

## **Dominant Factors Influencing Knowledge Sharing Among Employees at PT Inco Tbk Indonesia**

Indrianty Sudirman<sup>1</sup> and Habibie<sup>2</sup>

<sup>1</sup>*Department of Management, Faculty of Economics, Hasanuddin University Makassar, Indonesia*

<sup>2</sup>*Consultant in Mining PT. Vale, Indonesia*

This paper is intended to identify and analyze the dominant factors influencing knowledge sharing among the employees within the Department of Support and Engineering Services at PT Inco Tbk, Indonesia. This research was conducted at the Department of Support and Engineering Services (SES) PT Inco Tbk, Indonesia using descriptive statistical analysis and multiple regression analysis to identify the factors affecting the performance of knowledge sharing among employees within the department of SES PT Inco Tbk, Indonesia. Based on the result of multiple regression analysis, the research demonstrated that the performance of knowledge sharing was simultaneously influenced by the following factor: knowledge sharing mechanism, supporting tools or medias, cultural approach, motivational factor and inhibitor factor of knowledge sharing, however, we found that only knowledge sharing mechanism partially influenced the performance knowledge sharing of the employees in achieving the targets and missions of the Department of SES, PT Inco Tbk, Indonesia.

*Key Word* : Indonesia, knowledge sharing, motivational factors

### **Background**

In the era of knowledge economy, businesses have been viewing knowledge as a potential source to achieve competitive advantage (Cabrera et al., 2006; Bock et al., 2005). Knowledge management (KM) is a key factor that can help businesses in sustaining their competitive advantage in dynamic environments (Kankanhalli et al., 2005; Appleyard, 1996; Leonard, 1995; Liebeskind, 1996; O'Dell & Grayson, 1998; von Krogh, 1998). Thus, organizations must promote knowledge sharing as a key success in implementing knowledge management system in order to enhance the knowledge base and to gain competitive advantages.

Scholars and practitioners alike have increasingly regarded an organization's ability to facilitate the sharing and utilization of knowledge as critical for organizational effectiveness (cf. Bock and Kim 2002, Kogut and Zander 1996, Nonaka and Takeuchi 1995, Tsai 2001). Particularly in the emerging structure of distributed organizations, effectiveness is dependent on how well knowledge is shared between individuals, teams, and/or units (Alavi and Leidner 2001, Argote et al. 2000, Goodman and Darr 1998, Pentland 1995). Growing evidence suggests that organizations are more productive when they are able to successfully create the conditions in which

knowledge is shared by potential providers and then actively put to use by the recipients of new knowledge (Argote et al. 1990, Baum and Ingram 1998).

By systematically sharing knowledge between its members, an organization avoids redundancy in knowledge production, secures diffusion of best practice and enables problem solving by making relevant personal knowledge available to the problem-solving process regardless where the knowledge is originally obtained and stored in the organization. Sharing knowledge among organizational members is not a new phenomenon. Employees have always to some extent sought to cover their lack of knowledge by asking their colleagues, getting training from more experienced colleagues, receiving supervision from their superiors, etc.

Knowledge originates individual's intelligence but exists in the routines, procedures, systems, software, practice and norms of the organization, which are difficult to imitate (Davenport and Prusak, 1998). The flow of knowledge depends on knowledge sharing behaviors of the employees. However, sharing one's knowledge with others does not conform to human's nature. People are afraid that they will lose knowledge power in the organization if they share knowledge with others (Davenport, 1997). Therefore, in the execution of knowledge

management activities, knowledge sharing is identified as the most difficult one (Ruggles, 1998). These phenomena are in consistent with Davenport and Prusak (1998) who described that knowledge sharing is often unnatural because people think that their knowledge is valuable and important. Generally, people who possess great amounts of knowledge are unwilling to share it. Sharing knowledge is difficult to occur because it is an unnatural act (Lee and Al-Hawamdeh, 2002). Previous studies indicated that employees in general are reluctant to share knowledge (Husted, Michailova, and Minbaeva, 2005; and Chiu, Hsu, and Wang, 2006). Furthermore, a survey revealed that the biggest challenge organizations face with regard to KM is “changing people’s behavior,” particularly with regard to knowledge sharing (Ruggles, 1998).

In order to accelerate the implementation of knowledge management in Indonesia, it is therefore necessary to identify factors affecting the knowledge sharing as a prerequisite to implement knowledge management system within Indonesia environment. PT. Inco Tbk, one of multinational nickel mining company operated in South Sulawesi Province of Indonesia, has many overseas workers who mostly well educated and expert in certain competencies. Therefore, PT Inco Tbk is an interesting sample to be further analyzed whether knowledge sharing has occurred, what dominant factors affecting the knowledge sharing, and to what extent the knowledge transfer has improved the firm performance despite the fact that many overseas workers at the company have different culture with the local workers. The main objective of this paper is to identify several factors influencing the knowledge sharing among employees at the Department of Support and Engineering Services (SES) PT Inco Tbk, Indonesia both formal and informal manners and how the the knowledge from outside of the organization has been transferred into the internal organization.

### **Theoretical Framework**

In the new global economy, knowledge has become a central issue of primary resource for individuals. Davenport and Prusak (1998) found that knowledge had been recognised where it has become the most significant outline of capital needed. Knowledge is needed to ensure and sustain a competitive advantage for an organisation. Davenport and Prusak (1998) also claimed that organisations can no longer expect that the practices which helped them attain success in the past will definitely ensure future success. Otherwise, organisations need to make a difference themselves on the basis of what they recognise. Knowledge

should become as value, and then organisations will embark on a mission to use knowledge to their advantage.

