

## International Conference on Engineering and Technology Development



# 3<sup>rd</sup> ICETD 2014

28, 29 October 2014, Bandar Lampung, Indonesia

Hosted By :  
Faculty of Engineering and Faculty of Computer Science  
Bandar Lampung University, Indonesia



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الجامعة الإسلامية العالمية  
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA  
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# 3<sup>rd</sup> ICETD 2014

THE THIRD INTERNATIONAL CONFERENCE  
ON ENGINEERING AND TECHNOLOGY DEVELOPMENT

28 -29 October 2014  
Bandar Lampung University (UBL)  
Lampung, Indonesia

## PROCEEDINGS

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## **PREFACE**

The Activities of the International Conference is in line and very appropriate with the vision and mission of Bandar Lampung University (UBL) to promote training and education as well as research in these areas.

On behalf of the Second International Conference on Engineering and Technology Development ( 3<sup>rd</sup> ICETD 2014) organizing committee, we are very pleased with the very good response especially from the keynote speaker and from the participants. It is noteworthy to point out that about 80 technical papers were received for this conference.

The participants of the conference come from many well known universities, among others : University Kebangsaan Malaysia – Malaysia, IEEE – Indonesia, Institut Teknologi sepuluh November – Indonesia, Surya Institute – Indonesia, International Islamic University – Malaysia, STMIK Mitra Lampung – Lampung, Bandung Institut of Technology – Bandung, Lecture of The Malahayati University, B2TP – BPPT Researcher – Lampung, University of Kitakyushu – Japan, Gadjah Mada University – Indonesia, Universitas Malahayati – Lampung, Lampung University – Lampung,

I would like to express my deepest gratitude to the International Advisory Board members, sponsor and also to all keynote speakers and all participants. I am also grateful to all organizing committee and all of the reviewers who contribute to the high standard of the conference. Also I would like to express my deepest gratitude to the Rector of Bandar Lampung University (UBL) who give us endless support to these activities, so that the conference can be administrated on time

Bandar Lampung, 22 October 2014

Mustofa Usman, Ph.D  
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# THE INFLUENCE OF IMPLEMENTING INFORMATION TECHNOLOGY ON KNOWLEDGE MANAGEMENT TOWARD PERFORMANCE EVALUATION USING BALANCED SCORECARD

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**Abstract— Performance Evaluation using Balanced Scorecard already establish in early 1990 introduced by Robert S. Kaplan and David P. Norton. They measured performance evaluation using customer's perspective, internal business perspective, innovation and learning perspective and financial perspective. Balanced scored card give new perspective line beside only financial perspective. Knowledge management efforts typically focus on organizational objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration and continuous improvement of the organization. Implementing of Information Technology on Knowledge Management can be used to automate and control the process. Learning process as we know is one of three factor for increasing performance. The aim for this research is knowing how far Implementing of Information Technology on Knowledge Management influencing organizational performance.**

**Keywords: Balanced Scorecard, Information Technology, Knowledge Management**

## 1. INTRODUCTION

Organizational resource has to manage and deploy to deliver and fulfil organizational objective. Many tools and technique have evolved to assist managers and the most popular technique is balanced scorecard. The balancing method gives new balanced perspective than only financial perspective. It can increasing strategy as a management framework with the potential identify and exploit organization's key value drivers to their best strategic advantage. All perspective has been measured to integrate the potential resources to organizational strategy and can help to

measure specific value drives to make some priority for many alternatives.

Knowledge management is the process for capturing, developing, sharing, and using organizational knowledge effectively. It's focus on organization objectives such as improved performance, competitive advantage, innovation, the sharing of lessons learned, integration and continuous improvement for the organization. Knowledge Management is an organizational learning and gives a greater focus as a strategic asset and a focus on encouraging the sharing of knowledge. Implementing Information Technology can be helpful and useful for increasing information quality such relevancy, accuracy, updating and also maintaining both for knowledge and also security.

The research object already implement Information Technology for Knowledge Management thus this research aim is knowing the influence for implementing Information Technology for Knowledge Management toward Performance Evaluation.

