FRAMEWORK FOR MEASURING KNOWLEDGE MANAGEMENT PERFORMANCE USING KM BALANCE SCORECARD

Luciana Andrawina[1] , Amelia Kurniawati[2]

[1,2] Faculty of Industrial Engineering, Telkom University, Indonesia
[1] luciana_andrawina@yahoo.com, [2] amelia.kurniawati@gmail.com

ABSTRACT

Today's strong competition has encouraged many companies to implement knowledge management in their system. Telco Company is one of the companies which have implemented knowledge management in their management practices, but have never done a thorough evaluation from every possible perspective on it. Evaluation on knowledge management is very essential to find out the values and benefit generated from it. The importance of measuring a company's knowledge management system is because the company has allocated resources on implementing the KMS. The measurements indicators designed based on four perspectives of knowledge management balanced scorecard, which are: financial perspective, organizational capital perspective, customer capital perspective, and human capital perspective. The indicator design process is done using SECI method to make it more comprehensive.

Keywords: *Intellectual Capital, knowledge management SECI Method*

1. INTRODUCTION

The paradigm shift on company's strength is this strong competitive era has made the knowledge management viewed as a very important asset by the company. Based on that, there are many companies in Indonesia that have implemented knowledge management in their management practices. Telco Company is a company that has implemented a knowledge management system to improve their competitive advantage. However, although the company is one of the pioneers in applying KMS and has long had a department or division of knowledge management, performance measurement has never been done in the program that has been implemented. The reason why the measurement has not been done was because the indicator measured was intellectual capital which is intangible.

Several studies related to Intellectual capital (IC) made by Edvinsson and Malone (1997), known as IC framework of Scandia value scheme. Svieby, K. (1997) suggests Intellectual Capital in 3 categories, namely competence, internal structure, and external structure. Tiwana (2000) expressed the concept of intellectual capital that is consistent with the knowledge management balanced scorecard. These studies provide a basis to help design appropriate measurement indicators for Telco Company's knowledge management department's program. The design of measurement can be viewed from different perspective that will ultimately deliver improved Telco Company's KM performance KM Telco Company to be more comprehensive.

2. THEORETICAL BACKGROUND
2.1. Intellectual Capital

Stewart (1997) has proposed that intellectual capital is the "intellectual material, knowledge, information, intellectual property, experience taht can put to create wealth'. Some authors have used the term it is the sum of human capital and structural capital. It involves applied experience, organizational technology, customer relationships and professional skills that provide an organization with a competitive advantage (Edvinsson, 1997).

2.2. Knowledge Management Balanced Score Card

Tiwana (2000) put forward a type of measurement which is a modification Balanced Scorecard (BSC) from Kaplan and Norton (1996). BSC approach can be

modified for the purposes of measuring KM perspective by proposing a replacement as follows:

1. Financial Perspective: whether the investment in the KM bring financial benefits to the company's balance
2. Capital-Organizational Perspective: whether the current organization already has the best process, distinctive capabilities, a great ability to innovate faster than the competition with KM?
3. Customer-capital Perspective: whether the relationship with customers is good, have a good prospect, and bring in new customers as a result of the implementation of KM?
4. Human-capital perspective: whether the employee's performance is better and more share?

2.3. Skandia Navigator

Skandia's reporting model, the Skandia Navigator, is designed to provide a balanced picture of the financial and intellectual capital. At Skandia the intellectual capital ratios are grouped into major focus areas:

• Customer focus
• Process focus
• Human focus
• Renewal and Development focus

The components of IC were subdivided into human capital, and other intangible assets embedded in the organization itself called structural capital. Structural capital has been further subdivided into customer capital, e.g. the value of customer relations and organizational capital. The latter can be further broken down into process capital, related to the procedures and routines of the company's internal processes, and innovation capital, that represents the enablers to innovate products and processes (Marr, 2004).
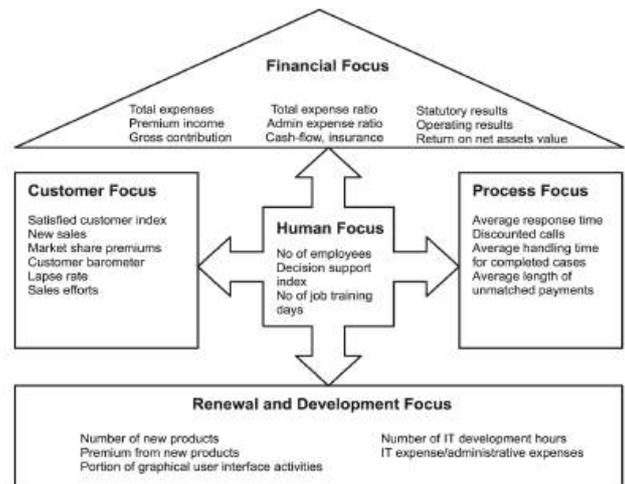

