
IMPLEMENTATION OF KNOWLEDGE MANAGEMENT (KM) IN HIGHER LEARNING INSTITUTIONS: KEY ACTIVITIES AND SUCCESS FACTORS

YIP MUM WAI
ASSOC. PROF. Dr. AHMAD RAHMAN SONGIP
Dr. DOMINIC LAU HOE CHAI

Abstract

Today, as the growing demand for knowledge based products and services is changing the structure of the global economy, the role of *knowledge* in achieving competitive advantages is becoming an important management issue in higher learning institutions. The practice of *knowledge management (KM)* is essential in higher learning institutions in order to sustain in this knowledge economy in Malaysia in line with the Knowledge Based Economy Master Plan 2002.

The main purpose of this study is to identify the Knowledge Management (KM) activities that are implementing in higher learning Institutions in Malaysia. The key activities are knowledge identification, knowledge acquisition, knowledge application, knowledge sharing, knowledge development, knowledge creation, knowledge preservation and knowledge measurement. The second objective is to identify the relationship between the success factors of KM implementation in higher learning institutions, i.e. top management leadership and culture with the perceived benefits of KM.

A total of 200 questionnaires were sent to the higher learning institutions in Klang Valley. 99 institutions responded. The result showed that the top management leadership and culture positively influenced the perceived benefits of knowledge management.

Introduction

After the launching of the Malaysian government's Knowledge Economy master plan in 9th September 2002, this adds to the pressure on the Malaysian higher education system to deliver a new kind of organization to train a new kind of graduate.

Five million was spend in preparing Knowledge economy master plan. The central mission of “Malaysia’s Strategic Initiative One of the Twenty-first Century” is to ensure that we make the paradigm shift from the production based economy to the knowledge-based economy. Fully endorsed by the Cabinet, the masterplan will be the blueprint for the Government to refer as it moves along the journey towards Vision 2020. Master Plan consists of SEVEN (7) Strategic thrusts and 136 recommendations.

In Knowledge economy, managing knowledge is the fundamental enterprise philosophy and organizational cultural. We are shifting from Production Economy whereby managing people is the fundamental enterprise philosophy to Knowledge Economy whereby managing knowledge is the fundamental enterprise philosophy. Practice of knowledge management (managing knowledge) is essential in higher learning institutions.

Definition of Knowledge Management (KM)

Ow (2001) found it KM has multiple interpretations. When applied in an IT context, knowledge management is about the managing hardware, software or systems. Applied in a business education context, less attention is focused on technical aspects of knowledge management and more emphasis is given to social aspects such as organizational theory, leadership and other issues in the human side of management. The curricula of Asian institutions of higher education appear to follow this pattern. With respect to the management of higher education establishments themselves, however, KM is clearly to be interpreted in the second, broader sense.

According to Malhahotra (1998), knowledge management caters to the critical issues of organizational adoption, survival and competence in face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technology and the creative and innovative capacity of human beings.

Knowledge Management is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information (Davenport, 1998).

Human aspects or soft elements of success factors of knowledge management such as top management leadership and culture are adopted in this survey. Knowledge management is about culture, not technology.

Literature Review

Knowledge management Activities

In order to achieve higher performances at the level of organization, 8 key activities in Figure 1 have to be practiced in higher learning institutions. This key processes are derived from the model that developed by Ow (2001), Probst, Raub and Romhardt (2000) and Natarajan and Shekhar (2000).