Petersen and Poufelt (2002) complained that while the concept of knowledge has been thoroughly discussed from diverse perspectives in the literature, there is still a lack of definitions for knowledge sharing. To them, knowledge sharing “*takes place each time you communicate what you are doing, who you are, or what you know to one person or to many people*”, and “*covers a variety of activities – a talk with a colleague at the coffee pot, an educational situation, a document in a database, an email, an information board with notices, etc.*” Several more definitions of knowledge sharing have been uncovered by the authors. Lee & Al-Hawamdeh (2002), defined knowledge sharing as the deliberate act in which knowledge is made reusable for one party through its transfer by another. Wiig (1999) defines it simply as “*networking to become acquainted with what others know*”. Christensen (2003) states that knowledge sharing is about identifying accessible knowledge that already exists, and storing and subsequently applying this knowledge to make processes faster, better or safer than they would have otherwise been.

Ipe’s (2003) conceptual framework focuses on the individual level analysis of knowledge sharing. Four factors—nature of knowledge, motivation to share, opportunity to share, and culture of work environment—have been identified in Ipe’s framework. Ipe also pointed out that motivation to share has to be determined by both internal and external factors. Internal factors emphasize attitudinal aspects of the individual whereas external factors deal with the individual’s relationship with others as well as the situational factors such as rewards. Bock *et al.* (2005) conducts research to find the effects of extrinsic motivators, social psychological forces and organizational climate on the behavioral intention in knowledge sharing.

Synthesis of prior research reveals that motivational factors on knowledge contribution reflect three levels of driving force (Bock *et al.*, 2005). The three levels of driving force are individual benefits, group benefits, and organizational benefits respectively. Individual benefits mean self-interest and individual gains (Constant *et al.*, 1994; Wasko and Faraj, 2000). Group benefits mean reciprocal relationships with others (Constant *et al.*, 1994; Kalman, 1999; Wasko and Faraj, 2000). As for organizational benefit, it refers to organizational gains and commitment (Kalman, 1999).

According to Osterloh and Frey (2000), there are two factors influenced the knowledge sharing i.e.; (1) workers are extrinsically motivated when they could

directly satisfy their needs due to physical incentive and formal needs. *Money is a goal which provides satisfaction independent of the actual activity itself* (Calder and Staw, 1975). (2) workers are intrinsically motivated when their motivation to do activities are due to their personal satisfaction to know something new or challenging. *Intrinsic motivation is valued for its own sake and appears to be self sustained* (Calder and Staw, 1975). Just like giving knowledge for sharing, solving simple problem, or showing as an expert person.

In general, the motivation in work environment can be traced back from the literatures describing some instruments to improve job satisfaction and efficiency in overall. Based on a model proposed by Reeser and Loper (1973), human has basic needs that drive them to work; such needs stimulate their behavior so that top level management should take into account in recognizing every worker since each person has different need. We describe the classification of human need into 5 (five) categories i.e.; physiology, safety, love, esteem, and self actualization.

The Self determination theory (*SDT*) describes that extrinsic motivation can be divided into 4 dimensions i.e.;

1. *External regulation* is a behavior exposed to satisfy external needs or external rewards, for example, a manager will be disappointed or sad because his/her workers do not share their experiences.

2. *Introjected regulation* is a control behavior to avoid a mistake or to achieve a wish or pride, for example, a worker is requested to share his/her knowledge to the manager, so he or she will feel guilty if he or she does not do that.

3. *Identified regulation* is a behavior exposed due to a person's value assuming that sharing knowledge is important, for example, a worker feels pride when he or she could share his/her knowledge to others.

4. *Integrated regulation* is an integration that occurred when the regulation is fully assimilated at each worker in which each worker believes in that regulation as their value and need, for example, believe in sharing knowledge as something good for them and company.

In achieving the goal of firm, the management has to satisfy *physiological* and physical needs to the company. Certain workers might feel achievement motivation or realize doing valuable things derived from their job or challenging task and high responsibility. Workers have to realize that their jobs are a good opportunity for improvement, growth, and their development. In other word, a reward is an important factor to drive the occurrence of *knowledge*

*sharing*, and they know that the knowledge they given to others is valued and appreciated. As a result, they will be motivated when their job will need a variety of expertise and skills.

According to Adler and Cole (1993), standardization and documentation activities are an important factor to transfer the knowledge since it will rapidly flow through out the entire people within the organization or firm. Any habit such as interaction each other, learning best practices, and adapting to the entire system of local company is an effective approach.

In general, knowledge obtained from an organization will affect the system of the organization either positive or negative impact when the knowledge sharing occurred (Argote, 1999). Knowledge sharing mechanism could occur through *training, mentoring, knowledge group, brainstorming, IT system and expatriates*.

The knowledge sharing in an organization is manifested itself through a knowledge or performance chance at the respective unit or receiver. Knowledge sharing is a flow of expertise and experience obtained naturally at a certain unit of an organization (Davenport, 1997; Ipe, 2003). Other authors defined that internal knowledge sharing is traditions and routines to share knowledge and experiences among units within the organization (Calantone, Cavusgil, & Zhao, 2002; Moorman & Miner, 1998). The process of sharing is very important since individual knowledge has no longer given significant impacts except that the knowledge is shared to others (Nonaka & Takeuchi, 1995).

