

# The Knowledge Transfer and the Performance of the Headmaster at State High Schools and State Vocational High Schools in South Sumatera Province, Indonesia

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**Abstract:** This study aims to analyze the influence of the knowledge transfer which consists of variables socialization, externalization, combination, and internalization (SECI) towards the the performance of the headmaster at state high schools and state vocational high schools in South Sumatera Province, Indonesia. The population in this study were 255 headmasters of state high schools and state vocational high schools in South Sumatra Province of Indonesia where there were 167 responses collected by using nonprobability sampling and purposive sampling technique. The instrument in measuring the variables in this study was questionnaires which were distributed to respondents. Questionnaire validity and reliability tests were conducted on 30 headmasters of state junior secondary schools in Palembang city who were pilot tests out of the sample to be researched later by means of calculating if  $r\text{-count} > r\text{-table}$ , then the questionnaire items were valid and if the correlation coefficient was bigger than critical value, then the instrument is declared reliable. The testing of data normality and hypothesis test statistics is done with *Structural Equation Modelling (SEM)*. The results showed that SECI which consists of socialization, externalization, combination, and internalization have a positive and significant effect on the performance of the headmaster. Separately, each variables of SECI, socialization and internalization have just a positive and significant effect. Whether, externalization and combination have not a positive and significant effect. Hopefully, the implications of this research can help to guide the headmasters about socialization, externalization, combination, and internalization in an effort to optimize the headmasters performance of each schools.

**Key words:** knowledge transfer; SECI; the performance; headmaster

**JEL codes:** I2, I200

## 1. Introduction

The important factors in this current globalization era are competent human resources (HR). According to Greene & Petty (1976) said that education is a human effort to prepare oneself for a meaningful life. The constitution of law (20:2003) explains that education is a conscious and planned effort to realize the learning atmosphere and the learning process so that students actively develop their potential to have religious spiritual

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strength, self-control, personality, intelligence, noble character and skills needed by themselves, society, nation and state.

In this era of information, it is important to realize that the flow of knowledge in an organization is very fast. Nonaka (1994) developed this idea by stating that knowledge is about the specific meaning of content; it implies that knowledge users must understand and have experience with the context, conditions, and effects where knowledge is generated and used by its means. Therefore, to make a knowledge repository useful, it must store the context in which the knowledge is generated. This is also confirmed by Davenport and Prusak (1998) who view knowledge as a combination that continues to evolve from experience.

Bhatt (2000) explained that Knowledge Management (KM) has components that are interrelated with each other such as People, Technology, and Process. Nonaka and Takeuchi (1995) proposed a knowledge transfer model in cyclical management to describe the process of knowledge transfer in creative organizations. The model included four phases of knowledge conversion in an organization known as SECI which consists of socialization, externalization, combination, and internalization.

Then, Nonaka and Takeuchi (1995) also describes management tools that justify the belief that knowledge is an asset to increase organizational capacity to be able to work more effectively. According to Tammets (2012), meta-analysis SECI model shows that the model has been applied in the context of industry and companies and other organizations with the aims of analyzing how the implementation of SECI in the organization can affect organizational productivity, performance, employee motivation. Masrek (2015), linking the dimensions of knowledge conversion with student academic performance where four dimensions are significantly correlated with student academic achievement. This proves that combination, externalization, socialization and internalization are truly significant predictors.

This study aims to find out the influence of SECI on the performance of the headmaster. Previous research which investigated the Knowledge Management of teachers in details through the SECI model and its application with the performance of the headmaster is still debated, where the object of the research described above to the teacher. This study seeks to close the research gap from previous researchers by proposing the specific concept of SECI model towards the implementation of information technology whose objects are the headmasters of state high schools and state vocational high schools in South Sumatera Province. This research is done in an effort to fill the gap of the research and become a value for the originality of the study. This research is expected to provide insight for the headmasters in managing HR based on SECI and used as a reference for future research.