Figure 1 Skandia Navigator

2.4. SECI Method

The firms can create knowledge through the interaction between explicit and tacit knowledge, a process called knowledge conversion. The four modes of conversion are (1) Socialization, (2) Externalization, (3) Combination, and (4) Internalization. Socialization is the conversion of tacit knowledge to tacit knowledge. It often takes place in informal social meetings and may go beyond organizational boundaries, as in the case of interaction with customers and supplies. Empathizing is important in socialization. Externalization is the conversion of tacit knowledge into explicit knowledge through articulation so that others can share knowledge. Concept creation in new product development is an example of externalization, in which metaphor and analogy are often used. Combination takes place when individual pieces of explicit knowledge are connected to create systematic sets of explicit knowledge, which are then disseminated among members of an organization. Database can help in this process. Internalization is the process of embodying explicit knowledge into tacit knowledge and closely related to "learning by doing" (Nonaka, 2000).
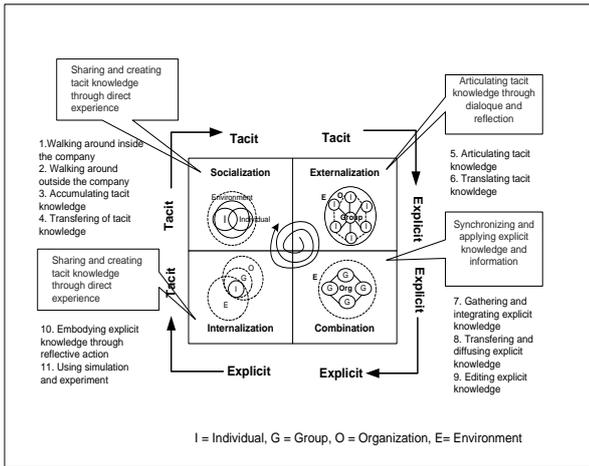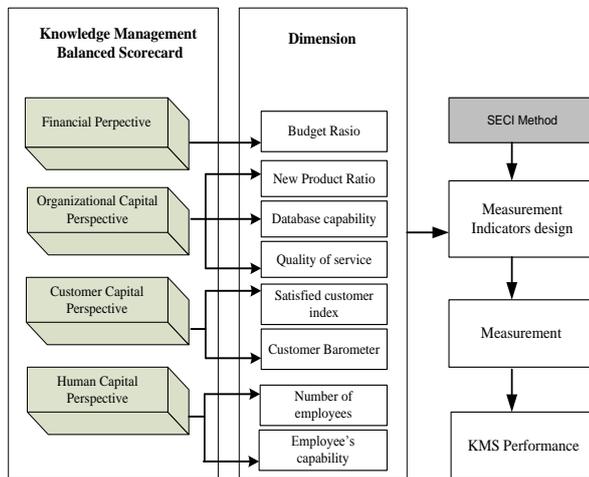
Figure 2. SECI Method

3. RESEARCH METHOD

Figure 3 Research Framework

From the research framework can be seen the elaboration of the four perspective concept of knowledge management's balanced scorecard that became a dimension in each measurement. Adjusted for research purposes to design Telco Company's KM department indicators.

4. RESULT AND DISCUSSION

This research will use the SECI method. The initial phase of the SECI method will prepare dimensions from the reference to be used as material for brainstorming. The design phase will involve a key person. The key person is a person who has the knowledge, experience and is fully responsible for the strategic policies of KM implementation at Telco Company, so they serve as the main data source for the research conducted.

Table 1 Dimension and Indicator Financial Perspective

Perspective	Dimension	Indicator
Financial Perspective is a financial measurement for implementation activities related to knowledge management system programs.	Budget Rasio	Revenues from new customers/total income
		Investment in information technology
		Investment on R&D
		Investment on employee training for product knowledge socialization
		Maintenance costs for information storage technology
Organizational Capital Perspective Is a measure of a company's ability to generate, develop and analyze new ideas that can add value to the company	New Product Rasio	New product ratio (less than two years) to all product items
	Quality of Service	Product advantages compared to the competitor's product
		Direct communication with the customers held annualy
	Database Capability	Database Validity
		Database evaluation update schedule
Customer Capital Measures is a measure of a company's ability to identify customer satisfaction, better handling, and produce enhanced product or service quality	Customer Satisfaction Index	Customer Satisfaction Index
		Reorder Frequency Ratio
	Customer Barometer	Numbers of customer churn
		CRM Progrramme Target/realization
		Numbers of customer / employee
Human Capital Measures is a measure of a company's ability to identify its employee capabilities.	Numbers of Employee	Turnover fixed employee
		Education level proportion
		unskilled personnel versus skilled personnel Proportion
	Employee's Capability	Employee training programme
		Members of Community of Practices
		The number of papers uploaded to KMS
		Employee motivation index

The process of designing the measurement indicators using SECI Method can be seen in Table 1. Each stage in the SECI will be conducted as described in the following table.