According to Levitt and March (1988), knowledge is embeded in organizational routines and standard operating procedures of products and processes of equipments and technology, maps and structures, norms and cultures and about on how these activities are generally done. Meanwhile Ciabuschi (2005) described another way in viewing knowledge sharing as a transfer process, access, and knowledge adaptation among groups.

Based on previous studies, there are at least five factors affecting knowledge sharing i.e., motivation (Szulanski, 1996); Osterloh dan Frey, 2000), knowledge sharing mechanism (Adler and Cole, 1993), culture (Schneider and Barsoux, 2003), supporting medias for knowledge sharing (Ciabuschi, 2005), and inhibitor factors affecting knowledge sharing (Szulanski, 1996).

Szulanski (1996); Osterloh dan Frey (2000) described that motivation has a critical role during process of knowledge sharing. Calder and Staw (1975) stated that the employees are intrinsically motivated when they could directly satisfy their needs particularly material incentives and other formal

needs such as career development. Meanwhile, money is the objective to provide independent satisfaction to the actual activity itself.

Another important aspect that can motivate employees in sharing and transferring knowledge is corporate value. Corporate value or corporate culture can shape value and behavior in an organization. Corporate culture will determine the firm's priorities, appropriate and appreciated behaviors, do's and don'ts, control system, and the best procedures to respond crisis and mistakes or errors (Storey, 2001).

Further, Adler and Cole (1993), stated that the standardization and documentation of activities is an important tool in transferring knowledge as it will flow more quickly to the entire team in a company. Adapting organizational habits or traditions like to

interacting each other and learning best practices into the local conditions throughout the company will be very effective. Knowledge sharing mechanism can be carried out, among other, through training and mentoring programs, knowledge group, brainstorming, IT system and expatriates. Allen (1977) added that individuals are the link or information carriers because they can restructure the information and apply it into the new context. Based on this understanding, the presence of expatriates is extremely effective way to facilitate the knowledge sharing through the exchange of employees among units within the company in different countries.

According to Richard Lewis (1996), there are three dimensions that may represent a pattern as in Table 1.

Table 1. Cultural differences of some continents

<i>Linear Active</i>	Tasking oriented, depending on facts and numbers or figures, more focus on logical thinking and analysis, to the point, individualistic and less expression emotionally.	Northern Europe, Nordic and Anglo Saxon
<i>Multiactive</i>	<i>Relationship-oriented</i> , more intuitive in decision making approach.	Latin and Arabian
<i>Reactive</i>	Appreciate to harmony and adaptative, very sensitive to other people's needs and attention, less direct communication to avoid confrontation and emotion expression.	Asian

Source: Richard Lewis (1996)

According to Schneider and Barsoux (2003), cultural consists of traditions, communication, hopes, including social aspect that may also influence knowledge sharing. In terms business perspective, socialization is a process in which new employees absorb corporate culture and become a part of value and behavior in the company. This can be done through training program for the development of group spirit or can be absorbed informally from the observation of other employees and learning the language in the organization as well as the local legends.

According to Forsgren (2005), value and corporate value can be a glue to bind the overall company. The glue refers to a set of value to be shared, belief, similar goal, norm, and vision at all levels of the company. The difference culture among employees coming from different nations can be unified in a corporate value.

It is widely accepted that facilities are needed to support the knowledge sharing. Ciabuschi (2005) described that information technology is an important potential key to support the process of knowledge sharing. Supporting facilities of knowledge sharing is used by employees to perform knowledge sharing

either among employees within the organization or from outside the organization that can be done through internet, training center, library, and canteen.

Szulanski theory (1996) described that the inhibitor factors of knowledge sharing could be in the form of limited absorptive capacity, casual ambiguities, and communication difficulties between transmitter and receiver. Such difficulties can be caused by remote job location, limited time for interaction, hierarchy structure of organization, and the presence of competition among employees. The limitation of receiver on either absorptive capacity or casual ambiguities is the limitation of receiver in receiving tacit knowledge.

Multinational companies often encounters difficulties in implementing knowledge sharing. There are at least two reasons that can inhibit knowledge sharing i.e., first, difficulty in transferring tacit knowledge since it cannot be transferred by oral or written, and second, the presence of competition and difference challenge among units.

Based on the above descriptions, it can be concluded that there are at least five variables that can influence the performance of knowledge sharing as follows;

1. Knowledge sharing mechanism . As described by Adler and Cole (1993), knowledge sharing mechanism is very important to be done, among other, through gathering and interaction each other, learning best practices and adapting them into the local conditions of the whole company. Another relevant study was conducted Burke and Cooper (2005) describing that training activities can expand the models of people and knowledge in the organization. Similarly, Argote (1999) also introduced the knowledge group to produce knowledge together and some other theories.

2. Supporting facilities of knowledge sharing. This is a part of the knowledge management system to accelerate and facilitate the transfer of knowledge amongst the employees.

3. Culture. Culture as a way to do knowledge transfer can take place through employment relationship, authority, and social relationships (Schneider and Barsoux, 2003).

4. Motivation factor. According to Calder and Staw (1975), employees are extrinsically motivated when their needs are fulfilled, such as career and money. In addition, Storey (2001) also pointed out that *corporate value* can also motivate employees in knowledge sharing.

5. Inhibiting factors of knowledge transfer. Szulanski (1996) explained that the inhibiting factors may be limitations on the capacity of the recipient (absorptive capacity), a difficult relationship between giver and receiver, as well as a separate work sites and so on.

