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Analysis of Knowledge Management Enabler in Knowledge Sharing on R&D Institution Capability

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ABSTARCT

R & D institutions play an important role in innovation because these organizations produce various kinds of knowledge that come from experiences and experiments and integrate them for the creation of knowledge and new products. Paten is a rough measure of innovation and be one measure of performance R & D institutions. The low productivity of patents indicates the problem of innovation capability. The purpose of this study is to find out specific factors in sharing knowledge that can influence the capabilities of innovation. These factors are referred to as knowledge management enablers, which refer to individual dimensions (learning motivation, interpersonal trust, knowledge self-efficacy), organizational dimensions (top management support and reward systems), and technological dimensions (information and communication technology use). The results of the analysis using the PLS-SEM method, it is known that interpersonal trust variables, knowledge-self efficacy from the personal dimension and ICT use from the technological dimension, is the variable that has the most positive effect on knowledge sharing with the parameter coefficient values of 0.263, 0.467, and 0.159 with a significance level of ρ <0.05. While the top management variable and reward system variables from the organizational dimension do not have a direct effect on knowledge sharing with a value of 0.806 and 0.022 at the significance level ρ> 0.05. The results of the study also show that knowledge sharing has a positive effect on innovation capability with a parameter coefficient of 0.478 at the significance level of ρ 0.000 <0.05.

Keywords: Innovation Capabilities, Knowledge Sharing, Knowledge Management Enablers, R & D Institutions.

1. INTRODUCTION

One indicator of innovation capability is the number of patents approved because it can describe the capacity of an organization to develop a product, which in turn can determine the level of competitive advantage, patent is one of the intellectual property rights products that can be considered as a rough measure of the level of innovation of a country through products and services created in a specific local scope [1]. The role of the organization of research and development (R&D) becomes very important in innovation because this organization produces a variety of knowledge that comes from experiences and experiments and integrates it for the creation of knowledge and new products and innovation [2]. Innovative organizations must be able to improve the capabilities of innovation both in terms of individuals and organizations themselves. One effort that can be done to improve the capability of innovation is through knowledge sharing activities [3]. Knowledge sharing between co-workers in an organization is able to create cooperation by communicating with each other about their intellectual capital both in the form of knowledge and skills so that it will encourage the ability to innovate.

Lack of innovation capabilities at the organizational level can be influenced by the presence of obstacles in the processes of knowledge management, especially knowledge-sharing activities. Obstacles in sharing knowledge among fellow researchers / inventors result in knowledge gaps that are valuable in supporting patent productivity performance. Obstacles in knowledge sharing is consistent with the results of the study by [4] which states that the biggest challenge in knowledge management d i organization of R & D is to ensure the participation of persons or members of the organization in an activity to share knowledge and collaborate in the re-use (re-use) results of activities previous.

The cause of low innovation capability in principle involves three elements of knowledge management that cannot be separated from one another namely human elements, organizational elements and technological elements [4], these three elements are the main elements in knowledge management that must synergize so that the organization's strategic goals achievable. Factors that affect the human element, organization and technology in the implementation of knowledge management is called the Knowledge Management Enabler (KME). KME must be optimized so that the knowledge management process can

be in line with strategic objectives organization [5]. Thus it is necessary to study further whether the factors enabler of knowledge management on the personal dimension, the technological and organizational knowledge sharing can affect innovation capabilities R&D institutions.

2. LITERATUR REVIEW

Innovation can be defined as the application of new ideas into products, processes or other aspects of a company's activities. Innovation focuses on the process of commercializing or extracting ideas into values [6]. Innovation capability as the ability to develop new products that can satisfy market needs, implement more appropriate technological process processes to produce new products, develop and adopt new products and processing technology for needs in the future, respond to unexpected technological change activities, as well as unexpected opportunities made by competitors [7]. The term 'capability' in innovation emphasizes the key role and adapting strategic management, integrating and reconfiguring all skills, capabilities, functional competencies and other resources to address environmental challenges [8].

The effectiveness of knowledge sharing is a vital stage for the success of knowledge management (KM) in organizations, because it is through this activity that the organization can maintain its competitive position [9]. The activity of sharing knowledge is a vital process in innovation which is an inseparable part of KM [10]. Knowledge sharing is generally supported by the KM system. Developing a knowledge-sharing environment in a team is a good way to get more satisfactory results, but it is not an easy task to influence team members to share [11]. It is possible for team members to be reluctant to share knowledge because they think that the knowledge they have can show power to their owners, so that they are difficult to share [12]. Knowledge management enabler (KME) can be defined as 'factors that influence the implementation of KM processes, KME can encourage organizational members to share knowledge and experience and knowledge creation [13]. Sharing knowledge in organizations can be explained by the theory of sticky knowledge, namely the obstacles in sharing knowledge in organizations can be explained in three dimensions, namely personal dimensions, organizational dimensions and technological dimensions, these three dimensions are key enablers of the KM process [14].