## **2. Literature Review**

### **2.1 Knowledge Management**

The perspective of the company that is based on knowledge has emerged in the management literature from Nonaka and Takeuchi (1995), Spender (1996), Baridwan (2012), the development of this perspective is an extension of the Knowledge-Based theory that was first popularized by Penrose (1959) and subsequently developed by Barney (1991), Conner and Prahalad (1996), and Wernefelt (1995) as stated by Alavi and Leidner (2001).

The term Knowledge Management (KM) was first introduced in the beginning of the 1990s. Nevertheless, an initial study of knowledge management was carried out in the mid-1980s such as the study from Sveiby and Lloyd (1987) with the book of *Managing Knowhow: Add Value by Valuing Creativity*. After that, knowledge

management was developed into a science that is widely applied in various companies. Until now, there have been several experts who critically developed knowledge management. Some of them defined knowledge management as follows, Malhotra (1998):

“Knowledge Management caters to the critical issues of organizational adaptation, survival, and competence in face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings”.

Malhotra described Knowledge Management (KM) as a process in an organization which is a synergistic combination of data with information processing capacity from technology and creative and innovative capacities of the human mind. In other words, Malhotra believed that KM is a combination of technology and the human mind.

## **2.2 Knowledge Transfer**

Drucker (1995) acknowledged the need for “the application of knowledge to knowledge itself”. A recent analysis of Knowledge Management based on the opinion of Swan et al. (1999) emphasized more on a knowledge-based view which leads to the production of tools to increase knowledge without learning from previous literature based on learning organizations that focus on people. Gibbons et al. (1994) also argued that knowledge sharing across organizational boundaries is the key to the effective exploitation of knowledge.

Based on Nonaka (1994), Nonaka and Takeuchi (1995), knowledge is “a dynamic human process where there is the justification of personal belief in the truth”. Knowledge is also relative to certain situations. Nonaka et al. (2001) said that “Without a context, just information, it's not knowledge”. Nonaka (1991) believed that there are two types of knowledge contained in each organization, namely tacit and explicit knowledge. Tacit knowledge includes mentality, beliefs, and persuasion of each worker. This tacit knowledge lies in each individual and is difficult to be expressed in words. In most organizations, tacit knowledge is rarely shared or communicated. Therefore, this knowledge will disappear when the individual who owns it leaves the organization. Tacit knowledge can also be seen as the knowledge contained in organizational culture, such as motivation and adaptability shown by workers who work in a particular corporate culture including ideas, perceptions, ways of thinking, insight, expertise/skills, and so on. On the other hand, explicit knowledge is the knowledge which can be codified, shared, and communicated to others. Explicit knowledge can be explicitly expressed in words and numbers and distributed in the form of data, specifications, and manuals. Most organizations have carried out a knowledge management process through capturing, storing, processing in a system or certain operating technology so that it is available and can be used by all members of the organization. Some of the examples in explicit knowledge are manual, book, report, document, letter, and so on. Furthermore, Nonaka (1991) also illustrated that organizational learning stems from an interactive process as well as knowledge internalization and externalization. The learning organization is created at the intersection of tacit and explicit knowledge during the interaction between workers, departments, or teams within the organization.

## **2.3 Socialization, Externalization, Combination, Internalization (SECI) Model**

One of the most famous theories of organizational knowledge formation is Nonaka's Spiral of Knowledge. Since his first article in 1991, Nonaka has developed this theory with several other authors. The main objective in developing this model is to provide an understanding of how to build organizational knowledge that can make the organizations understand how they can maximize the management, application, and transfer of knowledge.

Knowledge is created through the interactions between humans and the structure of social institutions. Nonaka (1994), Nonaka and Takeuchi (1995) pointed out that our actions and interactions with the environment shape and build knowledge through the process of converting tacit and explicit knowledge.

