
DESIGN OF KNOWLEDGE SHARING STRATEGY WITH STRUCTURAL EQUATION MODELING METHOD AND SWOT ANALYSIS (CASE STUDY: CHEMICAL INDUSTRY)

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Penulis

Nur Jariah adalah seorang praktisi yang telah lama berkecimpung di bidang Teknik Industri. Menyelesaikan gelar Master dalam bidang Teknik Industri di Universitas Indonesia, Depok. Saat ini bekerja sebagai Corporate Planning & System Development pada Coal Trading & Mining Company PAMA Group. Bidang peminatan: *Knowledge Management, Total Quality Management*.

Abstract

Penelitian ini menganalisis faktor-faktor dari pelaksanaan *knowledge sharing* yang berpengaruh terhadap kinerja karyawan untuk menentukan strategi *knowledge sharing* di salah satu perusahaan kimia. Faktor-faktor tersebut diantaranya pengalaman kerja, materi training, *trainer training*, *Standart Operational Procedure (SOP)*, dukungan *top* manajemen, dan budaya perusahaan. Responden sebanyak 262 orang yaitu para karyawan dari lini operasional sampai *middle* manajemen. Penelitian ini menggunakan *Structural Equation Modeling (SEM)* yang dijalankan melalui AMOS 20 sebagai alat analisa. Hasil penelitian membuktikan faktor-faktor tersebut mempunyai pengaruh positif dan signifikan terhadap kinerja karyawan. Sehingga, menjadi acuan dalam penentuan strategi *knowledge sharing* perusahaan.

Keywords

Knowledge Sharing, Kinerja Karyawan, Strategi Knowledge Sharing, Structural Equation Modelling (SEM).

INTRODUCTION

The business sector is one of the objects in the global competition. The company became the object of the competition trying to achieve their business objectives such as profitability and sustainable business. One of the successful key company to maintain the existence and can compete in their business with knowledge management.

Knowledge management is believed to be one of the ways in which companies in order to improve competitiveness by utilizing a variety of corporate resources, including knowledge that is explicit or implicit. Explicit knowledge is knowledge that has been formulated in the form of tangible documents, books, literature. Whereas implicit is the tacit knowledge is knowledge gained from experience, activities, and formally documented yet which is still located (stored) in the minds of their owners and are usually distributed through discussion. The process of knowledge sharing will assist the achievement of organizational goals.

Knowledge sharing is one of the methods used in knowledge management to provide opportunities for members of an organization, institutions or companies to share knowledge, techniques, experiences and ideas they have to other members.

Knowledge sharing can only be done if each member has wide opportunities in expressing an opinion, ideas, criticisms, and comments to other members. Here, the role of knowledge sharing among employees is very important, because it can improve skill and knowledge of employee to be able to think logically is expected to bring an innovation. Carl Davidson and Philip Moss (2002) said that managing knowledge (knowledge) is actually how organizations manage their employees, and the fact that knowledge management is how people from different places began to communicate with each other.

Knowledge possessed of human resources and organizations, is a form of intangible asset that is not less precious than the other intangible assets are even elements of the most precious intangible asset due to human factors as determinants of the real (driver) other intangible assets. This is why man is one factor that resources are very significant role in innovation-based organizations. Displacement events of human resources of an organization into its own problems for the organization, because the displacement human resources are actually not just physical movement, but also to transfer skills and knowledge which originally came into the organization where human resources are located, especially if human resources are the key person within the organization. A survey conducted EPRI (Strategic Human Performance Program) showed that 92% of organizations believe that the loss of skilled human resources will be

seriously affected even to withdraw from long-term and 92%, only 30% who do the transfer of knowledge from the expert staff to junior staff . Knowledge is a form of intangible asset that must be managed well by the organization, where the concept is referred to as knowledge management.

In the process of knowledge management besides collecting and managing knowledge assets and use it to get a competitive advantages, there is no less important part, that when the organizations invested heavily of effort to collect the assets of knowledge is then the organization must be able to measure the impact knowledge management to the organization (tangible outcomes) and believe that what was done in order to collect organizational knowledge assets in line with the vision of the organization's mission.