## 2. LITERATURE REVIEW

### Knowledge Management

Knowledge Management is the process for capturing, developing and sharing and last thing is using the result as knowledge for improving performance, competitive advantage and also innovation. (Davenport, Thomas H. 1994). Knowledge Management as and organizational learning is a tool for give great focus on strategic which should develop by organization which can create value for organization. Gartner Group created another definition such, "Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual

workers."(Duhon, 1998). There's three stages for developing Knowledge Management (Koenig, Michael E. D., 2011)

**First Stage: Information Technology**

The concept of intellectual capital provided the justification and the framework, the seed, and the availability of the internet provided the tool. The salient point is that the first stage of KM was about how to deploy that new technology to accomplish more effective use of information and knowledge(Prusak, 1999).The hallmark phrase of Stage 1 was first "best practices," to be replaced by the more politic "lessons learned."

**Second Stage: Human Resource and Corporate Culture**

The second stage can be describe as deploying new technology was not sufficient to effectively enable information and knowledge sharing that's effecting human and cultural dimensions. The implementation would involve changes in the corporate culture, in many cases rather significant changes.

**Third Stage: Taxonomy and Content Management**

The third stage can be describe as development from the awareness of the importance of content, and in particular the awareness of the importance content, and therefore of the importance of the arrangement, description, and structure of that content. Another major development is the Knowledge Management expansion beyond the 20th century vision as the organization's knowledge. Increasing Knowledge Management as ideally encompassing the whole bandwidth of information and knowledge likely to be useful to an organization, including external knowledge such emanating from vendors, suppliers, customers and knowledge originating in the scientific and scholarly community. Knowledge Management extends into environmental scanning and competitive intelligence.

**Implementing Information Technology for Knowledge Management**

Information Technology implementation usually include:

- Aggregation of content from both internal and external sources
- Classification of content
- Search
- Expertise location
- Views / Dashboards

As business today is becoming increasingly international, the ability to access information in different languages is now a requirement for some organizations.

**Performance Evaluation using Balanced Scorecard**

Performance Evaluation is a process for obtaining valid information about the performance of an organization and the factors that affect performance. Organization must be trying to adapt, survive, perform and influence. To better understand what they can or should change to improve their ability to perform, organization can conduct the assessments. This diagnostic tool can help organization obtain useful data on their performance, identify important factors that aid or

impede their achievement of results, and situate themselves with respect to competitors.

The balanced scorecard is a strategy performance management tool and also a semi standard structured report, supported by design methods and automation tools that can be used by managers to keep track of the execution of activities by the staff within their control and to monitor the consequences arising from these actions (2GC Balanced Scorecard Usage Survey, 2014).

The critical characteristics that define a Balanced Scorecard:

- Focus on the strategic agenda of the organization concerned
- Selection of a small number of data items to monitor
- Mix of financial and non-financial data items.

Designingmethod of balanced scorecard is about the identification of a small number of financial and non-financial measures and targets and they are reviewed it is possible or not to determine whether current performance comparing with

Perspective	Before	After	Growth
Customer	Decreasing 4.2%	Decreasing 5.6%	33.33%
Internal Business Process	\$17.500 Increasing	\$23.000 Increasing	31.43%
Innovation and Learning	56 Loans	44 Loans	21.43%
Financial Perspective	46% Revenue	53% Revenue	15.22%
<b>Average Growth</b>			<b>25.35%</b>

expectations.

The four steps for designing a balanced scorecard(Kaplan & Norton's 1990) are:

- Translating the vision into operational goals
- Communicating the vision and link it to individual performance
- Business planning
- Feedback and learning, and adjusting the strategy accordingly.

3. EMPIRICAL STUDY

First thing should be done is evaluating performance based on four perspective such Customer, Internal Business Process, Innovation and Learning and also Financial Perspective. Each perspective must be determined and break down based on

objective and each objective performance must be measured. Achievement target must be present for evaluation of performance. If the target has achieved the performance is good. Comparative research has been making to compare whether any influence which is significant or not between organizational performance before implementing and after implementing Information Technology on Knowledge Management.