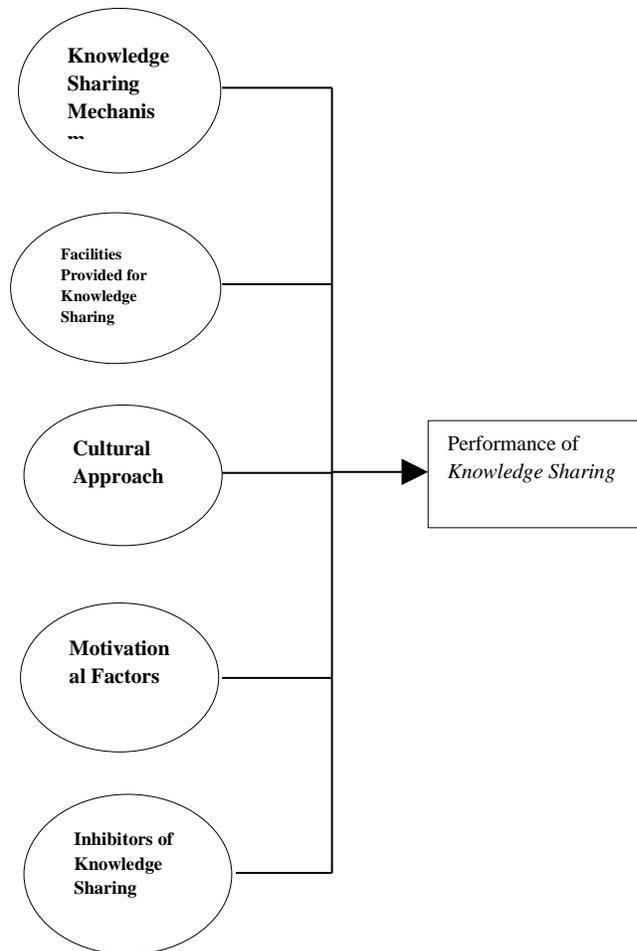


Figure 1. Factors affecting the performance of Knowledge Sharing

## Research Method

This research was conducted at the Department of Support and Engineering Services (SES) PT Inco Tbk, Indonesia, a multinational nickel mining company in South Sulawesi Province, Indonesia, in which the headquarter is located in Brazil. This department is expected to support the production capacity improvement, cost reduction, and continue to support the commitment of PT Inco regarding the environment, health and safety (EHS) entire PT Inco contract of work. A questionnaire-based study was conducted to test the sample consisting of all employees, around 150 employees at SES department including 15 expatriates from Canada, New Zealand, and Australia. Questionnaires were sent to all employees voluntarily complete the questionnaires with the overall response rates of 100 percent were achieved. Multiple regression analysis was used to identify some influencing factors as follows, knowledge transfer mechanism (X<sub>1</sub>), supporting facilities to allow knowledge transfer (X<sub>2</sub>), cultural approach (X<sub>3</sub>), motivational factors (X<sub>4</sub>) and knowledge transfer inhibitors (X<sub>5</sub>) against employees's knowledge sharing performances at SES department (Y), PT Inco Tbk.

Statistical analysis of F test was used to identify whether the independent variables or predictors of X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub> and X<sub>5</sub> would influence to the dependent variable or response of Y simultaneously. The t test was also carried out to identify whether each variable would influence to the dependent variable of Y partially using significance degree of 0.05. The R correlation showed correlation tight of all X variabel together correlated with Y variabel. R<sup>2</sup> value showed determinant coefficient, how significant the Y variable was simultaneously affected by all X variables. Determinant coefficient (R<sup>2</sup>) for this research was classified as low since R<sup>2</sup> value was less than 0.6 atau 60 %. Some operational definitions used in this study are described as follows;

1. Knowledge sharing performances is the effectiveness of knowledge sharing performances occurred at Support and Engineering Services Department, PT Inco to achieve mission and goals of the department.
2. Knowledge transfer mechanisms are mechanisms or methods are currently used by SES employees, PT Inco to transfer knowledge among them and getting knowledge from outside and transfer it to internal organization such as training, mentoring, knowledge group, brainstorming, expatriate and IT system.
3. Supporting facilities to allow knowledge transfer are facilities provided by the company in order to enable knowledge transfer among employees and

knowledge transfer from outside of organization. Supporting facilities can be intranet, library, meeting room, training centre and canteen.

4. Motivational factors are some factors motivate SES employees to share their knowledge such as monetary incentives, career development and corporate value.
5. Cultural approach is the relationship between and authority as well as the relationship between social environment and workers in seeking information and knowledge within the company.
6. Knowledge transfer inhibitors are some factors which influence to barrier the knowledge transfer process such as antara lain: the difficulties of tacit knowledge transfer, the competitions among employees, exclusives structural hierarchy, work location, and lack of time for interaction.

## Results and Discussion

The questionnaire used was subdivided into six sections; respondents' profile, knowledge sharing performance (Y), knowledge transfer mechanism (X<sub>1</sub>), supporting facilities (X<sub>2</sub>), cultural approach (X<sub>3</sub>), motivational factors (X<sub>4</sub>); and knowledge transfer barriers (X<sub>5</sub>). The questionnaire used a five point Likert scale in which the respondents were asked to rate their response with "5" as strongly agree, and "1" as strongly disagree. The measurement is an interval scale since it possesses all the properties of ordinal scale with one additional property (Coakes and Steed, 2003). The instrument for knowledge sharing effectiveness or performance was adopted from Liebowitz and Chen (2001) as well as Sveiby and Simons (2002). The level of effectiveness in knowledge sharing was grouped into five categories (very high, high, moderate, low and very low). According to Liebowitz and Chen (2001), "very high" performance indicated that the organization has done very well in knowledge sharing. An integrated system strategy provides a direction for knowledge sharing. Company culture also supports the behaviors of knowledge creation, inquiry, and sharing. Supporting technologies, tools and equipment are rovided to foster communication. A "good" knowledge sharer means that the organization does well in knowledge sharing. Rating "moderate" knowledge sharer means that even though tehre are some knowledge sharing culture, there needs to be supporting technologies, flexible guides, maps, processes, and pathways for locating and sharing knowledge. A clearer knowledge sharing strategy needs to be put in place. To be ranked a "low" or "very low" level means the culture and environment in the organization resists knowledge sharing. Very little, if any, strategies, technologies, and communication channels for