The personal dimension of KM is in the form of a person's self-confidence in knowledge (knowledge self-efficacy), learning motivation (learning motivation), and trust between members (interpersonal trust). Learning Motivation is defined as 'personal motivation in the organization to learn, which affects the effectiveness of knowledge sharing [15]. The higher the knowledge sharing activities in a research team, the higher the motivation for learning from team members [11]. Knowledge self-efficacy, can be defined as 'self-confidence in its capabilities related to the knowledge it possesses to organize and execute actions needed to achieve specific performance targets [16]. Individuals who have better knowledge, feel they have contributed a lot to organizational performance, and have confidence in someone to share valuable knowledge are important keys in the flow of knowledge [15]. Interpersonal trust can be defined as 'the desire of both parties to be open to each other, interpersonal trust is the main characteristic that greatly influences the process of creating and sharing effective knowledge.[17].

The organizational dimension in the KME is a dimension that explains the factors that influence KM at the level of organizational management. Factors that influence the organizational dimensions of KM can be in the form of top management support (top management support) and reward systems. Top management support is considered as one of the most potential influences in the organization's knowledge base [16]. This factor refers to the commitment and support of top-level managers who show knowledge sharing behaviors in influencing other organizational members to share knowledge and have implications for improving innovation performance [18]. Reward system is forms of appreciation that indicate organizational values that shape employee behavior [16]. The reward system can be an internal compensation structure or extrinsic award from the organization, and it is important to foster the motivation of employees / workers to share knowledge [4].

The technological dimension in KME is a dimension that explains the factors that use technology that affect KM. The factors that influence the technological dimensions of KM are the use of information and communication technology (ICT use). ICT use in the context of this research is to refer to the use of integrated means of communication and information in sharing knowledge. The impact of information flow in R & D organizations through internet technology, and concluded that internet technology has dramatically changed the sources and ways of knowledge workers in sharing through a technological gatekeeper concept [19].

Knowledge sharing can improve the capability of innovation and competitive advantages of new products for companies that use high technology [16]. Has seen a positive relationship between capability of innovation and knowledge management processes and it is known that absorption capacity is a mediator between acquisition of knowledge and capability of innovation [5]. Relatively similar results in R & D institutions were also examined to see a positive relationship between knowledge management capabilities and innovation in R & D institutions [20]. Knowledge sharing has a significant effect on Innovation Capability [3], and Knowledge sharing significant effect on the capability of innovation [16].

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3. METHODOLOGY

This research is explanatory research, namely research to test hypotheses between hypothesized variables. The variable used in this study is the independent variable and the dependent variable. Independent variables are variables that influence or become the cause of change or the emergence of dependent variables. In the PLS-SEM method, the independent variable is called the exogenous/predictor variable.

Exogenous variables in this study are learning motivation, Knowledge self-efficacy, Personality trust, Management support, reward system, and ICT use. Dependent variable is a variable that is influenced or which is due to the existence of independent variables. The dependent variable in PLS-SEM is called an endogenous variable. Endogenous variables in this study are Knowledge Sharing and Innovation Capability. The research framework can be seen in figure 1.

