# SECI MODEL IMPLEMENTATION FOR IMPROVING PERFORMANCE OF RICE MILLING UNIT

Dedy Sugiarto[1], DadangSurjasa[1], Binti Solihah[2], Nirdukita Ratnawati[3], Jimmy Susanto[1]

[1] Industrial Engineering Department, Faculty of Industrial Technology, Trisakti University
[2] Informatics Department, Faculty of Industrial Technology, Trisakti University
[3] Economics Department, Faculty of Economy, Trisakti University
d_giarto@yahoo.com, dedy@trisakti.ac.id

## ABSTRACT

*This paper presented implementation of SECI model (sosialization, externalization, combination, internalization) in managing knowledge for improving rice milling unit (RMU) performance. Some of RMU's performance indicators are percentage of broken rice and the presence of foreign objects. Case study was done at CV. MustikaAsih, Soreang, Bandung. Methodology was devided into two main steps. Those are identify initial knowledge management practices and design knowledge management activities based on SECI model.The result showed that tacit knowledge is gained by informal training from their relatives that also worked in same field. Externalization by writing tacit knowledge and combination phase by combining explicit knowledges to become new explicit knowledge have not been done yet. To improve its performance, knowledge map and simple comparative experiment were done as a externalization and combination phase. Internalization phase was done by improving drying process facilities and also rice milling workplace.*

*Keywords : knowledge management, SECI model, rice milling unit*

## 1. INTRODUCTION

Target in performance indicator can be reached by improving internal business process. Kaplan and Norton (2004) explained that improvement of internal business process in an organization needs support from its intangible assets such as human capital (employees'skill, talent, and knowledge), information capital (information systems, networks, and technology infrastructure) and organizational capital (culture, leadership, employee alignment, teamwork, and knowledge management). Those are learning and growth perspective, the fourth perspective of the balanced scorecard strategy. The aim of this research is to implement knowledge management based on SECI (socialization, externalization, combination and internalization) model. Case study was done at CV. Mustika Asih (MA), Soreang, Bandung.

MA founded in 2008 is a small scale rice milling company that produces rice and rice flour. It was originally a grocery store. The unhulled rice is supplied from the the surrounding areas such as Ciherang, Tasikmalaya, Garut, Cianjur, Sumedang, and Bandung itself. The rice produced in MA is usually sold directly to consumers and retailers. In addition, PD. MustikaAsih also supply the rice in Astana Anyar market in Bandung.

The rice milling process in MA consists of several steps : drying, warehousing, husking, polishing, packaging. Main problems are decreasing percentage of broken rice and eliminate foreign objects in rice.

## 2. THEORETICAL BACKGROUND
### 2.1 SECI Model

Based on the SECI Model, there are 4 types of interactions between and outside of an organization which is based on a clear distinction between tacit and explicit knowledge, namely (Nonaka and Takeuchi, 1995) :

- *Socialization* : transfer of tacit knowledge to tacit knowledge (ex: the transfer of information among people with conversation).
- *Externalization* : • the transfer of tacit to explicit knowledge (ex: writing a book)

- *Combination* :• transfer from explicit to explicit knowledge (ex: summarizes the book)
- *Internalization* : transfer from explicit to tacit knowledge (ex: teachers teach in the classroom)

## 2.2 Quality tools and SECI Model

Arendt (2008) explained the correlation between quality tools and SECI model. Teem meeting and brainstorming like in define step in six sigma program is part of socialization mode. Ishikawa of cause and effect diagram, value stream mapping and failure mode and effect analysis is part of externalization mode since it converts tacit knowledge of individuals into explicit knowledge. Analyzing relationships between process elements using design of experiment and also regression analysis can create new explicit knowledge so it is part of combination process. Lastly, control step in six sigma program like control charts, standard operation procedure and mistake proofing is part of internalization process.

## 3. RESEARCH METHODS

Methodology was devided into two main steps. Those are identify initial knowledge management practices and design knowledge management activities based on SECI model. Identification of initial knowledge management practices was done by interviewing the owner of RMU and his sons. Design of knowledge management activities was done by developing knowledge map, failure mode and effect analysis, expert systems as part of externalization activities. Posting related explicit knowledge and expert systems in portal, designing simple comparative experiment to analyze process element relationshio was done as part of combination activities for sharing explicit knowledge. Implementation of explicit knowledge to improve RMU's performance was done as part of internalization activities.

## 4. RESULT AND DISCUSSION
### 4.1 Initial Knowledge Management Practices

Knowledge management practices at CV. Mustika Asih still focus only on tacit knowledge, knowledge that comes from experience. So it emphasizes only socialization and internalization process. First tacit knowledge is gained by informal training from their relatives that also worked in same field. Internalization was done by learning by doing. Externalization by writing tacit knowledge and combination phase by combining explicit knowledges to become new explicit knowledge have not been done yet.

### 4.2 Design Knowledge Management Activities

Socialization is the first step of SECI Model. In this step, team meeting and brainstorming with RMU owner to identify main problems and how to solve them was done. The rice milling owner is skillful in operating the rice milling unit and have the wide experience in rice milling. The transfer of tacit knowledge was done in face to face way, by giving questions an directly observe the process of the rice milling. Main problems are percentage of broken rice and also the presence of foreign objects in rice. The shape of milling unit in polishing machine may influences the percentage of broken rice during the polishing and and the condition drying floor may influence the presence of foreign substance. The drying floor in MA is already broken and there are also cement debris. According to Standar Nasional Indonesia (SNI) : No. 0224-1987/SPI-TAN/01/1993, the foreign substances in the first quality of hulled rice must be zero.

