

The role of psychological security climate, leadership, and self-efficacy on teachers capability through knowledge management

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ABSTRACT

The study analyzed the relationship of leadership to knowledge management, leadership to innovation capability, psychological security climate to knowledge management, psychological security climate to innovation capability, self-efficacy to knowledge management, self-efficacy to innovation capability, knowledge management to innovation capability. The unit of analysis was vocational teachers and principals of vocational schools. The number of teachers from the respondents education unit is 3,056 teachers. By using the Slovin formula, the minimum number of sample sizes is 354 people and the sampling technique used was simple random sampling. The data analysis technique in this study uses partial least square (PLS). The results of data processing show that leadership has a significant effect on knowledge management, leadership has a significant effect on innovation capability, psychological security climate has a significant effect on knowledge management, psychological security climate has a significant effect on innovation capability, self-efficacy has a significant effect on knowledge management, self-efficacy has a significant effect on innovation capability, knowledge management has a significant effect on innovation capability. This research contributes to improving the quality of curriculum, teachers, and graduates of vocational schools/polytechnics in the 21st century.

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1. INTRODUCTION

In the era of education 4.0 and the digital era, innovation is very important for organizations to maintain their competitive advantage and become market leaders [1] likewise school organizations, such as the education unit. Educational units face not only the challenge of offering innovative services through effective exploitation of the knowledge resources available to them but also the challenge of how they capture it and use the available knowledge beyond their limits. In this regard, the more innovative teachers to new findings, the more creative they should be in managing their learning activities [2]. The more creative the teacher manages their learning, it can be ascertained that the more effective the results will be. It can be assumed that there is a relationship between the level of teacher innovation, namely the degree of teacher acceptance of an innovation with the ability to manage learning [3]. The educational problems that often occur in include teachers who are less creative in learning, and low innovation (less able to come up with new ideas). Monotonous learning is not interesting, children are bored. Learning is still conventional (still using the old learning methods) [4]. Many teachers do not want to change in using their learning methods. Many teachers are not interested in participating in teacher innovation competitions. There 37% of teachers' creativity has not been maximized in learning [5]. Meanwhile, teachers who already have creativity in learning only reach 63% of vocational school

teachers. Thus, it can be said that teachers with the status of permanent foundation teachers, still need to be improved in terms of teacher creativity.

Based on the identification of problems, the scope of the problems in this study is the creativity of teachers who have not been maximized in learning. Meanwhile, teachers who already have creativity in learning only reach 63%. Vocational school teachers have problems, namely a low culture of innovation, low creativity, and low productivity. Thus, it can be said that teachers with the status of permanent foundation teachers, still need to be improved in terms of teacher creativity [6]. There are several possible factors related to the low innovation power of teachers, such as leadership, self-efficacy, and psychological security climate. To examine and observe teacher creativity, the researchers consider the leadership variable, creating a climate of psychological security and self-efficacy in improving knowledge management, so that it can lead to interesting teacher innovations for further study. Based on the study of theory and the development of hypotheses, the research model is structured as Figure 1.