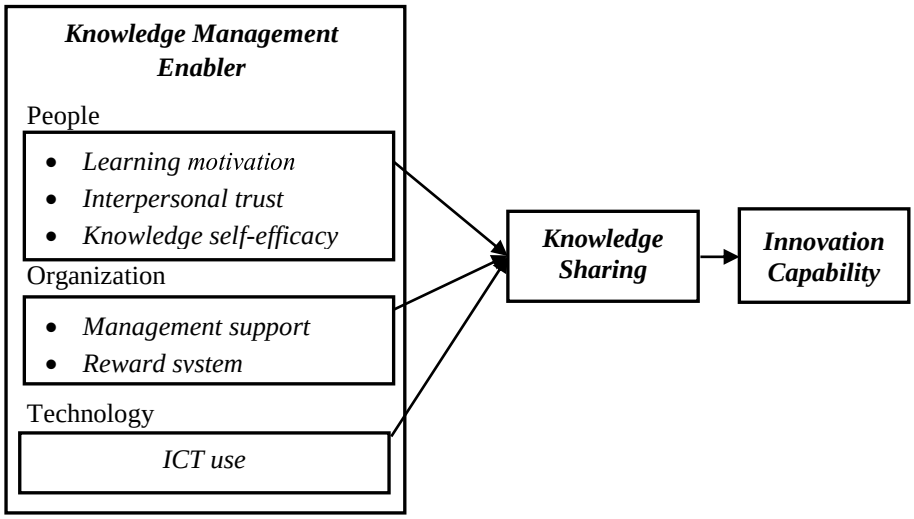

Figure 1: Research Framework

Data collection was done using a questionnaire with a sample of 100 respondents. Scale measurement uses a score of 1 to 5, (1 = Strongly disagree, and 5 = Strongly Agree). The sampling technique applied in this study is non-probability sampling and the type of sample used is Purposive Sampling, namely the technique of determining samples with certain considerations. Testing the hypothesis in this study uses Smart Partial Least Square (PLS) software, which is an alternative method of analysis with variance -based Structural Equation Modeling (SEM). The design of the model can be seen in figure 2.

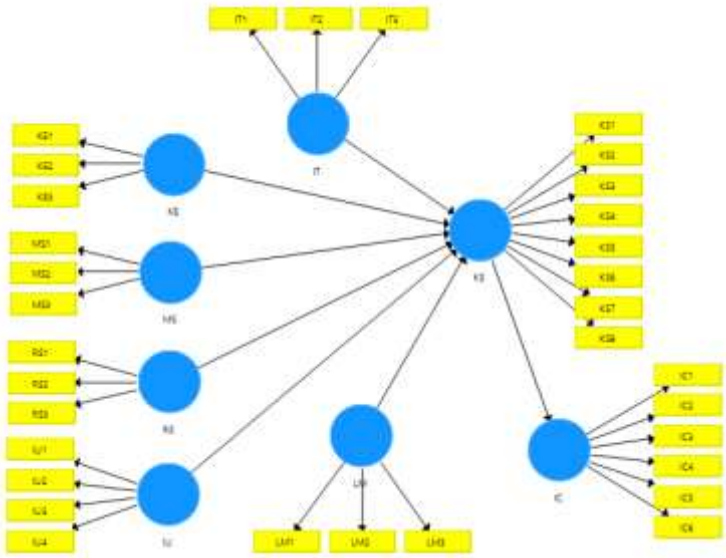

Figure 2. Design PLS-SEM Model

DOI : 10.31695/IJERAT.2019.3495

4. RESULTS AND DISCUSSION

PLS-SEM analysis was conducted in 3 stages, namely outer model analysis, inner model analysis, and hypothesis testing. With the model framework as follows:

4.1 Outer Model Analysis

Outer Model analysis done to ensure that the measuring instrument (measurement), which used to be a decent measurement (valid and reliable). Outer model analysis can be seen from several indicators, namely: Convergent validity, Discriminant validity and Unidimensionality. This outer model analysis specifies the relationship between latent variables and their indicators. or it can be said that the outer model defines how each indicator relates to its latent variables.

- Convergent validity is done to test the validity of indicators by looking at the value of outer loading of each variable indicator. An indicator is said to be valid and has good reliability if the outer loading value for each indicator is> 0.70. If using the standard convergent validity value > 0.70, then the value of the loading factor below 0.70 is removed from the model. Besides being seen from the loading factor, convergent validity can also be seen from the value of Average Variance Extracted (AVE). The AVE value in the model can be seen in Table 1, it shows that the AVE value of each construct is above 0.5. Therefore, there is no convergent validity problem on the model being tested.

Table 1: Value of Average Variance Extracted (AVE)

Variable	Average Variance Extracted (AVE)
Innovation Capability	0.652
Interpersonal Trust	0.664
ICT Use	0.618
Knowledge self-efficacy	0.702
Knowledge Sharing	0.527
Learning Motivation	0.615
Management Support	0.770
Reward System	0.774

Source: Data processed (2018)

- Discriminant validity aims to test to what extent the latent construct is really different from other constructs. This value is a cross loading factor value that is useful to determine whether the construct has adequate discriminant by comparing the loading value of each item to its construct greater than its cross loading value. The results of discriminant validity testing can be seen in Table 2.

