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## THE KNOWLEDGE TRANSFER AND INFORMATION TECHNOLOGY IMPLEMENTATION OF THE HEADMASTER AT STATE HIGH SCHOOLS AND STATE VOCATIONAL HIGH SCHOOLS IN SOUTH SUMATRA PROVINCE, INDONESIA

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### ABSTRACT

This study aims to analyze the influence of socialization, externalization, combination, and internalization (SECI) towards the implementation of an information technology. The population in this study was 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 non-probability sampling and purposive sampling technique. The instrument in measuring the variables in this study was questionnaires which were distributed to respondents. The results showed that SECI which consists of socialization, externalization, combination, and internalization have a positive and significant effect on the implementation of an information technology. This can help to guide the headmasters about socialization, externalization, combination, and internalization in an effort to support the implementation of an information technology of each school.

### KEY WORDS

Knowledge transfer, SECI, information technology, principal.

Competent human resources (HR) are important factors in the current globalization era. According to Limerick et al (2002); Walker and Dimmock (2000), economic, social, cultural, and political factors also underwent changes in this era of global economic knowledge. This is influenced by various aspects of individual and organizational life including schools where the school is related to education and knowledge.

Greene & Petty (1976) said that education is a human effort to prepare oneself for a meaningful life. Langeveld (1987) also revealed that education is an effort to help children to be able to carry out their life tasks independently so that they can be responsible morally; education is also an effort for adults in guiding immature people to maturity. Education is the key to progress which means that the better the quality of education organized by a community/nation, the better the quality of the community/nation will be.

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.

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. "Socialization" is the process of sharing tacit knowledge through observation, imitation, practice, and participation in formal and informal societies. Socialization usually starts with building a field or space for social interaction. Whereas, "externalization" is the process of articulating conceptual explicit textual knowledge; this is the key to knowledge creation. On the other hand, "combination" is the process of integrating concepts into knowledge systems

to integrate several bodies of explicit knowledge. Last but not least, “internalization” is the process of manifesting explicit knowledge into tacit knowledge.

Cartelli (2007) also wrote that integrating SECI with technology can improve student learning, knowledge construction, and meaningful learning. A study from Lopez-Nicolas and Soto-Acosta (2010) identified a technology that can support the performance of SECI and organizational learning. However, Nicolas and Acosta were not sure whether the effect of that supporting technology can be used for individual learning. Yeh et al. (2011) examined the SECI model in the context of teacher training with a blended learning approach and showed that SECI is suitable for teacher training and especially for increasing the professional knowledge of the teachers. The community also feels that teachers use several technologies for professional development and lifelong learning.

Bhatt (2000) explained that Knowledge Management (KM) has components that are interrelated with each other such as People, Technology, and Process. Based on the results of research from Yeh et al. (2011), knowledge management is still rarely applied in teacher training programs. Therefore, this research has developed a knowledge management-based training program that integrates the SECI model and mixed learning to improve the professional pre-service development of the teachers in connection with creativity instruction.

Furthermore, Lee and Wu (2010) exemplified a video technology that can develop knowledge transfer where a forum that facilitates contact between people who want to find knowledge with people who might have access to knowledge using computer networks and electronic bulletins and discussion groups can be created.

This study aims to find out the influence of SECI on the implementation of information technology so that the researchers can know whether SECI is useful to be applied in schools or not. Previous research which investigated the Knowledge Management of teachers in details through the SECI model and its application with the implementation of information technology is still debated. 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 Sumatra 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.

## LITERATURE REVIEW

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 Wernerfelt (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.

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. The power of information which was socially constructed should not be underestimated. Nonaka and Takeuchi (1995) and Blackler (1995) both put forward a community model of knowledge management that implies knowledge as “embedded in and built from and through social relations and interaction” and “achieved through understanding and shared attitude”. Gibbons et al., (1994) also argued that knowledge sharing across organizational boundaries is the key to the effective exploitation of knowledge. Knowledge transfer is the process of knowledge shifting from the original source to receivers. In the current education sector, knowledge transfer can improve the skills and abilities of students so that it is useful in achieving educational goals. Knowledge transfer needs to be studied and tested on how it can increase the knowledge transfer of teacher to student because someone's experience is also included as 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 et al., (2001) also added that in order to create context, individuals engage in social interaction to create knowledge. In organizations, knowledge is obtained from individuals or groups of people who have the knowledge or sometimes style in organizational routines. This knowledge is obtained from the media with structured data and information such as books and documents as well as person-to-person relationships that range from light to scientific talks. 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.