Martiny (1998) believes that "successful companies of the 21st century are those that do the best work of capturing, storing and utilizing what their employees knew" (Hewlett Packard Chairman and President, Mr Lew Platt). Nonaka (1988) proposes that human behavior is the key to the success or failure of knowledge management strategy, because in the knowledge management involves an emphasis on the climate in the workplace, promoting learning and sharing skills and knowledge.

There have been many studies that discuss the influence of knowledge management / knowledge sharing on the performance of employees. Based on the concept proposed by Choi (2002) and studies conducted by Chan Wai Too (2008) that knowledge sharing have a significant influence on employee performance. Research with a discussion of knowledge management / knowledge sharing on the performance of employees in Indonesia is mostly done in the organization with the object of the service industry, while for objects in the manufacturing industry is still few are discussed. Therefore, in this study will investigate the influence factors of knowledge sharing on the performance of employees in manufacturing industries are the result of this analysis will serve as a reference for determining the company's knowledge-based strategy to increase its competitiveness, especially in knowledge resources.

Based on the description of the background of the above problems, this study has the following objectives:

1. Obtain the results of the analysis the factors that affect employee performance of knowledge sharing activities.
2. Acquire knowledge sharing strategy that can support knowledge sharing companies that have a competitive advantage in terms of intellectual capital.

METHODS

The type of data used in this study is the data subject that the data in the form of opinions, attitudes, experiences, or characteristics of a person or group of people who become research subjects (respondents). Meanwhile, the source of the data in this study is the primary data obtained from the employees as respondents with a list of questionnaires. The factors of the implementation of knowledge sharing that affect employee performance used in this study include work experience, training materials, trainers, Standard Operational Procedure (SOP), support of top management, and corporate culture.

The populations of this study are chemical company employees who perform the activities of knowledge sharing of operational management to the middle line. Where the total number of employees are 642 person. Meanwhile, the number of employees who were respondents in this study is 300 people. This is done with the consideration that the employees in line is a potential object implementing the activities of knowledge sharing in the company.

The collection of data by distributing questionnaires to the respondents implemented in two stages:

1. Pilot project stage, by distributing questionnaires to 30 respondents. The aim was to determine the validity and reliability indicators in a questionnaire.
2. Phase of the study, by distributing questionnaires to 300 respondents, which returned questionnaires with complete data charging as much as 262 respondents.

The number of samples is sufficient, because the minimum sample size in studies using the technique of Structural Equation Modeling (SEM) is as much as 5-10 times the number of parameters estimated. Where the research model, there are 44 indicators, the sample used was between 220-440.

DATA PROCESSING

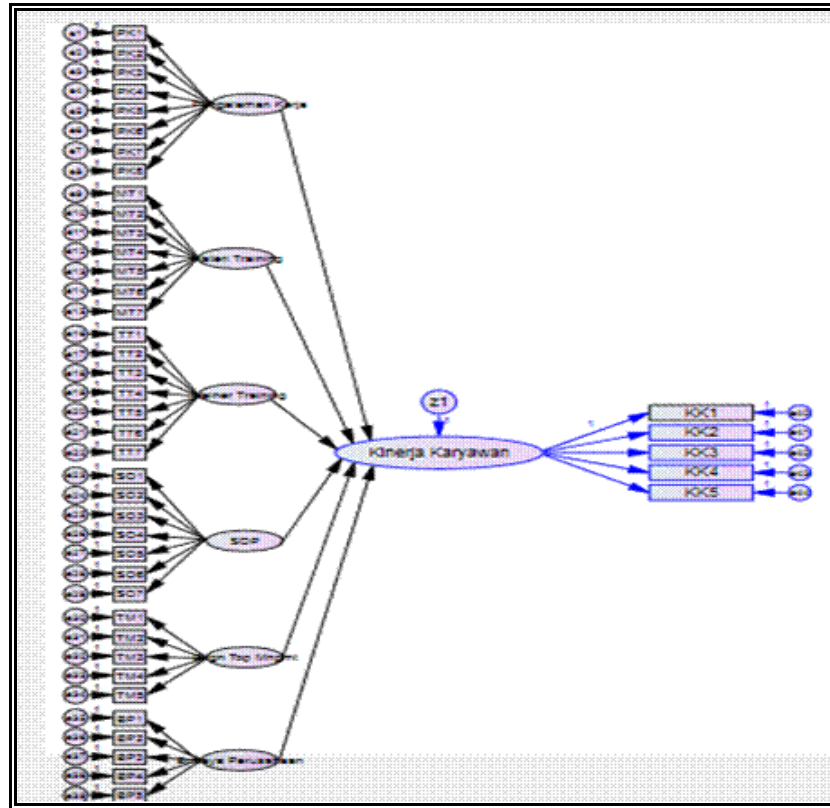
Modeling of Structural Equation Modeling (SEM)