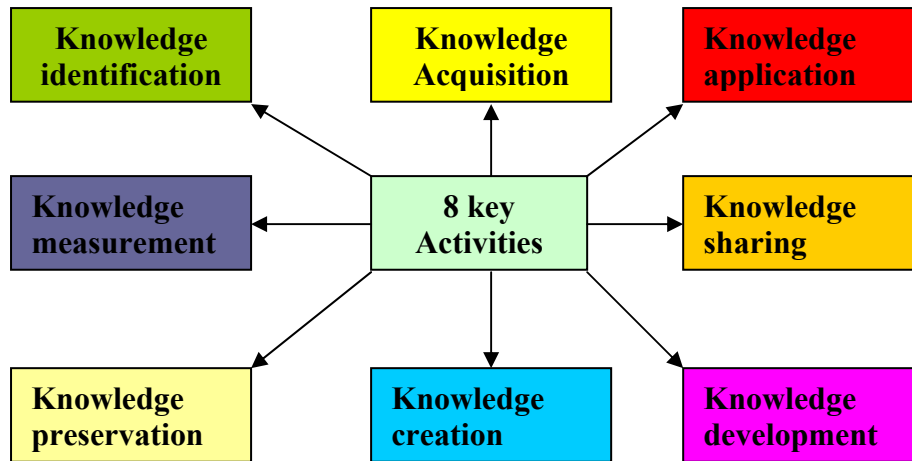


Figure 1: 8 Key Activities of Knowledge Management

Knowledge Identification

An organisation must state its business strategies and objectives. The knowledge requirements have to be identified to meet these goals. The difference between what the organisation requires and what it currently has is what is called the *knowledge gap* (Natarajan and Shekhar, 2000).

Knowledge acquisition

After determine the knowledge gap, the next step is to close the knowledge gap by applying knowledge acquisition or knowledge import. Companies import a substantial part of their knowledge from outside sources. According to Natarajan and Shekhar (2000), knowledge acquisition is quite simply the process of acquiring knowledge that is available somewhere. For an organization, this might entail capturing knowledge from existing documents or capturing tacit knowledge of its people into its repositories. Or it might mean identifying external sources of either process/technology expertise or market intelligence so that this knowledge can be purchased.

Knowledge Application

Knowledge application means making knowledge more active and relevant for the organization in creating values. Knowledge application deals with the fact that employees continually apply their knowledge to their working situation. We have to make the local knowledge that can use it in global application. Organizational knowledge needs to be employed into a company’s product, processes and services. If an organization does not find it easy to locate the right kind of knowledge in the right form, the organization may find it difficult to sustain its competitive advantages.

Knowledge sharing

Knowledge sharing and distribution of knowledge within an organization are a vital precondition for turning isolated information or experiences into something that the whole organization can use. The most important step is to analyze the transition of knowledge from the individual to group or organization. Knowledge distribution is the process of sharing and spreading knowledge which is already present within the organization (Probst , Raub, Romhardt, 2000).

Knowledge Development

Knowledge development is a building block which complement knowledge acquisition. Its focus is on generating new skills, new products, better ideas and more efficient processes. Knowledge development include all management efforts consciously aimed at producing capabilities which are not yet present within the organizations or which do not exist either insides or outside it. This can examine the company general

ways of dealing with new ideas and utilizing the creativity of the employees (Probst, Raub, Romhardt, 2000).

Knowledge Creation

Knowledge creation is the key focus that about the creating new knowledge or innovate the existing knowledge for the organization. The model that can be applied is the model that developed by Knowledge Management Guru, Nonaka and Takeuchi (1995) are tacit to tacit, tacit to explicit, explicit to tacit, explicit to explicit.

Knowledge Preservation

According to Natarajan and Shekhar (2000), knowledge once acquired needs to be preserved. Storing or preserving is certainly not about putting it somewhere and forgetting all about it. This is a process for selecting, storing and regularly updating knowledge of potential future value must therefore be carefully structured. If this is not done, valuable expertise may be simply thrown away (Probst, Raub, Romhardt, 2000).

Knowledge measurement

Knowledge measurement is used to measure the impact and effects after implementing knowledge management in an organization. This must be developed that link actions to strategies, monitor changes in intellectual capital and encourage value-creating work (Ow,2001)

Perceived Benefits of KM

According to Roelof P.uit Beijerse (1999) by managing knowledge, organization can:

- improve efficiency
- improve the market position by operating more intelligently on the market
- enhance the continuity of the company
- enhance the profitability of the company
- optimize the interaction between product development and marketing
- improve the group competencies
- make professional learn more efficiently and more effectively
- provide a better foundation for making decisions like make or buy of new knowledge and technology, alliances and merges
- improve communication between knowledge workers
- enhance synergy between knowledge workers
- ensure the knowledge workers stay with the company
- make the company focus on the core business and on critical company knowledge

According to (Kidwell, Linde, and Johnson, 2000), using knowledge management techniques and technologies in higher education is as vital as it is in corporate sector. Knowledge management can lead to better decision-making capabilities, reduced “ product” development time (i.e. curriculum development and research), improved academic and administrative services and reduced costs.