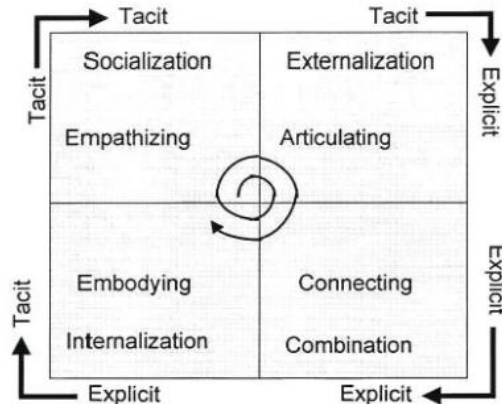


Figure 1 SECI Model (Nonaka & Takeuchi, 1995)

#### 2.4 Socialization

Based on the explanation from Nonaka & Toyama (2003), the process of socialization is the most basic process in disseminating knowledge. Socialization is measured using 5 indicators derived from Chei Sian Lee and Rujuta S. Kelkar (2011) namely informal knowledge sharing, service improvement, maintaining relationships with colleagues, maintaining relationships with employers, and work problems.

#### 2.5 Externalization

Nonaka and Konno (1998) defined externalization as the process of conversion/translation of tacit knowledge to explicit knowledge (real). Externalization can be accomplished by writing a description of the work process through debate or reflection. Externalization is measured using five indicators derived from Chei Sian Lee and Rujuta S. Kelkar (2013) such as new employees training, learning from experts, work documents, information dissemination, and organized learning.

#### 2.6 Combination

Nonaka and Takeuchi (1995) believed that combination is a source of knowledge used for the knowledge management cycle where knowledge that has been documented can be disseminated through a meeting in the form of documents or through a process of education/training. The combination is also assessed using five indicators derived from Chei Sian Lee and Rujuta S. Kelkar (2013) which consists of cooperation and coordination strengthening, supporting different team section, supporting the distribution process, supporting cooperation, and concerning the work goals.

#### 2.7 Internalization

Still referring to Nonaka and Konno (1998), internalization is the conversion of explicit knowledge to tacit knowledge. In other words, this can be said as the process of realizing explicit knowledge into individual tacit knowledge. Internalization is measured using five indicators from Chei Sian Lee and Rujuta S. Kelkar (2013) such as virtual learning, self-development opportunity, publication development, global network development, as well as increase benefits for self-development.

## 2.8 The Performance

The performance defined by Thomson (1992) as “An activity which demands the expenditure of energy or effort to create from ‘raw materials’ those products or services which people value”, it can also be said that performance is the process of creating value in a resource unit. According to Gibson et al. (1999) the performance is: “the desire of any employee behavior performance”. Rivai and Sagala (2013) also described that performance is the key to achieving productivity because performance is a result where people and other resources that exist in the organization together bring the final results based on the quality levels and standards that have been set. Mondy (2008), individual performance as referred above is the work of a person both in terms of quality and quantity based on predetermined work standards.

An effective headmaster has a wide range of abilities. Scheme of Duignan (2003, 2004) identified five basic capabilities of the headmaster that are interdependent and related in nature as shown in Figure 2. These five capabilities include: (1) *educational capabilities* which is the main ability in maintaining the focus of the headmaster’s attention to the teaching and learning process. Meanwhile, (2) *personal capabilities* and (3) *relational capabilities* underlie the headmaster’s leadership orientation towards the important role of the people around (*people orientation*) (educators, education staffs, learners, and stakeholders). On the other hand, (4) *intellectual capabilities* and (5) *organizational capabilities* underlie the form of *achievement orientation* (effectiveness, efficiency of the process, learning outcomes and environment) towards the performance of headmaster.

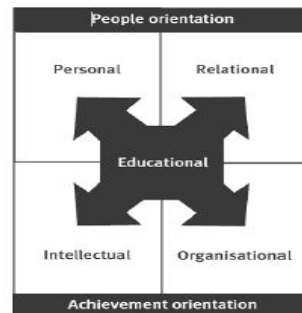


Figure 2 Dimension of the Ability of Headmasters Duignan (2004)

Clifford M. et al. (2014) explained that there are five important dimensions of the headmaster’s performance, namely:

(1) Build Common Goals

The leader develops an interesting vision of the organization together and ensures the vision that lives in the daily work of educators.

