



## MODELING AND OPTIMIZATION OF HUMAN RESOURCES (POP-SDM) IN IMPROVING TEACHER INNOVATIVENESS IN TASIKMALAYA REGENCY

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### Abstract

The purpose of this study was to test a model for increasing teacher innovation through strengthening the variables of work motivation, knowledge sharing, organizational culture, and creativity. The method used in this study was a mixed method with a POP-SDM approach. The sample in this study consisted of 163 teachers taken from 43 public elementary schools in Tasikmalaya Regency. The results of the study show that  $R^2 = 0.820$ , meaning that 82% of the exogenous variables jointly influence the endogenous variables. Teacher innovation ( $Q^2 = 0.508$ ). A  $Q^2$  value of 0.508 indicates that the model has strong predictive power for the teacher innovation variable. BIC (Bayesian Information Criterion) -115.125 is the lowest value in the initial model, thus the initial model chosen in this study is the best model.

**Keywords:** POP-SDM; Teacher Innovation; Work Motivation, Knowledge Sharing; Organizational Support; Creativity

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### INTRODUCTION

Hariyanti et al. (2024) examined teachers' innovative behavior through a systematic literature review of various studies conducted between 2019 and 2024. The results showed that teachers' innovativeness is influenced by internal factors such as self-efficacy, creativity, and goal orientation, as well as external factors such as organizational culture, principal support, and the intensity of knowledge sharing. This study confirms that innovation is not only formed naturally, but needs to be fostered through interactions between individual factors and the work environment. Therefore, creating a collaborative climate and innovative culture in schools is an important prerequisite for strengthening teacher innovation (Hariyanti & Izzati, 2024).

Febriyanti et al. (2025) researched strategies for increasing teacher innovation through strengthening learning organizations, creativity, self-efficacy, and job satisfaction. This quantitative study shows that teacher innovation can be significantly improved when teachers are in a work ecosystem that supports continuous learning and professional reflection. Creativity was found to be a mediating variable that bridges the influence of self-efficacy and learning organizations on innovation. These findings reinforce the view that the development of innovation cannot be separated from institutional support and the personal competence of teachers (Febriyanti et al., 2025).

Gresinta and Tukiran in 2024 researched teacher innovation in facing learning challenges in the digital age. This study identified that technology integration does not automatically increase teacher innovation in learning, but rather depends heavily on digital competency readiness, openness to change, and encouragement from the work environment. Teachers who have the ability to evaluate learning needs and dare to try new approaches are more likely to be innovative. This study shows that

innovation is the result of technological adaptation readiness combined with reflective and creative thinking in learning planning (Gresinta & Tukiran, 2024).

Adhinugraha et al. (2024) discussed the factors that influence teacher innovation through a literature review study. The results of the study showed that innovation is influenced by three main dimensions, namely individual characteristics (such as self-efficacy and achievement motivation), organizational support (facilities, rewards, and leadership), and professional development opportunities. This study highlights that the success of innovation at the teacher level cannot be separated from the active involvement of school organizations in creating a support system that allows teachers to innovate without bureaucratic obstacles. Thus, teacher innovation requires a strong structural foundation in addition to personal factors (Adhinugraha et al., 2024).

Suhendar et al. (2024) examined the influence of self-efficacy and visionary leadership of school principals on teacher innovation. Using a quantitative approach, the results showed that both variables had a significant positive influence on increasing innovation, with a combined contribution of 31%. This study underscores the importance of teachers' confidence in taking risks and trying new approaches, which is reinforced by the guidance and support of visionary principals. These results indicate that teacher innovation thrives in an environment that provides freedom, trust, and motivation to act creatively in teaching (Suhendar et al., 2022).

Based on previous research, the researcher conducted research on other factors, both internal and external, in increasing teacher innovation. The factors taken in this study were work motivation, knowledge sharing, organizational culture, and creativity. In testing this model, it is hoped that it will be proven and produce a model that is tested with the provisions and criteria in SEM-PLS statistics.

## METHOD

This study uses a mixed method approach, namely qualitative and quantitative research. In qualitative research, to explore the research variables in the field, interviews were conducted with informants, as shown in Table 1.