Table 2: Value Discriminant Validity

Variable	IC	IT	IU	TO	KS	LM	MS	Hospital
Innovation Capability	0.807							
Interpersonal Trust	0.198	0.815						
ICT Use	0.346	0.385	0.786					
Knowledge self-efficacy	0.193	0.162	0.138	0.838				
Knowledge Sharing	0.478	0.557	0.682	0.299	0.726			
Learning Motivation	0.117	0.371	0.311	0.131	0.434	0.784		
Management Support	0.342	0.410	0.507	0.163	0.467	0.179	0.878	
Reward System	0.061	0.155	0.457	0.046	0.337	0.424	-0,093	0.880

Source: Data processed (2018)

- The Unidimensionality test is to ensure that there are no problems in the measurement. Undimensionality test is done using reliability composite indicator and Cronbach alpha. For these two indicators the cut-value is 0.7. The outer loading value that is considered reliable is Cronbach's value Alpha and the Composite Reliability value must be above 0.70. Based on the values in Table 3. it can be seen that all constructs have the value of Cronbach's Alpha and Composite Reliability > 0.7, all the constructs are reliable.

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Table 3: Cronbach's value Alpha and Composite Reliability

Variable	Cronbach's Alpha	Composite Reliability
Innovation Capability	0.735	0.843
Interpersonal Trust	0.749	0.856
ICT Use	0.788	0.865
Knowledge self-efficacy	0.793	0.876
Knowledge Sharing	0.817	0.869
Learning Motivation	0.710	0.826
Management Support	0.851	0.909
Reward System	0.858	0.911

Source: Data processed (2018)

4.2 Inner analysis Model

Evaluate the inner model or test the structural model to see the direct and indirect effects between variables. Evaluation of the inner model with PLS-SEM begins by looking at the R-square value. In general, the value of R^2 of 0.7 0 is considered to have a large estimation accuracy, the value of R^2 of 0.50 is considered to have a moderate estimation accuracy, and an R^2 value of 0.2 0 is considered to have a weak estimation accuracy. Based on data processing, R-Square values are generated in Table 4.

Table 4: Value R-square

Variable	R Square	R Square Adjusted
Innovation Capability	0.229	0.221
Knowledge Sharing	0.617	0.592

Source: Data processed (2018)

Table 4 shows the accuracy of the estimator for the Innovation Capability variable in the medium category because it has a value above 0.2 0 which is equal to 0.229. This means that the percentage of the effect of Knowledge Sharing on Innovation Capability is 22.9% while the remaining 78.1% is influenced by other factors. Likewise, for Knowledge Sharing variables, the accuracy of estimation is moderate with a value of 0.617. This means that a large percentage of the effects of learning motivation, knowledge self-efficacy, interpersonal trust, management support, reward system and ICT use of Knowledge Sharing is 61.7% while the remaining 38.3% is influenced by other factors.

4.3 Testing Hypothesis

Hypothesis testing is done by looking at the probability value and t-statistic. For probability values (p-value) with alpha 5% is less than 0.05. The t-table value for alpha 5% is 1.96. So the hypothesis acceptance criteria are when t-statistics> t-table. Path coefficient analysis is done by looking at the direct effect, indirect effects and total effects.

Direct effect (direct effect) is to see the magnitude of the direct influence of each construct of the independent variable on the dependent variable. In table 5 it can be seen the magnitude of the influence of the independent variable namely learning motivation knowledge self-efficacy, interpersonal trust, management support, reward system and ICT use of Knowledge Sharing and free variables on Innovation Capability, namely Knowledge Sharing.

Table 5: Path Effect of Direct Effect Test

Inter-Variable Influences	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
IT -> KS	0.263	0.262	0.083	3.166	0.002	Accepted
IU -> KS	0.467	0.451	0.103	4,546	0,000	Accepted
KE -> KS	0.159	0.164	0.062	2,555	0.011	Accepted
KS -> IC	0.478	0.493	0.076	6,270	0,000	Accepted
LM -> KS	0.150	0.167	0.082	1,831	0.068	Rejected
MS -> KS	0.071	0.078	0.088	0.806	0.420	Rejected
RS -> KS	0.018	0.019	0.083	0.220	0.826	Rejected

Source: data processed (2018)

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From the results of data processing it is known that from the 7 hypotheses proposed there are four hypotheses accepted or have a positive effect, namely: H_2: Knowledge self-efficacy has a positive effect towards Knowledge sharing, H_3: Interpersonal trust has a positive effect towards Knowledge sharing, H_6: ICT use has a positive effect to Knowledge sharing, H_7: Knowledge Sharing has a positive effect on Inovation capabilities. While the three hypotheses are rejected or negative effects, namely: H_1: Learning motivation positive effect to Knowledge sharing, H_4: Management support has a positive effect to Knowledge sharing, H_5: Reward system has a positive effect towards Knowledge sharing. So in general it can be illustrated the strength of the relationship between the variables according to the research model used as in Figure 3 and 4.

