rare, inimitable, and non-substitutable) is knowledge. Consequently, several authors have argued for a knowledge- based view (KBV) of the firm as a specialized case of resource-based view (RBV) (Conner & Prahalad, 1996). KBV presents firms as social communities (Kogut & Zander, 1992) with the primary role of integrating the specialist knowledge resident in individuals into goods and services, so that organizational capabilities are the manifestation of this knowledge integration (Grant, 1996b). Knowledge is embedded in multiple entities within the firm, such as the organizational culture, routines, policies, systems, and documents, as well as individuals and teams (Spender, 1996). Knowledge

shapes the firm's core competences (Prahalad & Hamel, 1990) and therefore determines value creation (Grant, 1996b). Furthermore, tacit knowledge, social knowledge, and complex knowledge are difficult to imitate (Leonard & Sensiper, 1998). Hence, competences based on these types of knowledge cannot be easily duplicated by competitors, and strategies based on theses competences are likely to lead to sustainable competitive advantage.

The eventual isolation of a unique body of knowledge, the identity of a critical knowledge area can create a new perspective on the enterprise and how it contributes value to its customers. The framework can support management's intent in creating and using a business planning framework of competitive analysis, strategy formation, and identification of critical success factors for decision making and measurement. Such as a business framework is designed to create a managerial mindset that is predisposed to focus upon certain factors. The practitioners could find this predisposition as a source of difficulty in reframing their perspective of the organization. These conclusions align with the research of Mahoney (1995), Leonard (1998) and Thompsen (1999) on the impact of mental models on the identification and selection of key resource-capabilities that can serve in the best interest of the firm.

Figure 2. Critical knowledge areas, value creation, capability differentials, sustainable competitive advantage, and infrastructure elements (people, process, technology) (source: Cepeda, et al., 2004).

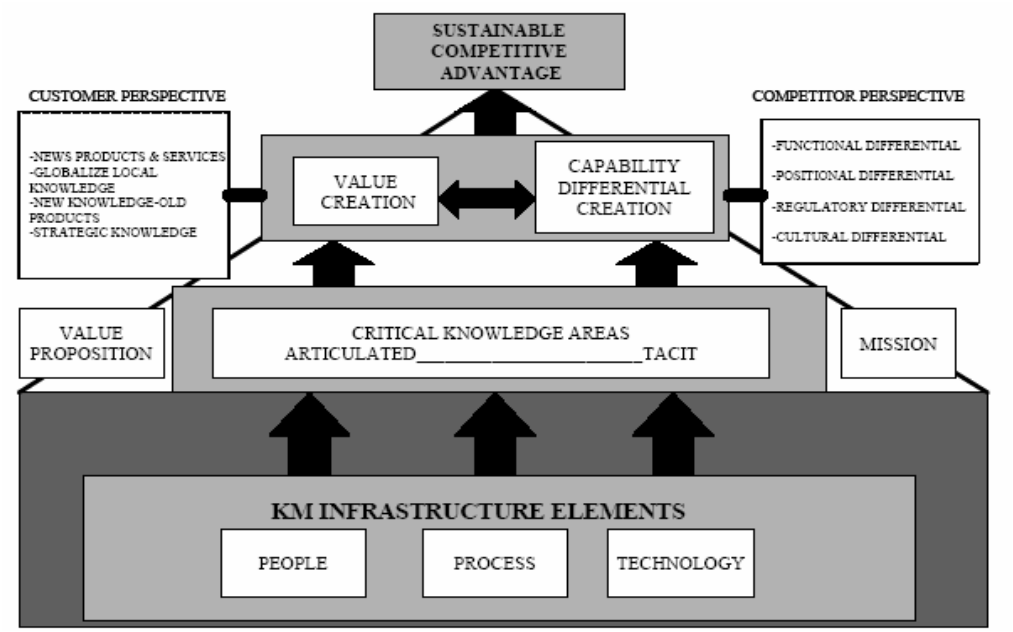
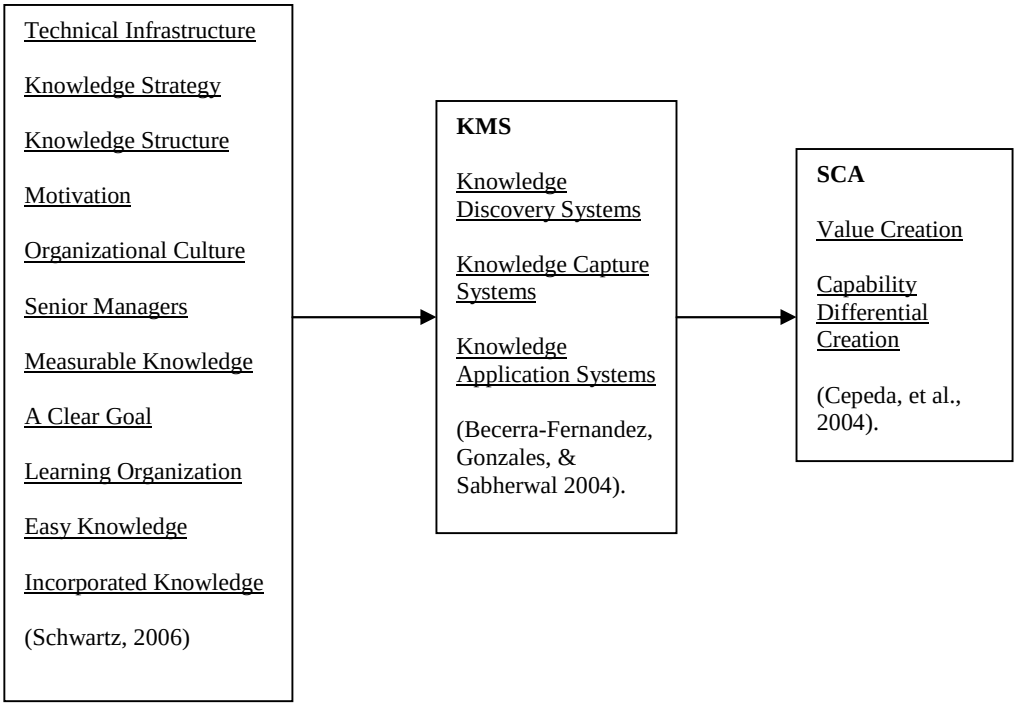