knowledge sharing are present in the organization. The following tables represent respondent's perception on the performance of knowledge sharing at the the SES department of PT Inco Tbk, Indonesia

with respect to knowledge transfer mechanism ( $X_1$ ), supporting facilities ( $X_2$ ), cultural approach ( $X_3$ ), motivational factors ( $X_4$ ), and knowledge transfer barriers ( $X_5$ ).

Table 2. The respondent's perception on the performance of knowledge sharing with respect to knowledge transfer mechanism ( $X_1$ ), supporting facilities ( $X_2$ ), cultural approach ( $X_3$ ), motivational factors ( $X_4$ ), and knowledge transfer barriers ( $X_5$ ).

No	Factors influencing knowledge transfer	Categories					Total
		Very High	High	Moderate	Low	Very Low	
1	Knowledge transfer mechanism	4,74%	19,30%	30,88%	23,86%	21,23%	100,00%
2	Supporting facilities	6,33%	14,98%	23,21%	25,11%	30,38%	100,00%
3	Cultural approach	10,05%	33,01%	27,27%	20,10%	9,57%	100,00%
4	Motivational factors	8,42%	22,11%	38,95%	27,37%	3,16%	100,00%
5	Knowledge transfer barriers	3,58%	16,21%	31,37%	26,74%	22,11%	100,00%

Table 2a. The respondent's perception on the performance of knowledge sharing with respect to knowledge transfer mechanism.

No	Knowledge Transfer Mechanism ( $X_1$ )	Category					Total
		Very High	High	Moderate	Low	Very Low	
1	<i>Training</i>	11	27	22	21	14	
2	<i>Mentoring</i>	2	21	28	33	11	
3	<i>Knowledge group</i>	6	21	33	17	18	
4	<i>Brainstorming</i>	3	16	37	24	15	
5	<i>Expatriate</i>	0	6	24	20	45	
6	<i>IT system</i>	5	19	32	21	18	
	Total	27	110	176	136	121	570
	Percentage	4,74%	19,30%	30,88%	23,86%	21,23%	100,00%

Table 2b. The respondent's perception on the performance of knowledge sharing with respect to supporting facilities.

No	Supporting Facilities (X <sub>2</sub> )	Categories					Total
		Very High	High	Moderate	Low	Very Low	
1	Intranet	16	20	19	16	24	
2	Library	1	7	20	26	41	
3	Training centre	5	22	28	24	15	
4	Meeting room	7	14	32	30	12	
5	Kantin	1	8	11	23	52	
	Total	30	71	110	119	144	474
	Percentage	6,33%	14,98%	23,21%	25,11%	30,38%	100,00%

Table 2c. The respondent's perception on the performance of knowledge sharing with respect to cultural approach.

No	Cultural Approach (X <sub>3</sub> )	Categories					Total
		Very High	High	Moderate	Low	Very Low	
1	Social approach	14	32	26	26	16	
2	Work and authority approach	7	37	31	16	4	
	Total	21	69	57	42	20	209
	Percentage	10,05%	33,01%	27,27%	20,10%	9,57%	100,00%

Table 2d. The respondent's perception on the performance of knowledge sharing with respect to motivational factors.

No	Motivational Factors (X <sub>4</sub> )	Categories					Total
		Very High	High	Moderate	Low	Very Low	
1	Monetary incentives	16	23	25	26	5	
2	Incentives non monetary	7	22	39	22	5	
3	Corporate value	9	20	35	30	1	
	Total	16	42	74	52	6	190
	Percentage	8,42%	22,11%	38,95%	27,37%	3,16%	100,00%

Table 2e. The respondent's perception on the performance of knowledge sharing with respect to knowledge transfer barriers.

No	Knowledge Transfer Barriers (X <sub>5</sub> )	Categories					Total
		Very High	High	Moderate	Low	Very Low	
1	Difficulties to transfer <i>tacit knowledge</i>	3	12	26	33	21	
2	Competition factors	0	5	31	32	27	
3	Structural hierarchies	4	16	37	17	21	
4	Different locations	3	18	27	26	21	
5	Lack of time to interact	7	26	28	19	15	
	Total	17	77	149	127	105	475
	Percentage	3,58%	16,21%	31,37%	26,74%	22,11%	100,00%

The result of multivariate regression analysis using SPSS is presented in the following table 3 as follows;

Table 3. The result of Multiple Regression Analysis using SPSS

Research variable	Regression ( <i>enter method</i> )			
	Coeff. Regression (B)	SE	t value	Sig T (p)
Constant	0,7870	1,071	7,349	0,000
X1	0,129	0,054	2,411	0,018
X2	0,078	0,067	1,161	0,249
X3	0,063	0,079	0,798	0,427
X4	0,057	0,061	0,925	0,358
X5	-0,053	0,032	-1,651	0,102
F Ratio	7,986			0,000
Multiple R	0,557			
R Square	0,310			
Adj. R Square	0,271			