(2) Focus on Learning

Leaders are involved in instructional leadership to develop and maintain student access to the right, ambitious, and strong instructional programs that are focused on academic excellence and social-emotional development.

(3) Manage Organizational Resources

Leaders act strategically and systematically to create safe and supportive conditions for teaching and learning by releasing financial, human, data, and other resources.

(4) Collaborate with the Community

Leaders ensure that parents and community organizations are involved with school.

(5) Lead with Integrity

Model of professional leaders who act with integrity and always have desire to learn.

## 2.9 Research Model and Hypothesis

The model of the research can be seen below.

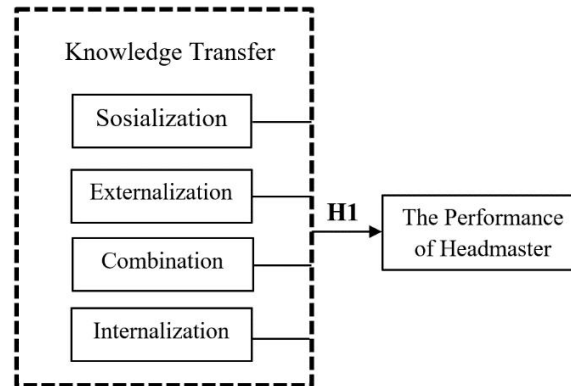


Figure 3 Research Model

Based on the literature review as described above, the hypothesis built in this study is:

- 1) Socialization affects the performance of headmaster in state high schools and state vocational high schools of South Sumatra Province;
- 2) Externalization has an effect on the performance of headmaster in state high schools and state vocational high schools of South Sumatra Province;
- 3) Combination influences the performance of headmaster in state high schools and state vocational high schools of South Sumatra Province;
- 4) Internalization affects the performance of headmaster in state high schools and state vocational high schools of South Sumatra Province;
- 5) Socialization, Externalization, Combination, and Internalization collectively influenced the performance of headmaster in state high schools and state vocational high schools of South Sumatra Province.

## 3. Methods of Research

### 3.1 Population and Sample

The population in this research was 255 headmasters of state senior high schools and state vocational high schools in South Sumatra, Indonesia where there were 167 respondents selected using nonprobability sampling and purposive sampling. 167 headmasters were selected as the respondents in this study. The time of distribution and collection of questionnaires was 30 days.

### 3.2 Measurement

The instruments used to measure the research variable are as follows:

- 1) SECI: The instrument used to measure SECI was a questionnaire developed by Chei Sian Lee and Rujuta S. Kelkar (2011) consisting of 20 statement items that are based on Nonaka & Toyama (2003). All statement items contain variables that describe SECI such as socialization, externalization, combination, and internalization. The questionnaires were measured using a seven-point Likert scale (1-7).

- 2) The performance of headmaster: The instrument to measure the performance of headmaster was a questionnaire developed by Clifford M. et al. (2014) as many as 16 statement items. The statement items contain the indicators of the performance of headmaster namely the effects on building common goals, focusing on learning, managing organizational resources, collaborating with the community, and leading with integrity. The questionnaires were measured using a seven-point Likert scale (1-7).

## 4. Results and Discussion

### 4.1 Validity Test on Questionnaire Trials

From the 167 sets of questionnaire which were distributed to the headmaster, 159 sets were returned by the respondent and 154 sets could be used to process data. Table 1 illustrates the profile of the majority of respondents in this study.

**Table 1 Profile of Respondents**

No	Demographic Type	Profile	Percentage (%)
1	Gender	Male	82.5
2	Age Range	51-55 (year)	44.2
3	Education level	Stratum 2	76.6
4	Working period (Educator)	21-30 (year)	66.9
5	Working period (Headmaster)	4-6 (year)	31.2

Source: Processed Primary Data, 2019

Based on Table 1 above, it is shown that most of sexes of the respondents are male (82.5%) with an age range of 51 to 55 years (44.2%). Education level of the majority respondents is stratum 2 with working period as an educator/teacher 21 to 30 years (66.9%) and as a headmaster 4 to 6 years (31.2%).