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. The basic argument is that knowledge creation is a synthesis process that is done through organizations that interact with

individuals and the environment to overcome the emerging contradictions in the organizations. Nonaka and Toyama (2003) also underlined that this is an interconnection between agents and structures that make knowledge processes occur as dynamic interactions between links from individual to the community.

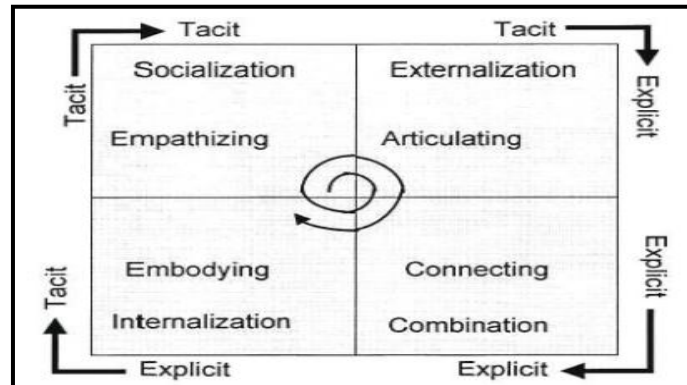


Figure 1 – SECI Model (Source: Nonaka & Takeuchi, 1995)

Based on the explanation from Nonaka & Toyama (2003), the process of socialization is the most basic process in disseminating knowledge. In the socialization process, there is a social interaction between individuals so that there is an interaction in between the tacit knowledge that generally in the form of discussion, story, or sharing experiences. 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.

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. Hamel (1991); Koskinen, K. U (2001) also explained that the transfer of tacit knowledge might be difficult but it still can be actualized. Externalization is measured using five indicators derived from Chei Sian Lee and Rujuta S. Kelkar (2011) such as new employees training, learning from experts, work documents, information dissemination, and organized learning.

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 (2011) which consists of cooperation and coordination strengthening, supporting different team section, supporting the distribution process, supporting cooperation, and concerning the work goals.

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. This process is almost the same as learning by doing. This process manifests new and explicit knowledge into work routines so that it becomes part of daily habits. Internalization is measured using five indicators from Chei Sian Lee and Rujuta S. Kelkar (2011) such as virtual learning, self-development opportunity, publication development, global network development, as well as increase benefits for self-development.

Information Technology (IT) always experiences rapid changes and developments. We are not aware that we continue to be faced with situations where information technology is developing rapidly and becoming better than before. This development can be said to be a very big driving force for the increasing interest of organizations in knowledge management. Smith and Farquhar (2000) stated that there are three factors of why knowledge management is very popular: (1) the increased virtual collaboration space for increasingly

dispersed organizations; (2) intellectual capital becomes important because the ability to learn quickly and continuously is a determining factor for success; and (3) technological advances that enable a manipulation of various forms of data and information. Meanwhile, when telecommunications and network technology is advancing, knowledge management technology can be said to experience very dynamic growth.

Furthermore, DeLone and Mclean (2003) proposed that the use of information technology for a company is determined by many factors. One of which is the characteristics of the users. According to Goodhue and Thompson (1995), the characteristic of a valuable human resource asset can be seen from the staff of the information technology who can consistently provide solutions to business problems and improve business opportunities through the system of information technology. Meanwhile, according to Lucas and Spitler (1999), to make information technology work effectively in contributing to performance, the members of the organizations are required to be able to use the technology properly. This rapid development of information technology becomes a competitive weapon that must be owned by companies in winning a competition. The application of information technology can be said to be successful if it can improve employee performance, which in turn can improve company performance. With the implementation of information technology, companies need to prepare human resources (HR). This is also supported by Igbaria (1994) that the use of information technology in completing company operational tasks can be explained from humanitarian elements that are behind the use of information technology.

According to Wilkinson and Cerullo (1997), information technology is a technology that focuses on the use of computers and technology related to the regulation of information sources. This is also clarified by Lucas and Spitler (1999) that in order to make information technology run effectively to contribute to performance, the members in the organization must be able to use the technology properly. Goodhue and Thompson (1995) proposed technology compatibility construct to be used as a basis for user evaluation in measuring the success of an information system. This success is marked with the increased performance especially the performance of individuals in the organization. Moreover, Goodhue and Thompson (1995) also said that the indicators to measure the implementation of information technology individually are the effects on task effectiveness and productivity, the utilization of services that can improve individual performance, the easiness in finding the latest data, the completion of assignments on time, the special authorization/permission to access data that needs to be done at work, and the level of trust in the new information system. Some previous studies concluded that the social mechanism in knowledge sharing that was built in information technology-based forums inherited the definitions and characteristics of what is referred to as a Knowledge Management System (KMS). By looking at the explanation from Awad and Ghaziri (2004), Surepong et al (2007); Abdullah et al (2006); and Seminar (2010), MS is the integration and synergy between modern or latest information technology and social/structural mechanisms in collaborative knowledge management.