The next step is to change the tacit knowledge to explisit knowledge (externalization process). This step is aimed to transform the information and the knowledge to a simple and understandable form so that can be used other people in organization. The knowledge map was built to codify knowledge about polishing machine that most related to broken rice percentage and also design of good drying floor and also work place that most related to presence of foreign objects. Map for good drying floor consist of its main material for

construction, its form and also its complement tools.

A good drying floor is a drying floor with convex shape which is used to dry the unhulled rice. Then the concave floor is closed with terpal to cover unhulled rice from rain. With a convex shape, the rain water can directly flow so it wont drench the hulled rice.



Figure 1. The Convex Drying Floor

Initially, the drying floor in the rice milling where the research held is not concave. It was trapesium as seen below.



Figure 2.The drying floor in PD. Mustika Asih Before Construction

Simple comparative experiment was done as a combination step to analyse the relationship of process elements. The variety of milling is modificated from the early shape which is oval to the new shape which is round. Below are the pictures which show the different of the oval milling and the round milling.



Figure 3.The Oval Milling Unit (before modfification)



Figure 4.The Round Milling Unit (after modfification)

According to the experiment which is done, it is known that there are influences of using the oval milling and the round milling to the broken rice which is produced, as summarize in the table below.

Table 1. The Difference Between Oval Milling and Round Milling

| Tabel Perbandingan Pemolesan dengan Milling Oval dan Milling Bulat | | | | | |
|---|---|---|---|---|---|
| | Ulangan | Berat Sebelum (kg) | Berat sesudah (kg) | Persentase | Rata-rata |
| Milling Bulat | 1 | 50 | 48 | 96% | |
| | 2 | 24.7 | 24.5 | 99,1% | |
| | 3 | 24.5 | 24.3 | 99,2 % | 98,1% |
| Milling Oval | 1 | 24.7 | 22.8 | 92,3% | |
| | 2 | 24.6 | 22.8 | 92,7% | 92,5% |

Internalization steps consist of improving drying floor and also workplace. The drying floor must be fixed and renewed so it can minimize the possibilities of mixing the foreign substances with hulled rice. The condition of the drying floor before the construction is below.



Figure 5. The Drying Floor before Construction



Figure 6.The Drying Floor after Construction

The bran disposal is done in a closed room so it is easier to be collected and the bran dust wont pollute the production floor. Below is the condition of the bran vessel before and after construction



Figure 7. The Open Bran Vessel



Figure 8. The Close Bran Vessel

## 5. CONCLUSION

Knowledge management practices at CV. Mustika Asih still focus only on tacit knowledge, knowledge that comes mainly from experience. This research gives an example how to manage not only tacit knowledge but also explicit knowledge through SECI model. Socialization, the first step of SECI model, was done by meeting and brainstorming with RMU owner to identify main problems and how to solve them was done. Tacit knowledge then was converted into explisit knowledge (externalization process). This step is aimed to transform the information and the knowledge to a simple and understandable form so that can be used other people in organization. For example the knowledge map was built to codify knowledge about

good drying floor to omit presence of foreign objects. Simple comparative experiment was done as combination process to analyse relationship of explicit knowledge. Lastly, some improvements such as drying floor and also bran vessel construction were done as an internalization process.

## ACKNOWLEDGMENT

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## AUTHOR BIOGRAPHIES

**Dedy Sugiarto** is a lecturer in Department of Industrial Engineering, Faculty of Industrial Technology, Trisakti University, Jakarta. He received his Master in Management from Trisakti University and and his Doctoral degree in Agroindustry Technology from Bogor Agricultural University. His research interests are in the area of Quality Engineering, Decision Support System and Knowledge Management. He is a member of the Quality Engineering Laboratory. His email address is <d_giarto@yahoo.com> and dedy@trisakti.ac.id .

**Dadang Surjasa** is a lecturer in Department of Industrial Engineering, Faculty of

Industrial Technology, Trisakti University, Jakarta. He received his Master in Industrial Engineering from Indonesian University and and his Doctoral degree in Agroindustry Technology from Bogor Agricultural University. His research interests are in the area of Logistics, Supply Chain Management and Decision Support System. He is a member of the Modelling and Simulation System Laboratory. His email address is <d_surjasa@yahoo.com> and , <dadang@trisakti.ac.id >

**Binti Solihah** is a lecturer in Department of Informatics Engineering, Faculty of Industrial Technology, Trisakti University, Jakarta. She received her Master in Informatics Engineering from University of Indonesia. Her research interest is in the area of Software Design. Her email address is <binti76@yahoo.com>

**Nirdukita Ratnawati** is a lecturer in Department of Economics, Faculty of Economics, Trisakti University, Jakarta. She received her Master in Economics from Indonesian University. Her research interest is in the area of development studies. Her email address is <nirdukita08@gmail.com>

**Jimmy Santoso** is a an undergraduate student in Industrial Engineering Department, Trisakti University, Jakarta. The research topics for his final projects are quality engineering and knowledge management. His email address is <jimmysusanto92@gmail.com>