Note: df (5.94); t-table = 1,290 ( $\alpha = 0.05$ ) and t-table = 1.660 ( $\alpha = 0.1$ )

Based on the result of multivariate regression analysis as presented in table 3, the multivariate regression equation was then formulated as follows;

$$Y = 0,787 + 0,129X_1 + 0,078X_2 + 0,063X_3 + 0,057X_4 - 0,053X_5 + e \quad (\text{Eq-1})$$

The multivariate regression equation (Eq-1) indicates that the performance of knowledge sharing within the SES department is positively influenced by four independent variables i.e., knowledge transfer mechanism (X<sub>1</sub>), supporting facilities (X<sub>2</sub>), cultural approach (X<sub>3</sub>), motivational factors (X<sub>4</sub>); and negatively influenced by the independent variable of

knowledge transfer barriers (X<sub>5</sub>). Such influences are also further supported by the analysis result of Fisher or F test showing that the value of F (calculated) is larger than the the value of F (table). Based on the F-test, therefore it can be concluded that the performance of knowledge sharing within the SES Department is simultaneously influenced by all independent variables i.e., knowledge transfer mechanism (X<sub>1</sub>), supporting facilities (X<sub>2</sub>), cultural approach (X<sub>3</sub>), motivational factors (X<sub>4</sub>), and knowledge transfer barriers (X<sub>5</sub>).

The partial influence of each independent variable was then further examined using t-test. The t test indicates that only knowledge transfer mechanism ( $X_1$ ) has partial influence to the knowledge sharing performances with a significant degree of 0,018 (less than 0.05) compared to the other independent variables i.e., supporting facilities ( $X_2$ ) with significant degree of 0,249, cultural approach ( $X_3$ ) significant degree of 0,427, motivational factors ( $X_4$ ) significant degree of 0,358, and knowledge transfer barriers ( $X_5$ ) significant degree of 0,102 (all larger than 0.05). Each of independent variable is further discussed in the following sections.

### ***Knowledge Transfer Mechanism***

The result of multiple linier regression shows that all five factors are simultaneously significant to the effectiveness of knowledge sharing of employees within SES department i.e., knowledge transfer mechanism ( $X_1$ ), supporting facilities ( $X_2$ ), cultural approach ( $X_3$ ), motivational factors ( $X_4$ ) and knowledge transfer barriers ( $X_5$ ). However, pearson correlations show that only 1 independent variables could be considered as a dominant factor influencing the knowledge sharing performances (Y) i.e., knowledge transfer mechanism ( $X_1$ ). Argote (1999) stated that knowledge transfer mechanism occurred through training, knowledge group, mentoring, brainstorming, IT system, and expatriates.

These mechanisms are in consistent with the real situation at the SES department of PT Inco Tbk, Indonesia where knowledge sharing mechanisms was conducted. As can be seen from table 2 and 2a, among 95 total of respondents, most responses concentrate on a moderate scale (30.88%), followed by a low scale (23.86%) and a very low scale (21.3%). The most favorite knowledge transfer mechanism, in the range scales of moderate to very high, are training and knowledge group that each counted around 63,2%. This finding is also in a good agreement with the previous works, for example, Burke and Cooper (2005) stated that organizational development such as training techniques can also help company in expanding and integrating the mental models of the people participating in the training. Argote (1999) introduced knowledge group involving all members to share, yield, evaluate, and combine knowledge to produce knowledge belongs to all members.

### ***Supporting Medias or Tools for Knowledge Sharing ( $X_2$ )***

As shown in the result of regression analysis, the performance of knowledge sharing among the

employees of the SES department of PT Inco Tbk, Indonesia is not partially influenced by the supporting medias or tools since the value of significant degree is larger than 0.05 i.e., 0.249. Despite the fact that there are many tools or medias available to be used for knowledge sharing as shown in the table 1b, but such medias haven't been used optimally to share their knowledge among employees. As can be seen from table 2b, among total of 95 respondents, 55.5% responses fall into low to very low scales, while the rest falls into moderate to very high scales. This phenomena indicates that the employees of the SES department of PT Inco Tbk, Indonesia, are very rare using the supporting medias or tools available in the company for knowledge sharing rather than preferring to interact physically through a meeting or training.

### ***Cultural Approach Factors ( $X_3$ )***

Similar to the independent variable of the supporting medias or tools, the knowledge sharing performance of the employees of the SES department of PT Inco Tbk is not either partially influenced by the cultural approach factor as indicated by the value of significant degree of 0.427 (larger than 0.05). This indicates that most employees within the SES department of PT Inco Tbk, Indonesia is lack of knowledge self-efficacy as a stereotype of Indonesian culture. As previously described, among 150 employees at the SES department only 15 expatriates while the rest are Indonesian. According to Constant et al (1994), sharing expertise is an opportunity to enhance sense of self-worth. When knowledge self-efficacy increases, people gain confidence in terms of what they can do. When people think that their expertise can improve work efficiency and increase productivity, they will be more inclined to share knowledge with others (Bock et al., 2005, Jarvenpaa and Staples, 2001; Kankanhalli et al., 2005; Kulkarni et al., 2007; Shin et al., 2007; Wasko and Faraj, 2005).