The model of the research can be seen in Figure 2.

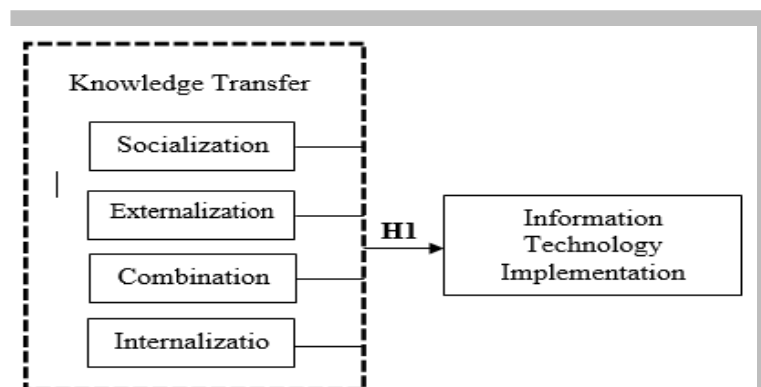


Figure 2 - Research Model

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

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

## METHODS OF RESEARCH

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 non-probability 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.

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 Implementation of Information Technology: The instrument to measure the implementation of information technology was a questionnaire developed by Goodhue and Thompson (1995) as many as 6 statement items. The statement items contain the indicators of the implementation of information technology namely the effects on task effectiveness and productivity, the utilization of services that can improve individual performance, the easiness in finding the latest data, the completion of assignments on time, the special authorization/permission to access data that needs to be done at work, and the level of trust in the new information system. The questionnaires were measured using a seven-point Likert scale (1-7).

## RESULTS AND DISCUSSION

The instruments are said to be valid and reliable if they meet the requirements for validity and reliability test. The test was conducted with different respondents including 30 sets of questionnaires to the Headmasters of State Middle Schools in Palembang. The validity test was done by correlating the scores of each item with the total score which is the number of scores from each item in question. If there were items that do not meet the requirements, the item will not be further investigated. To determine the validity of each number, the r-count value is compared with the r-table value of product moment. The r-table value is seen in Table R with  $df = n-2$  ( $n =$  number of samples),  $df = 30-2$ ,  $df = 28$ . If the significance level is at 5% and there are 30 trials of samples, r-table by 0.361 will be obtained. The research criteria for the validity test are:

- If  $r\text{-count} > r\text{-table}$  (0.361), then the questionnaire item is valid;
- If  $r\text{-count} < r\text{-table}$  (0.361), the questionnaire item is invalid.

The results of the validity test for the questionnaires as a research instrument can be seen in Table 1.

Table 1 - The Results of Validity Test for Socialization Variable

Variable	r-value	r-table value (n = 30, $\alpha$ = 5%)	Conclusion
<b>Socialization</b>			
X1.1	0.598	0.361	Valid
X1.2	0.630	0.361	Valid
X1.3	0.590	0.361	Valid
X1.4	0.588	0.361	Valid
X1.5	0.589	0.361	Valid

Based on Table 1 above, it is shown that the socialization variable has a Pearson correlation value or r-count value that is greater than the r-table value (0.361). Therefore, it can be concluded that all statement items used in this study are valid.

Table 2 - The Results of Validity Test for Externalization Variable

Variable	r-value	r-table value (n = 30, $\alpha$ = 5%)	Conclusion
<b>Externalization</b>			
X2.1	0.655	0.361	Valid
X2.2	0.584	0.361	Valid
X2.3	0.617	0.361	Valid
X2.4	0.639	0.361	Valid
X2.5	0.663	0.361	Valid

By looking at Table 2 above, it can be indicated that the externalization variable has a Pearson correlation value or r-count value which is greater than the r-table value (0.361). Thus, it can be said that all the statement items used in this study are valid.

Table 3 - The Results of Validity Test for Combination Variable

Variable	r-value	r-table value (n = 30, $\alpha$ = 5%)	Conclusion
<b>Combination</b>			
X3.1	0.650	0.361	Valid
X3.2	0.612	0.361	Valid
X3.3	0.528	0.361	Valid
X3.4	0.627	0.361	Valid
X3.5	0.625	0.361	Valid

As it can be seen in Table 3, it can be said that the combination variable has a greater Pearson correlation value or r-count value than the r-table value (0.361). By that, all the statement items used in this research are valid.