Socialization Step

Table 2 Socialization Step

Modes Conversion : Socialization	
From	To
Tacit	Tacit
Individual	Individual

Sharing and creating tacit knowledge through direct experience
   1. Walking around inside the company
   2. Walking around outside the company
   3. Accumulating tacit knowledge
   4. Transferring of tacit knowledge	

Activity	Output
Exploring key person tacit knowledge about the activities of KMS with Financial perspective	Identify the key person tacit knowledge about the activities KMS Tellco Company with financial perspective
	Explicit kknowledge Identify: revenue IT Infrastructure costs Training
Exploring key person tacit knowledge about the activities of KMS with Organizational capital perspective	Identify the key person tacit knowledge about the activities KMS Tellco Company with Organizational financial Perspective
	Explicit knowledge identify: comparison of its own products with competitors' products business processes
Exploring key person tacit knowledge about the activities of KMS with Customer capital perspective	Identify the key person tacit knowledge about the activities KMS Tellco Company with Organizational Customer capital Perspective
	Customer Satisfaction Index Customer claim Customer churn Target of CRM activity Rrealization of CRM
Exploring key person tacit knowledge about the activities of KMS with Human capital perspective	Identify the key person tacit knowledge about the activities KMS Tellco Company with Organizational Customer capital Perspective
	Explicit Knowledge identify: Eemployee profile Employee Mutation Employee Promotion Expertise of employee data Employees' academic formation Employee motivation index Training days per employees Ratio training hours/working hours (per year)

Externalization Step

Table 3 Externalization Step

Modes Conversion : Externalization	
From	To
Tacit	Explicit
Individual	Group

Articulating tacit knowledge through dialogues and reflection
   1. Articulating tacit knowledge
   2. Translating tacit knowledge	

Activity	Output
Transforming tacit knowledge of the key person with a financial perspective, customer capital perspective, and human capital perspective,	Documentation the transformation ofkey person tacit knowledge, work programs target and action plans of the KM department Telco company

Combination Step

Table 4 Combination Step

Modes Conversion : Combination	
From	To
Tacit	Explicit
Group	Organization

Systemizing and applying explicit knowledge and information
   1. Gathering and integrating explicit knowledge
   2. Transferring and diffusing explicit knowledge
   3. Editing explicit knowledge	

Activity	Output
Documenting each indicator of each key person proposed each perspective	The proposed indicators ddocumentation, determining the key factors determining success
establish indicators that will be used throughout the results of keyperson brainstorming	Business process measurement
determination of the size of time for each indicator will be measured (units of time or activity)	time for each indicator will be measured (units of time or activity)

Internalization Step

Table 5 Internalization Step

Modes Conversion : Internalization	
From	To
Tacit	Explicit
Group	Organization

Sharing and creating tacit knowledge through direct experience
   1. Embodying explicit knowledge through reflective action
   2. Using simulation and experiments	

Activity	Output
Confirm the indicators used to measure each perspective.	The design and formulation of the proposed indicators to measure each perspective. measurement scale
test measurements	Test measurement result. Evaluation

5. CONCLUSION

Measuring intellectual capital is an activity that is essential for knowledge management department Telco Company. By knowing the measurement results of the four perspectives then the company would benefit from each activity and how to evaluate the strategy and implementation of KM can be enhanced. At this step of the framework was tested empirically.

6. REFERENCES

(a) Edvinsson, L. and M.S. Malone, (1997). Intellectual Capital : Realizing Your Company's True Value by Finding Its Hidden Brainpower, Judy Piatkus (Publisher) Ltd, London.

(b) Stewart, T.A. (1997). Intellectual Capital: The New Wealth of Organization, Doubleday/Currency, New York.

(c) Svieby, K. (1997). The new organizational wealth: managing and measuring knowledge-based assets, Berrett-Koehler, San Fransisco.

(d) Tiwana. (2000). The Knowledge Management Toolkit : Practical Techniques for Building A Knowledge Management System. New Jersey: Pretince Hall PTR.

(e) H.Takeuchi and Nonaka, Hitotsubashi (2004). Knowledge Management, John Wiley & Sons (Asia) Pte Ltd.

(f) J. Mouritsen and H.T. Larsen, (2001). Accounting, Auditing & Accountability Journal,Vol. 14 No. 4, 2001, pp. 399-422.

(g) Marr, C. Bedfordshire, and A. Neely, (2004). "Intellectual capital – defining key performance indicators for organizational knowledge assets", Business Process Management JournalVol. 10 No. 5, 2004 pp. 551-569

(h) I.Nonaka, R, Toyama, R. and N. Konno, (2000). 'SECI, *Ba*, and leadership: a unified model of dynamic knowledge creation'. *Long Range Planning,* **33**, 2000, pp 5-34.

AUTHOR BIOGRAPHIES

Luciana Andrawina is a lecturer in Industrial Engineering Study Program, Telkom University, Bandung. She received her Doctor of Industrial Engineering from Bandung Institute of Technology in 2009. Her research interests are in the area of knowledge management. She is the head of e-business and technology group expertise at Telecom Institute of Techology. Her email address is <luciana_andrawina@yahoo.com>

Amelia Kurniawati is a lecturer in Industrial Engineering Study Program, Telkom University, Bandung. She received her Master of Industrial Engineering from Bandung Institute of Technology in 2009. Her research interests are in the area of knowledge management. She is the member of e-business and technology group expertise at Telecom Institute of Techology. Her email address is <amelia.kurniawati@gmail.com>