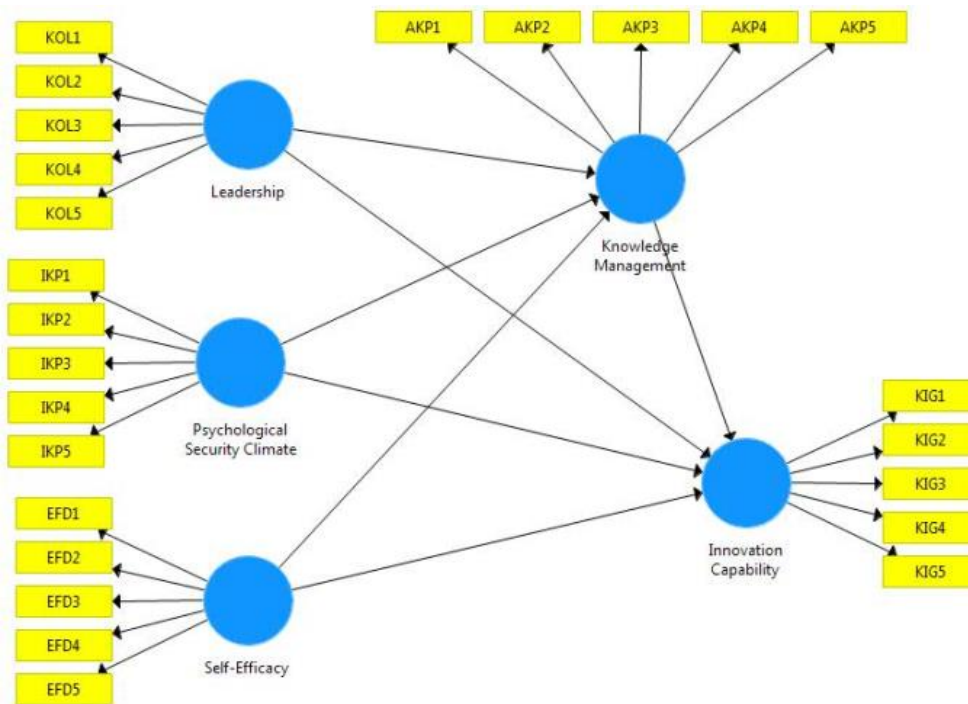


Figure 1. Research model

2. RESEARCH METHOD

This study used a quantitative approach, namely an approach that emphasizes the analysis of numerical data that is processed by statistical methods [7]. Quantitative research is a type of research that produces findings that can be achieved (obtained) using statistical procedures or other means of quantification (measurement) [8]. The number of teachers from the respondent's education unit is 3,056 people. So, the teachers with that number are the population of this study and by using the Slovin formula the minimum number of sample sizes is 354 people in this study the sampling technique used is simple random sampling, because members of the population have the same opportunity to become members of the sample, there is not discrimination against members of the population [9].

Data analysis techniques in this study using partial least square (PLS). PLS is a structural equation modeling (SEM) equation model with an approach based on variance or component-based SEM [10]. PLS is used to explain whether there is a relationship between latent variables (prediction). PLS is a powerful analytical method because it does not assume current data with a certain scale measurement, and the number of samples is small [11]. The research draw several hypotheses, namely: i) Leadership has a significant effect on knowledge management (H1); ii) Leadership has a significant effect on innovation capability (H2); iii) Psychological security climate has a significant effect on knowledge management (H3); iv) Psychological security climate has a significant effect on innovation capability (H4); v) Self-efficacy has a significant effect on knowledge management (H5); vi) Self-efficacy has a significant effect on innovation capability (H6); and vii) Knowledge management has a significant effect on innovation capability (H7).

3. RESULTS AND DISCUSSION

3.1. Outer model evaluation

The measurement model or outer model with reflective indicators is evaluated with convergent and discriminant validity of the indicators and composite reliability for indicator blocks. Individual reflective measure is said to be high if it has a correlation of more than 0.70 with the construct to be measured [12]. However, for research in the early stages of developing a measurement scale, a loading value of 0.50 to 0.60 is considered sufficient [13]. Based on the measurement model in Figure 2, all indicators are analyses of research variables with a loading factor greater than 0.50; so that it is declared significant or meets the requirements of convergent validity as presented in Figure 2.