Table 4 – The Results of Validity Test for Internalization Variable

Variable	r-value	r-table value (n = 30, $\alpha$ = 5%)	Conclusion
<b>Internalization</b>			
X4.1	0.818	0.361	Valid
X4.2	0.602	0.361	Valid
X4.3	0.560	0.361	Valid
X4.4	0.581	0.361	Valid
X4.5	0.757	0.361	Valid

Table 4 pointed out that internalization variable has a bigger Pearson correlation value or r-count than the r-table value (0.361). So, it can be assumed that all the statement items used in this study are valid.

Table 5 – The Results of Validity Test for Information Technology Implementation Variable

Variable	r-value	r-table value (n = 30, α = 5%)	Conclusion
Information Technology Implementation			
Z1.1	0.642	0.361	Valid
Z1.2	0.810	0.361	Valid
Z1.3	0.547	0.361	Valid
Z1.4	0.665	0.361	Valid
Z1.5	0.632	0.361	Valid
Z1.6	0.609	0.361	Valid

Table 5 indicated that the information technology implementation variable has a Pearson correlation value or r-count value that is greater than the r-table value (0.361). By that, it can be said that all the statement items used in this study are valid. To find out the reliability of the questionnaire instruments used, reliability test also carried out. If the correlation coefficient is greater than the critical value (0.7), then the instrument is declared reliable.

Table 6 – The Results of Reliability Test

Variable	Correlation Coefficient	Description
Socialization	0.811	Reliable
Externalization	0.831	Reliable
Combination	0.800	Reliable
Internalization	0.836	Reliable
Information Technology Implementation	0.859	Reliable

By looking at Table 6, it is known that socialization, externalization, combination, internalization, and information technology implementation have alpha coefficient value respectively by 0.811, 0.831, 0.800, 0.836, and 0.859; all of the values are greater than 0.7. Thus, all the statement items used in this study are reliable which means that the questionnaire used in this study can be used as a measuring tool that is trustworthy or reliable.

## RESULTS OF STUDY

Of 167 questionnaires which were distributed to the Headmasters, 159 were returned by respondents and 154 were used for data processing. Table 1 illustrates the profile of the majority of respondents in this study.

Table 7 – Respondents Profile

No	Demographic Type	Profile	Percentage (%)
1	Sex	Male	82.5
2	Age Range	51-55 years old	44.2
3	Education Level	Master	76.6
4	Working Period (Educator)	21-30 years	66.9
5	Working Period (Headmaster)	4-6 years	31.2

Source: *Processed Primary Data, 2019.*

Table 7 displays that the majority of the respondents were male (82.5%) with an age range of 51 - 55 years old (44.2%). Furthermore, the majority of the respondents' education level is Master (76.6%) with a working period as an educator/teacher by 21-30 years (66.9%) and as headmaster by 4-6 years (31.2%).

After testing various SEM assumptions, validity, reliability, as well as exogenous and endogenous confirmatory analysis, it is illustrated that the indicators and variables in this study can be used to test the full model that has been designed as an empirical model.



Table 8 – Estimate Regression Weight Structural Equation Modeling

			Estimate	S.E.	C.R.	P
Information Technology	<---	Socialization	1.000			.000
Information Technology	<---	Externalization	3.812	2.801	1.361	.174
Information Technology	<---	Combination	2.619	2.587	1.012	.311
Information Technology	<---	Internalization	1.000			

Source: Processed Primary Data (2019).

## DISCUSSION OF RESULTS

The results of this research are varied; there are some that support and oppose the hypotheses that have been formulated previously. The first hypothesis states that socialization has an effect on the implementation of information technology. Based on the results of the analysis, the socialization variable supports the hypothesis. Empirically, there is a significant effect of socialization (X1) on Information Technology Implementation (Y1) by 0,000 (p-value <0.05) or CR > 1.967. If there is an increase or decrease in Socialization (X1), then the Information Technology Implementation (Y1) will be affected. With this result, it can be indicated that the increase in socialization will improve the implementation of information technology and vice versa. The results of this study reject the findings from Lopez-Nicolas and Soto-Acosta (2010) which found that ICT is oriented to communication and workflow to produce a significant positive impact on the knowledge creation process, except the socialization process. This is also different from the research of Chaikrongrag, P and Angkasith, V (2010) who wrote that the socialization and combination phase of DOD does not work properly. A “Knowledge Agent” is employed as a missing link between units and to bridge knowledge. However, the results of this research hypothesis are in line with previous research done by Chei Sian Lee, Rujuta S. Kelkar (2011) where socialization had an influence on the implementation of information technology. They also proposed that utilizing existing information technology had been implemented in the work environment to support knowledge management initiatives. The SECI model can provide important design considerations to develop communication technology.