VR comprises different system elements which divide into:

- The architecture and software to produce visual and other images and to interface with input devices,
- Interface systems including sensors, effectors and input devices,
- Communications systems for networking and other purposes.

The purpose of this study to examine the relationship and the influence of these factors in Knowledge Sharing (Work Experience, Training,

Trainer, SOP, Top Management Support, and Corporate Culture) with Employee Performance (Quality, Quantity, Timelines, Need of Supervisory and interpersonal Impact)



Picture 1. Path Diagram with One Step Model

Structural model equation are used based on the conceptual framework are as follows:

$$\text{Kinerja Karyawan (KK)} = \gamma_1 \text{Pengalaman Kerja (PK)} + \gamma_2 \text{Materi Training (MT)} + \gamma_3 \text{Trainer Training (TT)} + \gamma_4 \text{SOP} + \gamma_5 \text{Dukungan Top Management (TM)} + \gamma_6 \text{Budaya Perusahaan (PK)} + \zeta \quad (1)$$

DATA ANALYSIS

Measurement Model (Confirmatory Factor Analysis)

The purpose of confirmatory factor analysis of the overall model to see whether the variables used in this study does reflect the latent variables are analyzed. Goodness of fit test results of the overall model can be seen in below.

Table 1. Goodness of Fit Test Results Overall Model and Cut Off Value

<i>Goodness of Fit Indices</i>	Results	<i>Cut Off Value</i>	Description
<i>Chi Square</i>	874,227	Kecil*	Not Good
<i>Probabilitas</i>	0,824	$\geq 0,05$	Good
<i>CMIN/df</i>	0,911	$\leq 2,00$	Good
<i>GFI</i>	0,924	$\geq 0,90$	Good
<i>AGFI</i>	0,948	$\geq 0,90$	Good
<i>CFI</i>	0,971	$\geq 0,95$	Good
<i>TLI</i>	0,959	$\geq 0,95$	Good
<i>RMSEA</i>	0,012	$\leq 0,08$	Good

The results of processing the overall data model shows that the variables used have reflected latent variables are analyzed.

Structural Equation Model (SEM)

This analysis is used to determine the effect of exogenous constructs to endogenous constructs a complex and difficult to solve by other analyzes. Structural Equation Modelling is done by two types of testing as well as in confirmatory factor analysis:

a. Goodness of Fit

Goodness of fit test results of the model can be seen in table 2 below

Table 2. Goodness of Fit Test Results Overall Model and Cut Off Value

<i>Goodness of Fit Indices</i>	Results	<i>Cut Off Value</i>	Description
<i>Chi Square</i>	987,442	Kecil*	Not Good
<i>Probabilitas</i>	0,824	$\geq 0,05$	Good
<i>CMIN/df</i>	1,121	$\leq 2,00$	Good
<i>GFI</i>	0,948	$\geq 0,90$	Good
<i>AGFI</i>	0,928	$\geq 0,90$	Good
<i>CFI</i>	0,874	$\geq 0,95$	Good
<i>TLI</i>	0,959	$\geq 0,95$	Good
<i>RMSEA</i>	0,046	$\leq 0,08$	Good

b. Causality Test (Regression Weight)

To see the relationship between variables is positive or negative can be seen from the Standardized Regression Weight column. If there is no negative sign "-" then the relationship between these variables is positive. Meanwhile, to see the significance test of the model, can be seen in the CR column. Significant provisions, if the value of $CR \geq TTable$. Based on the CR value is obtained that all $CR > TTable$ (1.65). Thus, it can be concluded as follows in Table 3.