Table 1 Qualitative Research Informants

Informant Position	Number
Head of Elementary Education Division, Tasikmalaya Regency	1
Head of Elementary School Curriculum Division, Tasikmalaya Regency	1
School Supervisor	2
Elementary School Principals in Tasikmalaya Regency	10
Elementary School Teachers in Tasikmalaya Regency (Civil Servants)	26
Total	40

Qualitative research was conducted over a period of 9 months, starting from October 2023 to June 2024. The target population in this study was all civil servant teachers at public elementary

schools in Tasikmalaya Regency, spread across 39 subdistricts, totaling 4,023 teachers with civil servant status and teaching certificates, spread across 1,034 elementary schools. The sampling technique used was proportionate random sampling, which is a sampling method in research where the proportion of each subgroup in the population is represented equally in the sample. In this study, with a limited population of 274 teachers, the sample taken was 163 teachers from 49 public schools in Tasikmalaya Regency. The data analysis technique used SEM-PLS 3 to test which model was the best of the alternative models that could predict an increase in teacher innovation.

## RESULTS AND DISCUSSION

The model to be tested in this study can be seen in Figure 1, where there are three independent variables, one intervening variable, and one dependent variable.



Figure 1 Structural Model of Research Constellation

Figure 1 shows the structural model of the research constellation, where the work motivation variable (X1) has five indicators, namely 1) achievement actualization, 2) self-development, 3) rewards, 4) working conditions, and 5) interpersonal relationships. The knowledge sharing variable (X2) has five indicators, namely 1) utilizing organizational support, 2) acquiring knowledge, 3) transferring knowledge, 4) receiving knowledge, and 5) applying knowledge. The organizational culture variable (X3) has five indicators, namely 1) paying attention to teachers' professional goals, 2) appreciating teachers' creative work, 3) caring for teachers' welfare, 4) helping teachers in facing teaching difficulties, and 5) appreciating teachers' contributions in developing learning methods. The creativity variable has five indicators, namely 1) new ideas, 2) combining ideas into something new, 3) persistent idea development, 4) exploration of desires, and 5) risk-taking. The innovation variable has five indicators, namely 1) experimentation in learning, 2) collaboration with students and colleagues, 3) application of technology, 4) changes in learning methods, and 5) improvement in learning quality.

Next, an item analysis was conducted on the indicators, where the requirement was an outer loading value  $>0.7$  or  $>0.6$  in the model development study. (Ghozali, 2021; Hair et al., 2022; Suhayat et al., 2023).

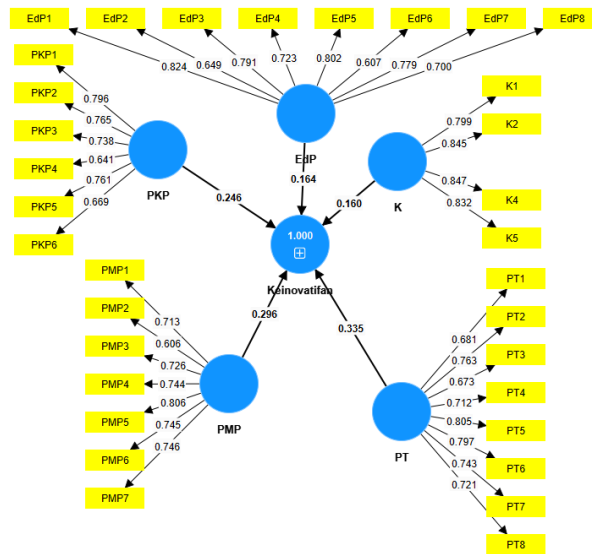


Figure 2 Results of the Outer Model Recalculation of Teacher Innovation Variables