Most likely, the willingness of the employees of the the SES department of PT Inco Tbk, Indonesia to share their knowledge only occurred in term of of job relationship and authority, but unlikely happened in terms of social relationship. As can be seen in table 2c, the number of responses prefer to work and authority approaches is higher than those prefer to social approach. According to Schneider and Barsoux (2003), the cultural approach is closely related to the aspect of socialization. In terms of real business perspective, however, new employees receive company's values dan are influenced by behavior and values inside the company. This phenomenon is then communicated in two forms i.e., training program and informal learning from the employees. Therefore,

cultural approach could be in the forms of both job relationship and authority, as well as social relationship with employees in seeking information and knowledge within the company.

#### **Motivation Factor ( $X_4$ )**

Based on the t-test, the knowledge sharing performance of employees in the Department of SES, Inco Tbk, Indonesia is not partially influenced by the motivational factors. As shown in the result of regression analysis model, the value of significant degree of the motivational factor is 0.358 (much higher than 0.05). According to Calder and Staw (1975), the motivation factor is divided into 3 sub factors i.e., financial incentive, career development, and corporate value.

The employees are intrinsically motivated when they could directly satisfy their needs particularly material incentives and other formal needs such as career development. Meanwhile, money is the objective to provide independent satisfaction to the actual activity itself. Storey (2001) also added that the corporate value could also develop a organizational behavior model since the value itself is the main factor of the overall company performance achievement. Organizational culture could form company priorities, appropriate behaviors, types of appreciated behavior, do's and don's, control system and procedures, best solution to respon crisis and errors or mistakes. In the case of employees at the department of SES, Inco Tbk, Indonesia, however, the motivational factor of non financial incentives such as staff or career development is mostly preferable. As can be seen in table 2d, about 71.6% respondents prefer to non financial incentives while financial incentives and corporate value factors are counted for 67.4% each.

#### **Inhibitor Factor of Knowledge Sharing ( $X_5$ )**

As can be seen from the result of t-test, the knowledge sharing performance of employees in the department of SES, Inco Tbk, Indonesia is not either partially influenced by the inhibitor factor. According to Szulanski (1996), inhibitor factors of knowledge sharing could be in the form of limited *absorptive capacity*, *casual ambiguities*, and communication difficulties between transmitter and receiver. Such difficulties can be caused by remote job location, limited time for interaction, hierarchy structure of organization, and the presence of competition among employees.

The limitation of receiver on either *absorptive capacity* or *casual ambiguities* is the limitation of receiver in receiving *tacit knowledge*. In the case of

employees at the department of SES, Inco Tbk, Indonesia, however, such inhibitor factors do not influence the performance of knowledge sharing. Table 2e shows that the majority of respondents agreed that difficulties to transfer tacit knowledge is considered as inhibitor factor for knowledge sharing.

#### **Conclusion**

1. Moderately, the knowledge sharing mechanism ( $X_1$ ), supporting tools or medias ( $X_2$ ), cultural approach ( $X_3$ ), motivation factor ( $X_4$ ) and inhibitor factor of knowledge sharing ( $X_5$ ) have simultaneous influences to the knowledge sharing performance of the employees of the Department of SES, Inco Tbk, Indonesia in achieving the targets and missions of PT Inco Tbk, Indonesia.

2. Partially, however, only knowledge sharing mechanism ( $X_1$ ) that significantly affect to the knowledge sharing performances. This conclusion is reasonable since PT Inco Tbk has a high committment in staff development program to improve the employee's performance including knowledge management through training, mentoring, *knowledge group* and *IT system* development for knowledge sharing and knowledge management system.

#### **References**

- Alavi, M., D. E. Leidner. 2001. Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quart.* 1 107–136.
- Appleyard, M.M. 1996. How does knowledge flow? *Strategic Management Journal*, 17 (special issue): 137-154
- Argote, L., P. Ingram. 2000. Knowledge transfer: A basis for competitive advantage in firms. *Organ. Behavior and Human Decision Processes* 82 150–169.
- Argote, L., S. L. Beckman, D. Epplé. 1990. The persistence and transfer of learning in industrial settings. *Management Sci.* 36 140–154.
- Baum, J. A. C., P. Ingram. 1998. Survival-enhancing learning in the Manhattan hotel industry, 1898–1980. *Management Sci.* 44 996–1016.
- Benyamin A. Hallatu (2003), Analisis Faktor-faktor yang Mempengaruhi Kinerja Staf Perencanaan dan Pengendalian Pengelolaan Hutan Dinas Kehutanan Kabupaten Jayapura, Makassar, Universitas Hasanuddin
- Bock, G. W., Y. Kim. 2002. Breaking the myths of rewards: An exploratory study of attitudes about knowledge sharing. *Inform. Res. Management J.* 15 14–21.
- Boland, R. J., & Tenkasi, R. V. (1995). Perspective making and perspective taking in communities of knowing. *Organization Science*, 6(4), 350–383.
- Cabrera, A., Collins, W.C., and Salgado, J.F. "Determinants of individual engagement in knowledge sharing," The