Table 3. Relationship between Variables

			C.R.	St.Reg. Weight	Effects	Significance
KK	<---	PK	11,026	0,917	Positive	Significance
KK	<---	MT	9,928	0,988	Positive	Significance
KK	<---	TT	8,356	0,998	Positive	Significance
KK	<---	TM	7,093	0,985	Positive	Significance
KK	<---	BP	7,403	0,905	Positive	Significance
KK	<---	SO	9,452	0,918	Positive	Significance

Hypothesis Testing

The following analysis of hypothesis testing has been determined.

1. Testing Hypothesis 1

H1 = work experience influential positive and significant impact employee performance.

Values obtained CR = 11.026, while the value CR_{tabel} = 2.58. Thus, CR > CR_{tabel}. While the probability is <1%. So, this means that the hypothesis that work experience be accepted because the value of CR and probalitasnya meet the requirements.

2. Testing Hypothesis 2

H2 = training materials have a positive and significant impact on employee performance.

Values obtained CR = 9.928, while the value CR_{tabel} = 2.58. Thus, CR > CR_{tabel}. While the probability is <1%. Thus, this hypothesis means that the material received training for the CR and probalitasnya meet the requirements.

3. Testing Hypothesis 3

H3 = trainer training has positive and significant impact on employee performance.

Values obtained CR = 8.356, while the value CR_{tabel} = 2.58. Thus, CR > CR_{tabel}. While the probability is <1%. So, this means that the hypothesis that the SOP is received for the CR and probalitasnya meet the requirements.

4. Testing Hypothesis 5

H5 = Support Top Management has positive and significant impact on employee performance.

Values obtained CR = 7.093, while the value CR_{tabel} = 2, 58. Thus, CR > CR_{tabel}. While the probability is <1%. So, this means that the hypothesis that top management support is received for the CR and probalitasnya meet the requirements.

5. Testing Hypothesis 6

H6 = corporate culture has positive and significant impact on employee

performance.

Values obtained $CR = 7.403$, while the value $CR_{tabel} = 2, 58$. Thus, $CR > CR_{tabel}$. While the probability is $< 1\%$. So, this means that the hypothesis that corporate culture is received for the CR and probalitasnya meet the requirements.

Determination of Knowledge-Base Strategy

1. Strategic Knowledge-Strength and Weakness (K-SW)

To be able to perform analysis of K-SW, it is necessary to compare the power and weaknesses owned company that deals with knowledge. That is by comparing the company's current knowledge (as-is) it should be known in order to implement the defined strategy, *Knowledge Strength*.

- The existence of Training & Development Department which is a means of facilitating the training (training) and career development of employees in the form of TPS Learning Center.
- Knowledge Sharing in the form of cultural activity which is a declaration of quality value added company.
- Generating knowledge about diversification and product innovation is an advantage in increasing the market share of products.

Knowledge Weakness

- Lack of knowledge management team that handles the transfer of knowledge sharing and knowledge in an integrated way.
- Lack of system documentation and knowledge transfer knowledge to overcome the current mapping of employees who resign with the knowledge they have in the absence of shared knowledge to other employees.
- The process of adaptation and transfer knowledge to new employees took more than 3 months.

2. Strategic Knowledge-Opportunities and Threats (K-OT)

To be able to identify the K-OT, then the required comparison between strategic knowledge owned by company with the competitor. In this case, companies do not yet have specific strategic knowledge, so that identification is focused on preparing strategic knowledge with policy-based management center (corporate) and adopt a strategic approach to knowledge that has been applied to other industries.