Critical Success Factor of KM: Top Management Leadership

According to Lang (2001), for successful KM implementation, the leadership and commitment of top management must be sustained throughout a KM effort. Thus an important hindrance to knowledge creation and utilization can be a lack of support from top management. A knowledge leader or champion-someone who actively drives the knowledge agenda forward, creates enthusiasm and commitment is important. This is also strongly supported by Jarrar (2002) and Pollitt (1999).

Politis (2001) said that the knowledge-enabled leader is capable of understanding the strategic relationship between knowledge acquisition and the business processes and functions; supporting and facilitating employees to acquire and share knowledge; leading the enterprise's effort to exploit knowledge; sponsoring and supporting ideas for further use in knowledge strategies for knowledge acquisition. They encourage communication, encourage negotiation, encourage knowledge sharing and promote interactive processes for knowledge acquisition. They also encourage team members to gather information and the knowledge required to monitor their performance.

From the survey conducted by Chase's (1997), lack of senior management commitment is one of the barriers implementation of a knowledge based management systems.

According to Gamble and Blackwell (2001), one of the most important things need to be put in place to enable effective knowledge management is the senior management of the organizations realizes that knowledge management is virtually important to success. At 3M Knowledge Management does not just bubble up from middle management; top management see it as one of the major duties to encourage knowledge linkages (Brand 1998).

An important hindrance to knowledge creation and utilization can be a lack of support from top management. A knowledge leader or champion-someone who actively drives the knowledge agenda forward, creates enthusiasm and commitment is important. The supportive CEO will ensure that there are efforts to create a culture that support innovation, learning and knowledge sharing and to give more explicit recognition to tacit knowledge and related human aspects, such as ideals, values or emotions. (Yasar F.Jarrar, Arora, 2002)

In order to managing knowledge effectively, Drucker (1992) also mentioned that the foundation of effective leadership is thinking through the organization's mission, defining it and establishing it, clearly and visibly. The leader sets the goals, sets the priorities and sets and maintains the standards. He makes compromises, of course; indeed, effective leaders are painfully aware that they are not in control of the universe. Besides that, another requirement of effective leadership is to earn trust. Otherwise there won't be any followers and the only definition of a leader is someone who has followers.

Bollinger and Smith (2001) indicated that management needs to focus on four particular areas in knowledge management. One of the four areas is that management must initiate government functions of top down monitoring of systems and processes to facilitate knowledge related activities. This can include implementing incentive to encourage knowledge sharing, identification and management of knowledge assets and restructuring operations and organization if necessary. This is also supported by Jarrar (2002). He commented that the top management must support the practice of knowledge management and providing funding and other resources for infrastructure and direct modeling of the design behaviors.

Honold (1997) also said that leadership should focused on the development of the individuals throughout the organization, creating a vision and developing common goals and continually scanning the environment and adapting to it. Personal responsibility for performance exemplified in job autonomy, control over decisions directly relating to one's work, job enrichment through multi-skilling and cross training, access to information to measure one's own performance and make good decisions and allowance of risk taking.

According to the research done by Skyrme and Amidon (1997), they have illuminated certain characteristics which can determine an organization's success with the knowledge agenda. Below are the ten characteristics of leaders:

- They can clearly articulate a vision of the Knowledge Management agenda and Knowledge Management. Their thinking about their business, their business environment and their knowledge goals was clear.

-
- They have enthusiastic knowledge champions who were supported by top management.
 - They have a holistic perspective that embraces strategic, technological and organizational perspectives.
 - They use effective communications using all the tricks of marketing and public relations.
 - There is effective interaction at all levels with their customers and external experts. Human networking takes place internally and externally on a broad front.
 - They demonstrate good teamwork, with team members drawn from many disciplines.
 - They have a culture of openness and inquisitiveness that stimulates innovation and learning.
 - They develop incentives, sanctions and personal development programmes to change behaviors.
 - They bet on knowledge, even when the cost benefits cannot easily be measured.