- International Journal of Human Resource Management (17:2) 2006, pp. 245-264.
- Calder, B. J. B. M Staw (1975), The Self Perception of Intrinsic and Extrinsic Motivation, *J. Personality Soc, Psych*
- Chini, TC (2004), *Effective Knowledge Transfer in Multinational Corporations*, Palgrave, New York
- Choi, C. & Lee, S. 1997. A knowledge-based view of cooperative interorganizational relationships, P. Beamish & J. Killing (Eds.) *Co-operative strategies: European perspectives*. San Francisco: The New Lexington Press
- Ciabuschi F (2005), 'IT Systems' Contribution to Knowledge Sharing in MNCs. A Lesson from Siemens AG: Knowledge Management Research and Practice, Vol. 3(2)
- Cole, R. 1998. Introduction to special issue on knowledge and the firm. *California Management Review*, 40(3): 15-21
- Davenport, T., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Boston: Harvard Business School Press.
- Davenport, T.H. and Prusak, L. 1998. *Working knowledge: How organizations manage what they know*. Boston: Harvard Business School Press
- Davenport, T.H., and Prusak, L. *Working knowledge: how organisations manage what they know* Harvard Business School Press, Boston, MA, 1998.
- Goodman, P. S., E. D. Darr. 1998. Computer-aided systems and communities: Mechanisms for organizational learning in distributed environments. *MIS Quart.* 22 417-440.
- Grant, R. 1996 Toward a knowledge-based theory of the firm. *Strategic Management Journal*, Winter, 17: 109-122
- Guerra, Patricia; Lugli, Valentina and Flores, Mario Alberto Parra (2009), How to Improve the Knowledge Sharing within a MNC: The case of Proact Group, Sweden, Uppsala Universitet Master Management
- Hansen, M. 1999. The search-transfer problem: the role of weak ties in sharing knowledge across organizational subunits. *Administrative Science Quarterly*, 44: 82-111
- Inkpen, A.C. & Dinur, A. 1998. Knowledge management processes and international joint ventures. *Organization Science*, 9(4): 454-468
- Ipe, M. (2003). Knowledge sharing in organizations: A conceptual framework. *HRM Development Review*, 2(4), 337-359.
- Jensen, M. & Meckling, W. 1996. Specific and general knowledge and organizational structure, P. Myers (Ed.), *Knowledge management and organizational design*. Butterworth-Heinemann, Butterworth-Heinemann, 17-38
- Jia-Chi Huang and Sy-Feng Wang (2003), Knowledge Conversion Abilities and Knowledge Creation and Innovation: A New Perspective on Team Composition: available at: <http://www.alba.edu>. from [www.google.com](http://www.google.com), 2003.
- Kankanhalli, A., Tan, B.C.Y., and Wei, K.K. "Contributing knowledge to electronic knowledge repositories: an empirical investigation," *MIS Quarterly* (29:1) 2005, pp. 113-143.
- Katz, R. & Allen, T. 1982. Investigating the not invented here (NIH) syndrome: A look at the performance, tenure and communication patterns of 50 R&D projects groups, *R&D Management*, 12(1): 7-19
- Kogut, B. & Zander, U. 1993 Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies*, 24(4): 625-646
- Kogut, B., U. Zander. 1996. What do firms do? Coordination, identity, and learning. *Organ. Sci.* 7 502-518.
- Leonard, D. 1995. *Wellsprings of knowledge*. Boston, Harvard Business School Press
- Liebesskind, J.P. Knowledge, strategy, and the theory of the firm. *Strategic Management Journal*, 17 (special issue): 93-117
- Lin, C.P. "To Share or Not to Share: Modeling Tacit Knowledge Sharing, Its Mediators and Antecedents," *Journal of business ethics* (70:4) 2007, pp. 411-428.
- Lin, H.F. "Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions," *Journal of Information Science* (33:2) 2007, pp. 135-149.
- Malhotra, Yogesh dan Galletta, Dennis F, Role of Commitment and Motivation in Knowledge Management System Implementation: Theory, Conceptualization and Measurement of Antecedents Success:
- Nonaka, I. & Takeuchi, H. 1995. *The knowledge-creating company*. NY, Oxford University Press
- Nonaka, I., H. Takeuchi. 1995. *The Knowledge Creating Company*. Oxford, New York.
- O'Dell, C. & Grayson, J. 1998. If only we knew what we know: Identification and transfer of internal best practices. *California Management Review*, 40(3): 154-174
- Park, H., Ribiere, V., & Schulte, W. D. (2004). Critical attributes of organizational culture that promote knowledge management technology implementation success. *Journal of Knowledge Management*, 8(3), 106-117.
- Pentland, B. T. 1995. Grammatical models of organizational processes. *Organ. Sci.* 6 541-556.
- Polanyi, M. 1962. *Personal knowledge: Towards a post-critical philosophy*. London: Routledge & Kegan
- Proceedings at 36<sup>th</sup> Hawaii International Conference on System Science, 2003
- Riege, A. (2005). Three-dozen knowledge-sharing barriers managers must consider. *Journal of Knowledge Management*, 9(1), 18-35
- Ruggles, R. "The state of the notion: knowledge management in practice," *California Management Review* (40:3) 1998, pp. 80-89.
- Schneider S. C & Barsoux J.L (2003), *Managing Across Cultures*, Pearson Education Limited
- Spender, J.C. 1996. Making knowledge the basis of a dynamic theory of the firm. *Strategic Management Journal*, (Special issue): 45-62
- Szulanski, G. 1996. Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal*, 17: 27-43

- Thomas, Teresa and Pretat, Cedric (2009), *The Process of Knowledge Transfer*, Sweden, Baltic Business School University of Kalmar
- Tsai, W. 2001. Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business innovation and performance. *Acad. Management J.* 44 996–1004
- van den Hooff, B., & de Ridder, J. A. (2004). Knowledge sharing in context: The influence of organizational commitment, communication climate, and CMC use on knowledge sharing. *Journal of Knowledge Management*, 8(6), 117–130.
- von Krogh, G. 1998 Care in knowledge creation. *California Management Review*, 40 (3): 133-153