Knowledge Opportunities

- To implement the information systems technology terintegrasi IFS ERP Application form throughout the enterprise to support business processes that can be utilized in designing the company's knowledge

management repository.

- The existence of training programs and skill development, knowledge, and attitude for all employees.
- Establish cooperation with educational institutions and professional organizations in several areas.

Knowledge Threats

1. Rapidly growing industry competition, thus enabling the employee to resign.
2. When employees resign, then the knowledge / knowledge he has also carried away by it.
3. Development of knowledge in product innovation with low production cost and selling prices of competitors' products competitive

Strategic Knowledge-SWOT Analysis

Based on the analysis of the Knowledge-SWOT identification of the above it can be prepared a strategy that can be seen in table 4 below.

Table 4. Strategic Knowledge-SWOT Analysis

		<i>STRENGTH</i>	<i>WEAKNESS</i>
		<i>K-SWOT ANALYSIS</i>	
<i>OPPORTUNITY</i>	<i>Strength-Opportunities Strategy</i>	<ul style="list-style-type: none"> - Utilizing information technology systems for employees in the form of enterprise portal / portal and repository of knowledge management knowledge - Forming a knowledge management team that handles the transfer of knowledge sharing and knowledge integration was 	<i>Weakness-Opportunities Strategy</i>
			<ul style="list-style-type: none"> - Assessment of employee performance objectively in accordance with the standards of competence (performance appraisal) that is integrated with the application of knowledge management - Provide opportunities for achievement and superior employees to follow seminar / training of certified national
<i>TREATH</i>	<i>Strength-Treatth Strategy</i>	<ul style="list-style-type: none"> - Arrange SOP on knowledge transfer for employees who will resign - Arrange knowledge mapping system for each part of the company is up-to-date knowledge in accordance with the development of the industrial world 	<i>Weakness-Treatth Strategy</i>
			<ul style="list-style-type: none"> - Development of Corporate Governance in an integrated system - Forming a buddy team, the employee is designated as a mentor in each section to guide and knowledge sharing & transfer to new employees

CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on the analysis and discussion of the study can be concluded that:

1. Factors of knowledge sharing that has been established (work experience, training materials, trainer training, SOP, top management

support, and corporate culture) has a GFI value of 0.948; AGFI 0.929; TLI 0.959; 0.974 CFI, and RMSEA 0.046 according to the criteria for cut off value is specified, this means sharing knowledge variables have a significant and positive impact on employee performance.

2. The results of the analysis is used as the basis for the design of knowledge sharing strategy for the company as follows:
 - a. In the framework to maximize the internal forces that are owned and take advantage of existing opportunities, a strategy can be carried out utilizing information technology systems for employees in the form of enterprise portal / portal and knowledge repository and knowledge management team up to deal with knowledge management knowledge sharing and knowledge transfer been integrated.
 - b. In order to minimize internal weaknesses and take advantage of existing opportunities, a strategy can be done in an objective assessment of employee performance in accordance with the standards of competence (performance appraisal) that is integrated with the application of knowledge management and provide opportunities for achievement and superior employees to follow seminar / national training certified.
 - c. In the framework to maximize the internal forces that are owned and cope with emerging threats, develop a strategy to do SOP on knowledge transfer for employees who will resign and Arrange knowledge mapping system for each part of the company is up-to-date knowledge in accordance with the development of the industrial world.
 - d. In order to minimize internal weaknesses that are owned and cope with emerging threats, to do a development strategy in corporate governance system was the integration and Forming a buddy team, the employee is designated as a mentor in each section to guide and knowledge sharing and transfer of new employees.

Suggestions

Although this study contributes to the results already achieved in previous studies, but there are still some limitations that should be a concern by the researchers to come, including:

1. Object of this research case study is a chemical company (engaged in the manufacturing industry), thus the conclusions obtained in this study certainly do not allow conclusions to be generally applicable to other manufacturing industries are different.
2. In determining the factors of knowledge sharing in this study did not include the utilization factors of information technology, in this study

only focuses on six factors (work experience, training, trainers, SOPs, support of top management, and corporate culture).

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