Culture

According to the survey done by Skyrme and Amidon (1997), they highlighted that creating knowledge culture is the most difficult challenge affecting knowledge sharing in companies. One of the critical success factors of Knowledge Management is creating a knowledge creating and sharing culture.

According to the survey done by McDermott and O'Dell (2001), they also agree that culture does play an important role in the success of a knowledge management effort. They found many examples where well-designed knowledge management tools and processes failed because people believed they were already sharing well enough, that senior managers did not really support it.

According to Davenport and Prusak (1998), one of the most important conditions leading to the success of a knowledge management project in their survey is a knowledge friendly culture where employees are bright and intellectually curious are willing and free to explore without fear.

Pollitt (1999) said that a "knowledge-friendly" culture is one of the most important factors for a project's success, but one of the most difficult to create if it does not already exist. In terms of the organizational culture, people should have a positive orientation to knowledge and not be inhibited in sharing knowledge. In addition, the knowledge management project must fit in with the existing culture. A culture with a positive orientation to knowledge is one that highly values learning on and off the job.

Hence, sharing knowledge requires a company culture that encourages people to share it and freely exchange their thoughts, ideas and ways of working. (Sydanmaanlakka, 2002)

According to the Reamy (2001), company began realizing that culture was an essential ingredient instead of pouring millions of dollars into the technology infrastructure.

Harvey and Denton (1999) support to the importance of culture by saying that to complete globally in our business you need to rich in technology and to be rich in technology you need knowledge and a culture which prizes knowledge.

The successful of KM is 10 percent systems and IT and 90 percent people and culture and the statement so often articulated " the most important resource of an organization is its people' is increasingly meaningful, not merely as rhetoric but also in practice. (Jarrar,2002)

Greengard (1998) identified three cultural barriers organizations are usually confronted with when adopting a knowledge management initiative. First, people do not like to share their best ideas, second, people do not like to use other people's ideas and third, people like to consider themselves experts and prefer not to collaborate with others

Objectives of the Research

The main purpose of this study is to identify the Knowledge Management (KM) activities that are implemented in higher learning Institutions in Malaysia. The key activities are knowledge identification, knowledge acquisition, knowledge application, knowledge sharing, knowledge development, knowledge creation, knowledge preservation and knowledge measurement. The second objective is to identify the relationship between the success factors of KM implementation in higher learning institutions, i.e. top management leadership and culture with the perceived benefits of KM (cost reduction, creativity and innovation, efficiency, research, quality performance, staff competencies and reputation).

Hypotheses of the Study

Figure 2 illustrated the proposed model for top management leadership and culture with the perceived benefits of KM. The box on the left hand side contains the top management leadership and culture and the box on the right hand side contains the perceived benefits of KM.

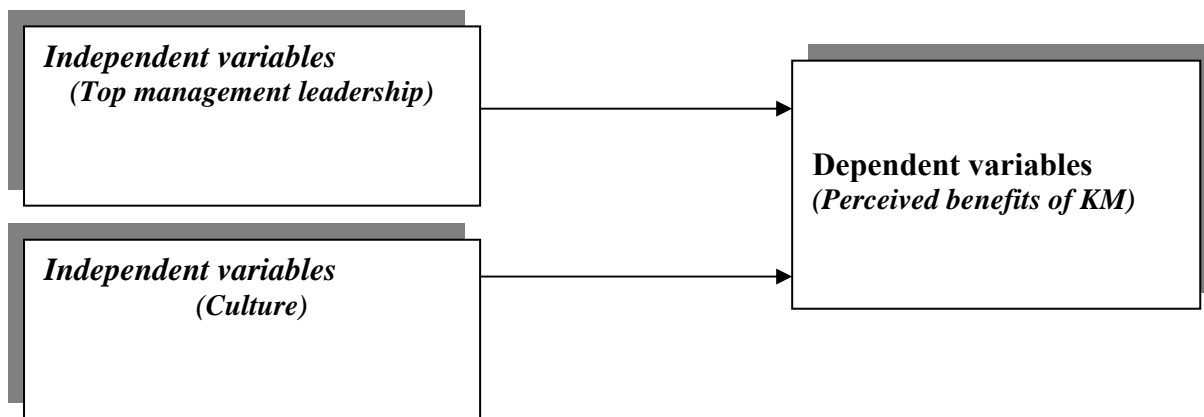


Figure 2: Hypotheses

- Top management leadership has a positive influence on *perceived benefits of KM*.
- *Culture* has a positive influence on *perceived benefits of KM*.