Figure 2 shows interrelationships between knowledge management infrastructure, critical knowledge areas, and various elements leading to sustainable competitive advantage. These relationships between these elements ensure the leading and enhancing sustainable competitive advantage. A critical knowledge area can be considered as another critical success factor and important for management decision making and the formation of competitive strategy. By examining the connections between critical knowledge area and the points of competitive differentiation (differential capabilities and value creation ways), specific actions can be identified to leverage those points and enhance competitive advantage. A critical knowledge area can be a unifying factor in the development of an integrated strategy for enhancing competitive advantage. It can also be used to align infrastructure, policies, practices, systems, and processes to achieve fulfillment of competitive strategies.

Research Methodology

In this study, we used positivism paradigm and quantitative approach to answer the main problems of research. In order to assess the significance of various variables in explaining knowledge management systems, we undertook a questionnaire survey of rural credit bank at West Java Province. The questionnaire was developed following the procedures. Firstly, the academic literatures are reviewed. Secondly, relevant existing measures are assembled and bases for new measures are assembled and bases for new measures are developed. Some existing scales are

modified for the research, and new measures are developed in case there are no generally accepted measures. It is revised on the basis of comments. The questionnaire, accompanied by a cover letter explaining the aims of the study that will be sent to directors of rural credit bank at West Java Province. In order to improve the response rate, the questionnaire is made to be short, concise and of current interest to respondents.



Analysis Model

The data for this research is obtained from Central Bank of Indonesia, the data included type of rural credit banks. The directory listed 404 rural credit banks at West Java Province. In this study we use interviewers to collect data from the field. Questionnaire is asked by interviewers to top managers or directors of rural credit banks at West Java Province. The sample of this research is 100 rural credit banks at West Java Province and the sampling we used random sampling to get the sample from population.

References

Alavi, M., & Leidner, D. E. (1999). "Knowledge management systems: Emerging view and practices from the field". *Proceeding of the 32nd Hawaii International Conference on System Sciences*.

Becerra-Fernandez, I. & Gonzales, A., & Sabherwal, R. (2004). Knowledge management: Challengers, solutions and technologies. Upper saddle River, NJ: Prentice Hall.

Cole, R. (1998). "Introduction". *California Management Review*. 40(3), 15-21.

Chong, S. Y. & Choi, Y. S. (2005). "Critical Factors in the Successful Implementation of Knowledge Management". *Journal of Knowledge Management Practice*, June, pp. 1-23.

Cepeda, G., Galan, J. L., & Leal, A. (2004). "Identifying a key knowledge are in the professional services: A case study". *Journal of Knowledge Management*. 8(6), 131-150.

Chaw, C. W., Lee, B. B., Lim, B. H., & Wong, C. M. (2003). *An Empirical Study of Knowledge Management Practices among Small and Medium Industries in Malaysia*. Unpublished academic dissertation. Multimedia University.

Covin, T,. Hall, N., Smalt, P., & Stivers, B. (1997). “Harnessing Corporate IQ’. *CA Magazine*, 130(3), pp. 26-29.

Cross, R., & Baird, L. (2000). “Technology is not enogh: improving performance by building organizational memory. *Sloan Management Review*, 41(3), 41-54.

Conner, K. R., & Prahalad, C. K. (1996). “A resource-based theory of the firm: Knowledge versus opportunism”. *Organization Science*. 7(5). 477-501.