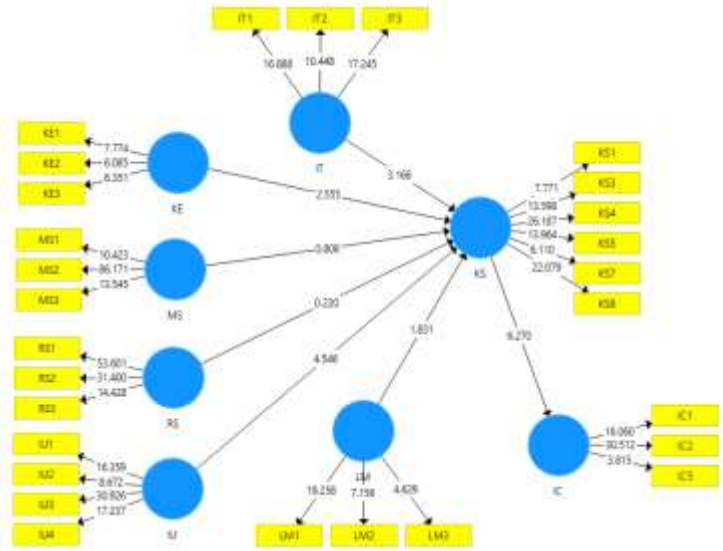

Figure 3: Model Total Influence Based on Value t Calculate

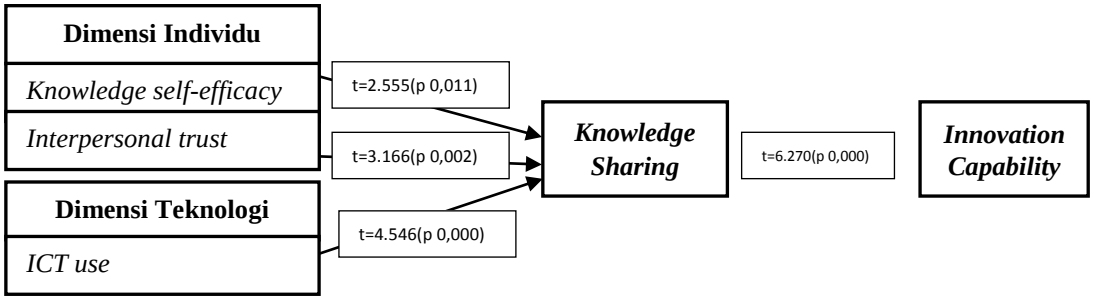

Figure 4: Strengths of KME relationships in sharing knowledge with innovation capabilities

Overall, aspects of the KME are inseparable from influencing knowledge sharing and innovation capabilities. In this case the learning motivation, top management support and reward system variables, in general based on the parameter coefficients produced, all have a positive effect on sharing knowledge and innovation capabilities but based on the calculated t-score all are <1.96 and the significance level is generated> 0.05 so that the influence of the three variables is not significant for sharing knowledge and capability of innovation. In other words, even though there are three variables that have a relatively low correlation value to the others, the effects of each variable cannot stand own.

CONCLUSION

The results of the study show that the low capability of innovation can be explained from the perspective of knowledge management which is derived from the key factors that influence it. From the results of the analysis and discussion, it is known that the factors in the most influential knowledge management enabler in knowledge sharing activities to support the improvement of innovation capability are interpersonal trust and knowledge self-efficacy factors from the personal dimension and ICT use factors from the technological dimension. So in general it can be concluded that the willingness of employees to share knowledge can improve the capability of innovation.

The implementation of knowledge management will not work if there is no knowledge sharing process in it, because with this knowledge sharing the knowledge possessed by individuals can accumulate into organizational knowledge. Knowledge management facilitates this process so that knowledge can be better organized and later can be fully utilized for the benefit of the

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organization. With the existence of knowledge management based on the accumulation of individual knowledge through this knowledge sharing, if at any time there is one member of the organization that comes out, the knowledge possessed by the individual will not be lost because it has become the knowledge of the organization and organization will not experience shocks in the presence member that comes out.

The low capability of innovation in principle involves three elements of knowledge management that cannot be separated from one another, namely individual elements, organizational elements and technological elements. These three elements are the main elements in knowledge management that must work together so that the organization's strategic goals can be achieved. Therefore, the management/Top management needs to study further to minimize the above matters, among others, by increasing the "culture of knowledge sharing" through building a culture that supports knowledge sharing; build awareness among employees of the value of creating, sharing and using knowledge; develop and maintain a network of people who currently share knowledge and create new knowledge. Strengthening the culture of knowledge sharing is expected to increase the desire to seek knowledge, make knowledge easily accessible, and stimulate knowledge sharing.

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