Research methodology

The data of this research were secured by means of questionnaires, distributed to Private Higher Learning Institutions and Public Higher Learning Institutions. The target for this study was the Higher Learning Institutions in Klang Valley in Malaysia.

Sample Size

A total of 200 questionnaires were sent to all the higher learning institutions in Klang Valley. The 99 samples were responded. The response rate was 49.5%. The 99 samples come from variety of departments, which included business management, engineering, Information Technology, and etc. The method used for gathering data was portal survey. The questionnaires were completed by the Principal, Chief Executive Officer, head of faculties, head of division and etc of the higher learning institutions.

Validity and Reliability Considerations

In order to confirm that respondents provide *valid* and *accurate* indications of the KM adopted, people who have written extensively on KM were requested to validate the questionnaire for suitability and accuracy. The feedback received was then used as a basic for further amendments to enhance the internal validity of

then questionnaire. The reliability of the results obtained was assessed by using Cronbach's alpha (Nunnally, 1978).

Questionnaires design

The questionnaires designed in this study consisted of four main parts: the background of the company, the knowledge management activities, perceived benefits of KM and the success factors (top management leadership and culture) of KM. The first part was designed to determine fundamental issues, including the respondent's working departments, types university/college/institution ownership. The second part is about knowledge management activities. The third part is the perceived benefits of KM implementation. Last part of the questionnaire consists of success factors of KM: top management leadership and culture which consisting 9 statements and 7 statements (also called independent variables). These statements were measured using 5 point Likert Scale. (5= *Strongly agree* 4= *Agree* 3 = *Neutral* 2= *Disagree* 1= *Strongly disagree*)

Results and Discussions

Demographic Background

Table 1 shows that out of the 99 respondents, 15.3% were from Information Technology Division, 4.1% from Law division, 11.2% were from Education Division, 10.2% were from Business Management, 12.2% were from Engineering, 4.1% were from Sciences, 7.1% were from Architecture, 3.1% were from Linguistics, 14.3% were from medicine, 1.0% were from mathematics division and others took up merely 17.3%.

Table 2 shows that the majority of respondents surveyed are from the following by fully government (17.5 %), majority government (2.1%) and semi government (6.2%), majority private (1.0%) and fully private institutions (73.2 %).

Key Activities of Knowledge management

The key activities are knowledge identification, knowledge acquisition, knowledge application, knowledge sharing, knowledge development, knowledge creation, knowledge preservation and knowledge measurement. Table 3 shows the responses for questions related to the key activities of knowledge management in higher learning institutions. A total of 15.7 % of the respondents surveyed use knowledge acquisition, followed by 15.3% who use knowledge application and 15.1% use knowledge sharing. 12.5% use knowledge development, 12.1% use knowledge creation, 11.2% use knowledge preservation, 9.4% use knowledge identification and 8.2% use knowledge measurement. It shows that higher learning institutions place a major emphasis in knowledge acquisition. They understand that the important of knowledge acquisition in order to build out their competencies especially the lecturers of the higher learning institutions. They acquire the knowledge from the unlimited resources such as seminar, workshop, conference and etc in order to acquire the current and specialized knowledge which can be applied in their workplace. Thus, knowledge application is the second important activity in most of the higher learning institutions. Followed by the knowledge sharing where they share their experience and knowledge with each other. As we know knowledge is power in production economy, but knowledge is not power is knowledge economy. Effective knowledge sharing/collaboration/networking is power in this knowledge economy.

Perceived benefits of Knowledge Management Implementation

Cronbach's Alpha was used to evaluate the reliability of the measures as suggested by Nunnally (1978). Nunnally (1978) suggested that constants have reliability values of 0.7 or greater. In general, an alpha of 0.7 and above is considered acceptable (Hair et al., 1992). From the result in Table 4, all these values are higher than 0.70. Hence, none of the factors need to be deleted.

Table 5 shows that the mean for the questions relating to the perceived benefits of KM. Creativity and innovation (3.87), reputation (3.88), staff competencies (3.74), efficiency (3.70), cost reduction (3.65), quality (3.58) and research (3.41).