Davenport, T. & Prusak L. (1998), *Working Knowledge: How organizations manage what they know*. Boston, Massachusetts: Harvard Business School Press.

Davenport, T., DeLong, D. W., & Beers, M. C. (1998), “Successful knowledge management project”. *Sloan Management Review*, 39 (2), 43-57.

Davenport, T., Klahr, P. (1998), “Managing customer support knowledge”. *California Management Review*, 40, 195-208.

Dyer, G. (2000). “KM crosses the chasm – IDC state of the market survey”. *Knowledge Management*. 3(3).

Drucker, P. (1999). *Management Challenges for the 21st Century*. New York: Harper Business.

Drucker, P. (1995). *Managing in Time of Great Change*. New York: Truman Talley Books.

Evan, P., & Wurster, T. S. (1999). “Getting real about virtual commerce”. *Harvard Business Review*, 85-89.

Grant, R. M. (1996a). “Prospering in dynamically-competitive environments: Organizational capability as knowledge integration”. *Organization Science*. 7 (4), 375-387..

Grant, R. M. (1996b). “Toward a knowledge-based theory of the firm”. *Strategic Management Journal*. 17, 109-122.

Jennex, M. E., & Olfman, L. (2000). “Development recommendations for knowledge management/organizational memory systems”. *Proceedings of the Information Systems Development Conference 2000*. .

Jennex, M. E., & Olfman, L. (2004). “Modeling knowledge management success”. *Proceedings of the Conference on Information Science and Technology Management*. CISTM.

Kogut, B., Zander, U. (1992). “Knowledge of the firm, combinative capabilities, and the replication of technology”. *Organization Science*. 3(3), 383-397.

Leonard-Barton, D. (1995). *Wellsprings of knowledge*. Boston: Harvard Business School Press.

Leonard, D., & Sensiper, S. (1998). “The role of tacit knowledge in group innovation”. *California Management Review*. 40, 112-132.

Maier, R. (2007). *Knowledge Management Systems, Information and Communication Technologies for Knowledge Management*. Verlag Berlin Heidelberg: Springer.

Mandviwalla, M., Eulgem, S., Mould, C., & Rao, S. V. (1998). ”Organizational memory systems design. Unpublished working paper for the Task Force on Organizational Memory” presented at the 31st *Annual Hawaii International Conference on Systems Sciences*.

Nonaka, I. & Takeuchi, H. (1995). *The Knowledge Creating Company: How Japanese companies create the dynamics of innovation.* New York: Oxford University Press.

Nonaka, I. (1994). ”A dynamic theory of organizational knowledge creation”. *Organization Science*. 5, 14-15.

Nahapiet, J., & Ghoshal, S. (1998). ”Social capital, intellectual capital, and the organizational advantage”. *Academy of Management Review*. 23 (2), 242-266.

Polanyi, M. (1967). *The Tacit Dimension.* Garden City, New York: Anchor Books.

Porter-Liebeskin, J. (1996). ”Knowledge, Strategy and the theory of the firm”. *Strategic Management Journal*. 17 (Special Issues), 93-107.

Prahalad, C. K., & Hamel, G. (1990). ”The core competence of the corporation”. ”*Harvard Business Review*”. 40(3), 79-91.

Ruggles, R. (1998). “The State of the notion: Knowledge management in practice”, *California Management Review*. 40(3), pp. 80-90.

Shaw, W. J. (1999). *Knowledge Management*. Unpublished academic dissertation. California State University Dominguez Hills.

Salleh, Y. & Goh, W. K. (2002). “Managing human resources toward achieving knowledge management”, *Journal of Knowledge Management*. 6(5). Pp. 457-468.

Schwartz, D. G., Divitini, M., & Brasethvik, T. (2000). “On knowledge management in the Internet age”. In D. G. Schwartz, M. Divitini, & Brasethvik (Eds.), *Internet based knowledge management and organizational memory* (pp. 123). Hershey, PA: Idea Group Publishing.

Schwartz, D. G. (2006). *Encyclopedia of Knowledge Management*. Hershey: Idea Group Reference.

Stein, E. W., & Zwass, V. (1995). “Actualizing organizational memory with information systems. *Information Systems Research*. 6(2), 85-117.

Spender, J. C. (1996). “Making knowledge the basis of a dynamic theory of the firm”. *Strategic Management Journal*. 17, 45-62.

Sveiby, K. (1997). *The new organizational wealth.* San Fransico: Berrett-Koehler.

Winter, S. (1998). “On course, competence and the corporation”. *Journal of Law, Economics and Organisations*, 4(1), pp. 163-180.

Wiig, K. (1997). “Knowledge management: Where did it come from and where will it go?”. *Expert Systems with Applications*. Pergamon Press/Elsevier, vol. 14.

Quinn, J., Anderson, P., & Finkelstein, S. (1996). “Managing professional intellect”. *In Harvard Business Review on Knowledge Management*. Boston, MA: Harvard Business School Publishing.