After testing various assumptions of *SEM*, reliability, validity, and exogenous-endogenous confirmatory analysis can be given an illustration that the indicators and variables in this study can be used to test full model that has been designed as an empirical model.

**Tabel 2 Estimate Regression Weight Structural Equation Modeling**

				Estimate	S.E.	C.R.	P
The Perfomance of Headmaster	<---	Socialization		3.641	.720	5.058	***
The Perfomance of Headmaster	<---	Externalization		3.107	9.940	1.319	.187
The Perfomance of Headmaster	<---	Combination		9.666	9.117	1.060	.289
The Perfomance of Headmaster	<---	Internalization		3.727	.674	5.530	***

Source: Processed Primary Data, 2019

**Table 3 Regression Weight Structural Equation Model Socialization, Externalization, Combination Dan Internalization Affect the Performance of Headmaster**

Variable			Estimate	S.E.	C.R.	P	Label
The Perfomance of Headmaster	<---	SECI	1.504	.252	5.976	***	

Source: Processed Primary Data, 2019

#### 4.2 Discussion and Conclusion

There are research results that support and oppose the hypotheses that have been formulated previously. The first hypothesis states that socialization has an effect on the performance of headmaster. The value of the test results produced meets the hypothesis acceptance requirements, namely the value of  $CR (5,058) \geq 1.96$  on significant levels 0,000. Empirically, the conclusion is that there is strong empirical evidence to reject  $H_0$  and then accept  $H_1$ , so that in this study the hypothesis states that the higher socialization, the higher the performance of headmaster is accepted. Based on the result of the analysis, the socialization variables affects and means if socialization increases and is accompanied by increasing the performance of headmaster. School success is strongly influenced by the ability of schools to create relationships. Schools that can not build and develop relationships will not build good relationship with the community and parent and this will not allow school to achieve success. Socialization can enable the school to fulfill the desires and satisfy the needs of the students. The results of this study are in the line with the research conducted by Ping et al. (2017), while socialization and internalization have significant results that influenced organizational performance. Nonaka et al. (2001); Nonaka dan Toyama (2003) also state that socialization is the most basic process in disseminating knowledge. In the socialization process, social interaction between individuals occur so that there is an interaction between tacit knowledge, generally the forms of the socialization process are discussions, stories, and sharing various experiences.

The second hypothesis tells that externalization influences the performance of headmaster. Based on the analysis of the study, externalization has the effect on the performance of headmaster obtained that the effect of 0.187 was not significant ( $p\text{-value} > 0.05$ ) or  $CR 1.319 \leq 1.967$  which means that if there is an increase in externalization, the performance of headmaster will not experience an increase. However, on the contrary, if there is a decrease in externalization, the implementation of information technology will not encounter a decline. The results of this study is that it cannot be proven to be empirically strong to accept  $H_0$  and then reject  $H_1$ , so that in this study the hypothesis states that the higher externalization, the higher the performance is rejected. This is in accordance with the opinions of Nonaka and Toyama (2003) which state that the externalization is the process of changing / translating knowledge, generally in the form of writing or drawing. The externalization process can help change someone's tacit into explicit that cannot be easily understood by others, this is understandings of each individual recipient of that knowledge.

The third hypothesis suggests that combination affects the performance of headmaster. Based on he results of the research, combination empirically doesnot have an influence of 0.289 is not significant ( $p\text{-value} > 0.05$ ) or  $CR 1, 012 \geq 1.967$  towards the performance of headmaster. This indicates that an increase in combination will not make an increase on the performance of headmaster and vice versa. This is contrary to the opinion of Nonaka and Takeuchi (1995) which supports the results of this study stating that combination is a source of knowledge management cycle where knowledge that has been documented can be disseminated through a meeting in the form of documents or through the process of education and training. This also explains that the combination variable has no effect in term of of processing the setting of tacit to explicit by doing the combination (organizing, mixing knowledge) through combining various type of explicit knowledge. This can be exemplified in terms of education and training of headmaster. Headmasters are only carrying out tasks from superiors without regard to the benefit of the training by not seeing the knowledge transfer process that can occur.