Hypothesis Testing of Critical success factors (top management leadership and culture with perceived benefits of knowledge management)

H1 tested the relationship between the top management leadership and perceived benefits of KM. H2 tested the relationship between the culture and perceived benefits of KM. The results are tabulated in Table 6. The both results are significant; the regression confirms that top management leadership and culture have an influence with the perceived benefits of KM.

These are supported by the research surveyed done by Mason and Paulen (2003), they mentioned that organizational culture, leadership and management are the important factors in implementing KM. Furthermore, Prusak (1998) considers the notion of social capital critical to KM, and considers culture and trust as important factors in KM. This finding also is consistent with the KM researchers (Choi, 2000, Skyrme and Amidon ,1997, Chase, 1997) who also agreed that top management and culture are the important factor in KM implementation.

Furthermore, according to the survey done by McDermott and O'Dell (2001), they also supported that culture does play an important role in the success of a knowledge management effort.

Conclusion

The knowledge-based economy will provide the platform to sustain a rapid rate of economic growth and enhance international competitiveness so as to achieve the objectives of Vision 2020. It will also strengthen Malaysia's capability to innovate, adapt and create indigenous technology; and design, develop and market new products, therefore providing the foundation for endogenously driven growth.

In Knowledge economy, managing knowledge is the fundamental enterprise philosophy and organizational cultural. We are shifting from Production Economy whereby managing people are the fundamental enterprise philosophy to Knowledge Economy whereby managing knowledge is the fundamental enterprise philosophy. Practice of knowledge management (managing knowledge) is essential in higher learning institutions.

The main purpose of this study is to identify the Knowledge Management (KM) activities that are implementing in higher learning Institutions in Malaysia. The result showed the all the higher learning institutions are practicing 8 key activities of knowledge management. Knowledge acquisition and knowledge application and knowledge sharing are the most important key in higher learning institutions.

The second objective is to identify the relationship between the success factors of KM implementation, i.e. top management leadership and culture with the perceived benefits of KM. The result showed that the top management leadership and culture are the key success factors of KM implementation; this bring the perceived benefits such as cost reduction, creativity and innovation, efficiency, staff competencies, quality performance and research.

	Percentages
IT	15.3
Law	4.1
Education	11.2
Business management	10.2
Engineering	12.2
Science	4.1
Architecture	7.1
Linguistics	3.1
Medicine	14.3
Maths	1.0
Others	17.3

Table 1

	Valid Percent
Fully government	17.5
Major government	2.1
Semi government	6.2
Major private	1.0
Fully private	73.2
Total	100.0
System	
Total	

Table 2: Results of Types of Ownerships

Knowledge management Activities	Percentages (%)
<i>Knowledge identification</i>	9.4
<i>Knowledge acquisition</i>	15.7
<i>Knowledge application</i>	15.3
<i>Knowledge sharing</i>	15.1
<i>Knowledge development</i>	12.5
<i>Knowledge creation</i>	12.1
<i>Knowledge preservation</i>	11.2
<i>Knowledge measurement</i>	8.2

Table 3: Knowledge Management Activities

Items	Reliability (α)
Knowledge management activities	0.8159
Perceived benefits	0.9116
Top management leadership	0.9007
Culture	0.8716

Table 4: Results of Reliability Analysis

No.	Tangible effects	Mean scores
1	Cost reduction	3.6465
2	Creativity and Innovation	3.8687
3	Efficiency	3.7071
4	Research	3.4141
5	Quality Performance	3.5758
6	Staff competencies	3.7449
7	Reputation	3.8182

Table 5: KM Perceived Benefits (Dependent Variables)

Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.838	.330		2.538	.013
	TOP	.312	.114	.276	2.737	.007
	CUL	.570	.126	.454	4.507	.000

a Dependent Variable: BENEFITS

Table 6: Regression Analysis of TOP (top management leadership) and CUL(culture) with the perceived benefits

	Top management leadership
1	Top management develops and facilitates the KM vision, mission, objectives and goals for the organization.
2	Top management is committed involved in knowledge management activities.
3	Top management encourages continuous improvement based on sharing ideas.
4	Top management encourages employees to give feedback to improve KM performances.
5	Top management encourages people involve in achieving the organizations' objectives.
6	Top management provides adequate fund for KM implementation.
7	Top management provides incentives and reward for the KM implementation
8	Top management encouragement toward formal / informal communication.
9	Top management benchmarks other organizations best practices.