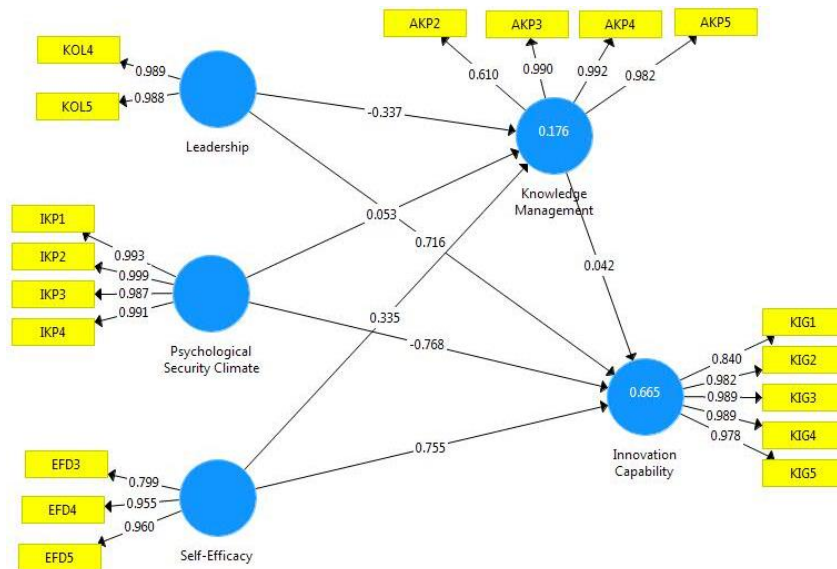


Figure 2. Convergent validity

3.2. Average variance extracted and latent correlation

Another method to assess discriminatory validity is to compare the value of the square root of the average variance extracted (AVE) of each construct with the correlation between constructs and other constructs in the model [14]. If the square root value of AVE for each construct is greater than the correlation value between constructs and other constructs in the model, then it is said to have a good discriminant validity value. The results of the AVE test can be seen in Table 1. Based on the AVE value in Table 1, all variables have a value > 0.50 so it can be said that each indicator that has been measured has been able to reflect their respective variables validly.

Table 1. Average variance extracted

Variables	AVE
Leadership	0.976
Psychological safety climate	0.985
Self-efficacy	0.825
Teacher innovation capability	0.916
Knowledge management	0.825

3.3. Cronbach’s alpha and composite reliability

The next examination of convergent validity is constructing reliability by looking at the output of composite reliability or Cronbach’s alpha as in Table 2. The criterion to be said to be reliable is the composite reliability or Cronbach’s alpha value of more than 0.70. Reliability tests were carried out to prove the accuracy, consistency, and accuracy of the instrument in measuring constructs. In PLS-SEM using the SmartPLS 3.0 program, to measure the reliability of a construct with reflexive indicators, it can be done in two ways, namely with Cronbach’s alpha and composite reliability [15]. The construct is declared reliable if the composite reliability and Cronbach alpha values are above 0.70, which can be seen in Table 2.

Table 2. Cronbach's alpha dan composite reliability

Variables	Cronbach's alpha	Composite reliability
Leadership	0.975	0.976
Psychological safety climate	0.995	0.995
Self-efficacy	0.898	0.933
Teacher innovation capability	0.976	0.982
Knowledge management	0.931	0.948

3.4. Evaluation of inner model and outer loading

The inner model is a test by evaluating latent constructs that have been hypothesized in the study. Bootstrapping is a statistical resampling procedure or technique. Resampling means that respondents are drawn randomly with replacement, from the original sample many times until observations are obtained as displayed in Figure 3.

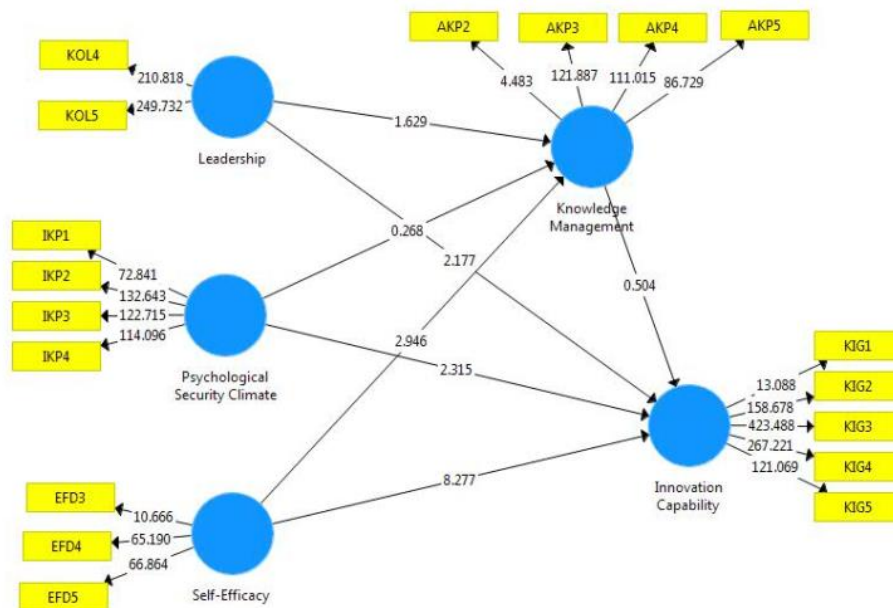


Figure 3. Inner model

Based on the results, it can also be seen that all paths have met the significant figures at 95% CI>(1.96). This is a requirement in the evaluation with a loading factor, which is carried out to assess the significance of the latent construct with its construct. Testing of the structural model is done by looking at the R-square value which is the goodness-fit test of the model. Changes in the value of R-square can be used to explain the effect of certain exogenous latent variables on endogenous latent variables whether they have a substantive effect. The R-square values of 0.75, 0.50, and 0.25 can be concluded that the model is strong, moderate, and weak. Furthermore, it is seen how much strength the dependent exogenous and endogenous variables are in this initial model by looking at the magnitude of the R-square value for each of the endogenous variables in Table 3.