On the other hand, the second hypothesis tells that externalization influences the implementation of information technology. Based on the analysis of the study, externalization does not have any effect on the information technology implementation. It is obtained that the effect of 0.174 was not significant (p-value > 0.05) or CR 1.361 ≤ 1.967 which means that if there is an increase in externalization, the implementation of information technology 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 support the results from Vaccaro, Veloso & Brusoni (2009) which discussed the process of creating knowledge of organizations in two virtual teams involved in new product development projects in the automotive industry. In this matter, externalization with the use of information technology is not found. This research also confirms the findings from Chei Sian Lee, Rujuta S. Kelkar (2011) who revealed that externalization has an influence on the implementation of information technology. It is described that the utilization of the existing information technology has been implemented in the work environment to support knowledge management initiatives. Therefore, it can be said that the SECI model can provide important design considerations for developing communication technology.

The third hypothesis suggests that combination affects the implementation of the information technology. The results of the research do not support the hypothesis where an influence of 0.311 is not significant (p-value > 0.05) or CR 1, 012 ≥ 1.967. This means that if there is an increase in the combination, information technology implementation will not experience an increase and vice versa. Chaikrongrag, P and Angkasith, V (2010) found that the role of socialization and combination did not work effectively. A “Knowledge Agent” is employed as a missing link between units and to bridge knowledge. The results of this research reinforce the research conducted by Lucas and Spitler (1999) which underlined that

information technology can be used effectively to contribute to work performance. Therefore, the members of the organization must be able to use the technology properly. In this study, it is known that the headmasters have used this information technology but not yet effectively. Supported by the opinions of DeLone and Mclean (2003), the use of information technology for a company is determined by many factors, one of which is the characteristics of the users. Whereas, the opinion of Nonaka et al. (2000) emphasized that explicit knowledge can be transferred through a combination. This is an area where information technology is most helpful because explicit knowledge can be conveyed in documents, e-mail, databases, meetings, and briefings. The key steps to collect, disseminate, edit, and process relevant internal and external knowledge are needed to make it more useful. The combination allows the transfer of knowledge between groups throughout the organization.

The fourth hypothesis mentions that internalization affects the implementation of information technology. Based on the results of this study, internalization supports the hypothesis where the influence is significant ( $p$ -value  $< 0.05$ ) or  $CR \geq 1.967$ . This indicates that if there is an increase in internalization, the information technology implementation will also increase. Conversely, if there is a decrease in externalization, the implementation of information technology will decrease as well. This is 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. These results are in contrast with the results from Chalkiti, K and Sigala, M (2008) which examined network studies and the creation of social knowledge capabilities and affordances of online forums to support tourism professionals. They found that internalization is difficult to examine by studying and observing online interactions because interviews must be conducted to know how they use discussion forums to have independent study.

The fifth hypothesis proposes that socialization, externalization, combination, and internalization together influence the implementation of information technology. 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 implementation of information technology. The coefficient value obtained is 6.310 with  $p$ -value \*\*\* which means that the  $p$ -value  $< 0.05$ . Besides that, it is shown that there is a significant influence between socialization, externalization, combination, and internalization on the implementation of information technology. The coefficient value of 6.310 above is obtained from the accumulation of the CR coefficient of the independent variable and then divided by the number of large variables so that the joint efficiency is obtained. The test values have met the hypothesis acceptance requirement that is the CR value (6.310) must be larger than 1.96 with a significance level of \*\*\*. The results of this study are in line with the research of Holocher et al (2011) which prove that technology can support the motivation of individuals to share knowledge and become independent learners. Sarra Berraies and Mehrez Chaher (2014) also identified the importance of tacit-linked activities namely socialization, combination, internalization, and externalization for the innovation performance at ICT companies in Tunisia. The study found that those variables contribute to the theoretical study in the field of Knowledge Creation Process (KCP), Organizational Learning (OL) and innovation performance by building integrative models that highlight the relationship between the variables. It is important to note that this study emphasizes the role of OL as a mediator between those variables. In addition, this study highlights the most important dimensions of the SECI model in contributing to OL innovation and development.

## 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 performance and so on.

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