	Culture
1	The culture is characterized by openness and flexibility.
2	Acquiring knowledge culture exists to input their knowledge related to their practices.
3	Knowledge sharing culture exists to enhance knowledge for decision-making.
4	Knowledge sharing culture will bring to the creation of new knowledge and competences.
5	Knowledge creating culture exists to leverage knowledge for innovation.
6	Life long learning culture lead employees to enhance their knowledge and skills.
7	Motivation culture encourages employees applying knowledge in the organization.

Table 7: Success factors of KM Implementation

References:

Andrey S. Bollinger and Robert D. Smith (2001), "Managing organizational knowledge as a strategic asset", *Journal of Knowledge Management*. Volume 5 Number 1, pp8-18.

Arora, R., (2002). "Implementing KM – a balance score card approach", *Journal of Knowledge Management*, Volume 6, Number 3, pp. 240-249.

Brand, A. (1998), "Knowledge Management and Innovation at 3M", *Journal of Knowledge Management*.

Chase R.L., (1997), "The Knowledge Based Organization: An International Survey", *The Journal of Knowledge Management*. , Volume 1, Number 1, pp38-49.

Davenport, T, H, Prusak, L., (1998), "Working knowledge: How organization manages what they know", Harvard Business School Press.

Drucker, P., (1992), "Managing for the Future: The 1990s and beyond", Truman Talley Books/Dutton New York, page 121.

Dutrenit, G., (2000), "Learning and Knowledge Management in the firm", Edward Elgar Publishing Limited.

Hair, J F, Anderson, R, Tashan, R and Black, W (1995). "Multivariate Data Analysis with Readings", Englewood Cliffs, NJ: Prentice Hall.

Harvey, C, Denton, J, (1999), " To come of age: the antecedents of organizational learning", *Journal of Management Studies*, 36, 5, 897-918.

Honold, L., (1997), "A review of the literature on employee empowerment, Empowerment in Organizations", Volume 5, Number 4.

Jarrar Yasar F. (2002), "Knowledge management: learning for organizational experience", *Managerial Auditing Journal*, Volume 17, Number 6, pp 322-328.

Kidwell, J.J, Vander Linde K., and Snadra L. Johnson (2000), "Applying Corporate Knowledge Management Practices in Higher Education", *EDUCAUSE*, Number 4, 2000.28-33.

Lang C.J., (2001), "Managerial concerns in knowledge management", *Journal of Knowledge Management*, Volume 5, Number 1, pp 43-59

McDermott, R., Dell, C., (2001), "Overcoming cultural barriers to sharing knowledge", *Journal of Knowledge Management*, Volume 5 Number 1, page 76-85.

Natarajan, G., Shekhar, S., (2000), "Knowledge Management Enabling Business Growth", McGraw Hill International Edition.

Nonaka, I, Takuechi, H., (1995)“ The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation”.

Nunnally, JC,(1978), “Psychometric Theory”, 2nd edition, McGraw-Hill, New York, NY, pp. 181-191.

Paul R.Gamble and John Blacewell, (2001), “Knowledge management: A state of the Art Guide”, Kogan Page.

Pollitt,J.D.,(1999), “Strategic issues for training”, Education + Training”, Volume 41 Number 3 pp. 116-156

Politis, J.D. (2001), “The relationship of various leadership styles to knowledge management”, Leadership and Organization Development Journal, 2001, pp 354-364.

Probst, G., Raub, S., Romhardt,K., (2000), “Managing knowledge,: Building blocks for success”, John Wiley and Son Ltd.

Roelof P.uit Beijerse, (1999), “Questions in Knowledge Management: defining and conceptualizing a phenomenon”, Journal of Knowledge Management, Volume 3, Number 2.

Skyrme, D., Amidon, D, (1997), “The Knowledge Agenda”, The Journal of Knowledge Management, Volume 1, Number 1, September, 1997, pp27-37.