Table 3 explains the contribution of the variables that affect the variables in the R-square table, the R-square value of the knowledge management variable is 0.176 or 17.6%, meaning that the leadership, psychological safety climate, self-efficacy variables contribute to the knowledge management variable by 16.6% and 62.4% is influenced by other factors outside this study [16]. The R-square value of the innovation capability variable is 0.665 or 66.5%, meaning that the leadership, psychological safety climate, self-efficacy, and knowledge management variables contribute to the innovation capability variable of 0.665 or 66.5% and 33.5% are influenced by other factors outside of this study.

Table 3. R-square

Dependent variables	R-square
Innovation capability	0.665
knowledge management	0.176

3.5. Evaluation of inner model and outer loading

This test is carried out using the bootstrapping method using smart PLS 3.0. Intervening variables are said to be able to mediate the effect of exogenous (independent) variables on endogenous (dependent) variables if the T-statistic value is greater than the T-table and the P-value is smaller than the significant level used (5%). The details are presented in Table 4.

Table 4. Hypothesis testing direct relationship

Variable	P-value	Sig.
Leadership → Knowledge management	0.000	Supported
Leadership → Innovation capability	0.001	Supported
Psychological security climate → Knowledge management	0.000	Supported
Psychological security climate → Innovation capability	0.002	Supported
Self-efficacy → Knowledge management	0.001	Supported
Self-efficacy → Innovation capability	0.000	Supported
Knowledge management → Innovation capability	0.001	Supported

3.6. Evaluation of inner model and outer loading

Based on the results of data analysis as shown in Table 4, the p-value of 0.000 is smaller than 0.050 so it can be concluded that leadership has a significant effect on knowledge management. An increase in the leadership variable will lead to a significant increase in the knowledge management variable, and a decrease in the leadership variable will encourage a significant decrease in the knowledge management variable. This is in line with the research states that leadership has a significant effect on knowledge management [17]. Managing knowledge as a resource becomes very important and critical. Innovation is highly dependent on the availability of knowledge. Therefore, the complexities created by the wealth of knowledge must be recognized and managed. Vocational education leadership applies planning, organizing, actuating, and controlling (POAC) education management in collaboration with stakeholders to achieve key performance indicators effectively and efficiently. This research contributes to improving the quality of curriculum, vocational teachers/lecturers, and graduates of vocational schools/polytechnics in the 21st century.

3.7. Relationship between leadership and innovation capability

Based on the results of data analysis, the p-value of 0.001 is smaller than 0.050 so it can be concluded that leadership has a significant effect on innovation capability. An increase in the leadership variable will lead to a significant increase in the innovation capability variable, and a decrease in the leadership variable will encourage a significant decrease in the innovation capability variable. This is in line with the research which states that leadership has a significant effect on innovation capability [18]. Previous researchers have proven the positive and significant influence of knowledge-oriented leadership on innovation capability [19]. More specifically, many researchers conclude that knowledge-oriented leadership has a positive and significant effect on innovation capability. Polytechnic-industry collaboration creates innovative works. This is because collaboration between polytechnics and industry is needed to produce various innovative products or works. The psychological climate of individual lecturers and vocational education students has a significant relationship with job satisfaction, work attitudes, psychological well-being, motivation, and performance in developing creativity, innovation, and adaptive development of 21st century science and technology [20].

3.8. Relationship between psychological security climate and knowledge management

Based on the results of data analysis, the p-value of 0.000 is smaller than 0.050 so it can be concluded that psychological security climate has a significant effect on knowledge management. An increase in the psychological security climate variable will lead to a significant increase in the knowledge management variable, and a decrease in the psychological security climate variable will encourage a significant decrease in the knowledge management climate variable. This is in line with the research which states that the psychological security climate has a significant effect on knowledge management [21]. The psychological climate of individual lecturers and vocational education students has a significant relationship with job satisfaction, work attitudes, psychological well-being, motivation, and performance in developing creativity, innovation, and adaptive development of 21st century science and technology.