The fourth hypothesis mentions that internalization affects the performance of headmaster. The results of this study fulfill the terms of acceptance of the hypothesis,  $t_{\text{hitung}} = t_{\text{tabel}}$  is  $CR$  value  $(5,530) \geq 1.96$  on significant level



0.000. The conclusion is that there is a prove to reject  $H_0$  and then accept  $H_1$ , so that this indicates if there is an increase in internalization, the performance of headmaster will also increase. Based on the analysis of the study, internalization variable has characterize virtual learning, opprtunity to develop themselves, pulication development, global network development, increase benefits for self-development. So that the increasing of internalization, there also will make the increasing the performance of headmaster. This study s similar to the research from Nonaka and Toyama (2003) which stated that in the process of internalization, there is a change in explicit knowledge into tacit knowledge. It is generally carried out through a process of learning and/or research that is carried out or experienced by each individual. Tara E. I. et al. (2018) process knowledge from explicit using the internalization of the process of receiving knowledge and implementation of individual knowledge, which is covered by learning by the process of doing it alone. On the other hand, explicit knowledge becomes part of individual knowledge and will become an asset for the company. Internalization is also the ability to see connections and recognize patterns and capacities to process understanding between fields, ideas and concepts.

The fifth hypothesis proposes that socialization, externalization, combination, and internalization together influence the performance of headmaster. Based on the analysis of the study, socialization, externalization, combination, and internalization support this hypothesis. This is empirically shown by the significant effect on the performance of headmaster. The coefficient value obtained with all *p-value* significantly in terms of acceptance the  $p\text{-value} < 0.05$ , which means that all of variables socialization, externalization, combination, and internalization have directly effectiveness towards the performance of headmaster, with value  $CR\ 5.976 \geq 1.96$ . The results of this study are in line with the last research of Travaille A.M dan Hendriks (2010) which based on Nonaka, discuss how the knowledge creation process contributes to academic success. This shows the result of an independent exploration of the knowledge at the university's research institution. This research also shows the important of the extraordinary socialization process but it is underappreciated. It also shows that the success of the study is usually defined at individual level of interactions of groups and institutions, which is studied by four knowledge creation process (socialization, externalization, combination, and internalization) that seems to run smoothly at the institutional level.

Where the two dimensions of performance of headmaster are closely related between the indicators, namely monitoring the progress of the school towards the achievement of the mission and objectives specifically related to the achievement of student learning education, as a dimension of shared goals. While the dimension of focus on learning has two indicators namely monitoring teaching to ensure instructional priorities are met including the application of ambitious teaching standards, and monitoring teacher progress in developing a positive climate of class and students on the social, emotional, and academic skills. Empirical evidence concludes that the three indicators above are interpreted and characterized in one dimension, namely entering into the dimensions of building a common goal.

This shows that one of the important findings of this research is the process of knowledge transfer that involves socialization, externalization, combination and internalization of the headmaster will improve the performance of the headmaster to build shared goals, manage organizational resources, collaborate with the community and lead with integrity. This is consistent with the study of Clifford M. et al. (2014) but did not include the focus on teaching and learning as part of performance appraisal because it was in accordance with the latest minister of education and culture regulations that headmasters acted as managers, where this was in accordance with the conditions on the ground that headmasters were not too focused on doing things related to learning but already thinking about how to advance the school from the other side for example how to achieve the

school's vision and mission, empowering school resources, collaborating and collaborating with the community, and leading the school with a spirit of integrity.

## 5. Conclusion

This research is expected to be a reference for other researchers who are interested in SECI variables. This study has several limitations in terms of the number of headmasters who become the unit of analysis and respondents. Therefore, subsequent research is expected to involve more headmasters such as all headmasters in senior high schools and vocational high schools both the public and the private. It is also suggested to increase the number of other variables such as information technology implementation and so on.

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