### Implementation and Result

The organization has already implement Knowledge Management in 2011 but without applying Information and Technology. Performance evaluation number based on average before implementing on 1999 to 2011 and performance evaluation based on average on 2012 to July 2014.

The Performance evaluating indicator matrix can be shown below:

Perspective	Strategy		
	Objectives	Measures	Targets
Customer	Decrease in Loan Interest Rate	Smaller Percentage	Decreasing 5%
Internal Business Process	Increasing Lending	Quantity of Money Being Loaned	\$20.000 Increasing
Innovation and Learning	Monitoring Demand for Loan	Number of Loans Being Taken Out	50 Loans
Financial	Increase Margin	Increasing in Profit	40% Revenue

After making evaluation performance between before and after implementation it's analyzing with growth.

### Comparison Perspective Performance Before and After Implementation IT KM

#### 4. CONCLUSION

After implementing Information Technology on Knowledge Management the most growth is happened on Customer perspective with 33.33% growth. Means before implementing Information Technology on Knowledge Management it would be decrease 33.33%. Based on some observation and interview with members of the organization it could be happened because most of the customer satisfaction is increasing. The second big growth is on Internal Business Process perspective with growth 31.43%. It can be increasing because most of the member can get information to develop their task faster. Innovation and Learning Process increase 21.43% and the small growth of all perspective is Financial Perspective with growth number is 15.22%

#### REFERENCE

- [1] Alavi, Maryam; Leidner, Dorothy E. (2001). "Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations and Research Issues".
- [2] Capozzi, Marla M. (2007). "Knowledge Management Architectures Beyond Technology".
- [3] Davenport, Thomas H. (1994), *Saving IT Soul: Human Centered Information Management*.
- [4] Duhon, Bryant (1998) *Harvard Business Review*, March - April, 72 (2)pp.
- [5] Durham, Mary. (2004). Three Critical Roles for Knowledge Management Workspaces. In M.E.D. Koenig & T. K. Srikantiah (Eds.), *Knowledge Management: Lessons Learned: What Works and What Doesn't*. (pp. 23-36). Medford NJ: Information Today, for The American Society for Information Science and Technology.
- [6] Koenig, M.E.D. (1990) *Information Services and Downstream Productivity*. In Martha E. Williams (Ed.), *Annual Review of Information Science and Technology: Volume 25*, (pp. 55-56). New York, NY: Elsevier Science Publishers for the American Society for Information Science.
- [7] Koenig, M.E.D. (1992). *The Information Environment and the Productivity of Research*. In H. Collier (Ed.), *Recent Advances in Chemical Information*, (pp. 133-143). London: Royal Society of Chemistry. Mazzie, Mark. (2003). Personal Communication.
- [8] Maier, R. (2007). *Knowledge Management Systems: Information And Communication Technologies for Knowledge Management* (3rd edition). Berlin: Springer.
- [9] McInerney, Claire (2002). "Knowledge Management and the Dynamic Nature of Knowledge". *Journal of the American Society for Information Science and Technology* 53 (12): 1009–1018.
- [10] Ponzi, L., & Koenig, M.E.D. (2002). *Knowledge Management: Another Management Fad?*. *Information Research*, 8(1). Retrieved from <http://informationr.net/ir/8-1/paper145.html>
- [11] Ponzi, Leonard, & Koenig, M.E.D. (2002). *Knowledge Management: Another Management Fad?* *Information Research*, 8(1). Retrieved from <http://informationr.net/ir/8-1/paper145.html>
- [12] Prusak, Larry. (1999). *Where did Knowledge Management Come From?* *Knowledge Directions*, 1(1), 90-96. Prusak, Larry. (2004). Personal Communication.
- [13] Rosner, D.; Grote, B.; Hartman, K.; Hofling, B.; Guericke, O. (1998). "From natural language documents to sharable product knowledge: a knowledge engineering approach". In Borghoff, Uwe M.; Pareschi, Remo. *Information technology for knowledge management*. Springer Verlag
- [14] Senge, Peter M. (1990). *The Fifth Discipline: The Art & Practice of the Learning Organization*. New York, NY: Doubleday Currency.

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