3.9. Relationship between psychological security climate and innovation capability

Based on the results of data analysis, the p-value of 0.002 is smaller than 0.050 so it can be concluded that psychological security climate has a significant effect on innovation capability [22]. An increase in the psychological security climate variable will encourage a significant increase in the innovation capability variable, and a decrease in the psychological security climate variable will encourage a significant decrease in

the innovation capability variable. This is in line with the research which states that psychological security climate has a significant effect on innovation capability [23]. Individuals are more likely to feel that they are cared for and respected, and benefit from the exchange of personal experiences and skills that serve to increase organizational capacity [11]. This is useful for improving individual behavior to increase creativity and innovation capability.

3.10. Relationship between self-efficacy and knowledge management

Based on the results of data analysis, the p-value of 0.000 is smaller than 0.050 so it can be concluded that self-efficacy has a significant effect on knowledge management [24]. An increase in the k variable of self-efficacy will significantly increase the knowledge management variable, and a decrease in the self-efficacy variable will significantly reduce the knowledge management variable. This is in line with the research which states that self-efficacy has a significant effect on knowledge management [25]. From the theoretical framework, hypotheses can be developed that can be tested to determine whether the formulated theory is valid or not [26]. Then it can be measured by proper statistical analysis. Referring to previous theory and research, there is an influence between variables, including knowledge-oriented leadership, psychological security climate, knowledge management process which consists of knowledge acquisition variable, knowledge dissemination and application of knowledge, and endogenous variable of teacher innovation capability [27]. Human resources play an important role in education management as actors of continuous and sustainable improvement to develop knowledge through the three pillars of quality higher education [28].

3.11. Relationship between self-efficacy and innovation capability

Based on the results of data analysis, the p-value of 0.000 is smaller than 0.050 so it can be concluded that self-efficacy has a significant effect on innovation capability. An increase in the self-efficacy variable will encourage a significant increase in the innovation capability variable, and a decrease in the self-efficacy variable will encourage a significant decrease in the innovation capability variable. This is in line with the which states that self-efficacy has a significant effect on Innovation capability [29]. A teacher's belief in his abilities will be able to encourage him to find new ideas, besides that a teacher who has the drive and enthusiasm to work will make the teacher able to deal with all existing problems [30]. The thoughts that have been described provide an assumption that there is a positive relationship between self-efficacy and innovation capability.

3.12. Relationship between knowledge management and innovation capability

Based on the results of data analysis, the p-value of 0.001 is smaller than 0.050 so it can be concluded that knowledge management has a significant effect on innovation capability [31]. An increase in the knowledge management variable will encourage a significant increase in the innovation capability variable, and a decrease in the knowledge management variable will encourage a significant decrease in the innovation capability variable. This is in line with the research which states that knowledge management has a significant effect on innovation capability [32].

4. CONCLUSION

The results of this study found that leadership has a significant effect on knowledge management and innovation capability; psychological security climate has a significant effect on knowledge management and innovation capability; self-efficacy has a significant effect on knowledge management and innovation capability; knowledge management has a significant effect on innovation capability. Leadership has a significant effect on innovation capability through knowledge management mediation; psychological security climate has a significant effect on innovation capability through knowledge management mediation; self-efficacy has a significant effect on innovation capability through knowledge management mediation. The results of this study have implications for increasing the teachers' innovation, so schools need to improve the psychological security climate, leadership, and self-efficacy and implement knowledge management.

The limitation of the study is that the variables used are limited to independent variables (Knowledge-oriented leadership, psychological security climate, and self-efficacy), intervening/mediation variables (knowledge management processes and self-efficacy), and dependent variable (teacher innovation capability). This research is also limited in the education unit. Subsequent research should expand to other variables such as work environment, leader-member exchange, job satisfaction, and organizational citizenship behavior. Vocational high school management needs leadership by applying a management style of synergy, collaboration, communication, and innovation. The principle of synergy builds trust within the organization. Conditions of mutual trust must be built in vocational schools. This trust is important because it can change and create dynamics towards changes in the industrial revolution 4.0 and the 21st century.




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