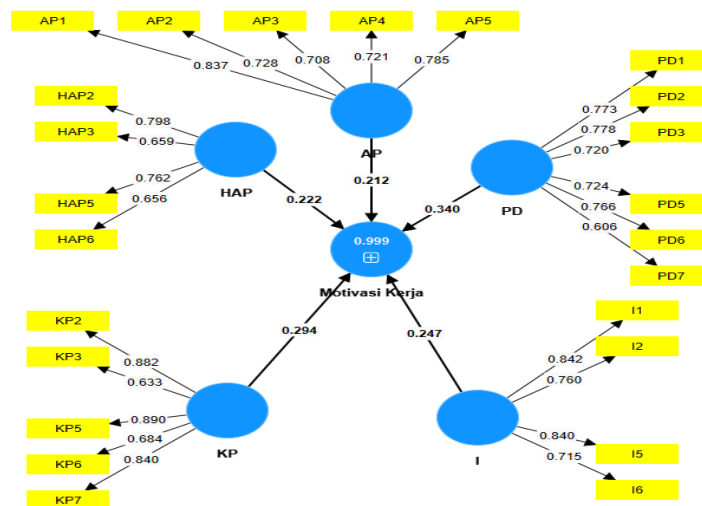


Figure 3 Results of Outer Model Recalculation of Work Motivation Variables

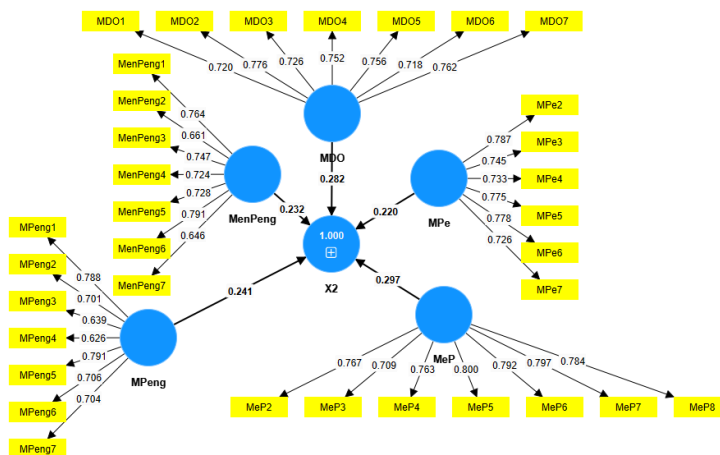


Figure 4 Results of Outer Model Recalculation of Knowledge Sharing Variables

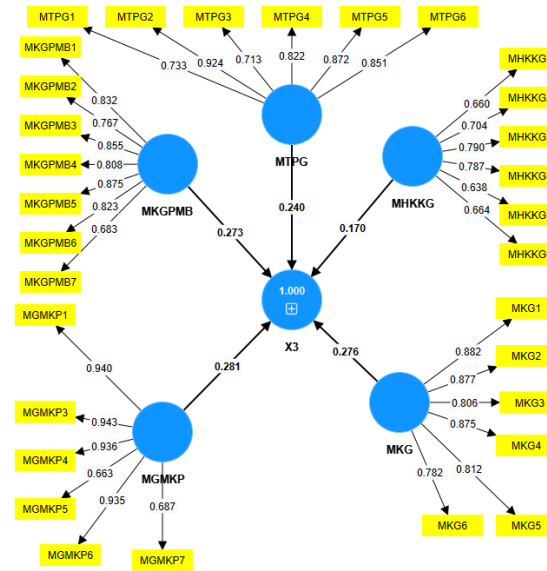


Figure 5 Results of Outer Model Recalculation of Organizational Support Variables

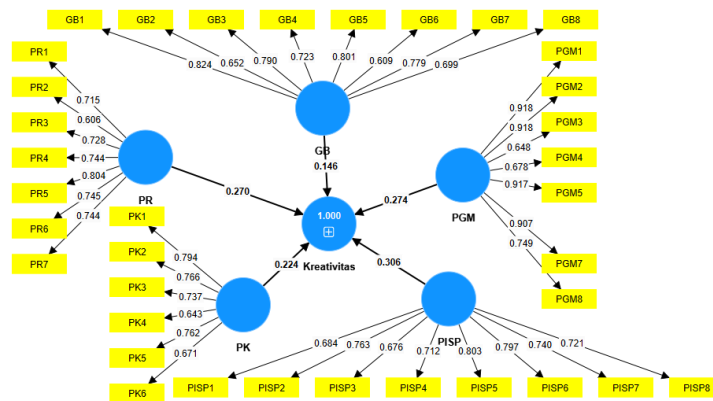


Figure 6 Results of Outer Model Recalculation of Creativity Variables

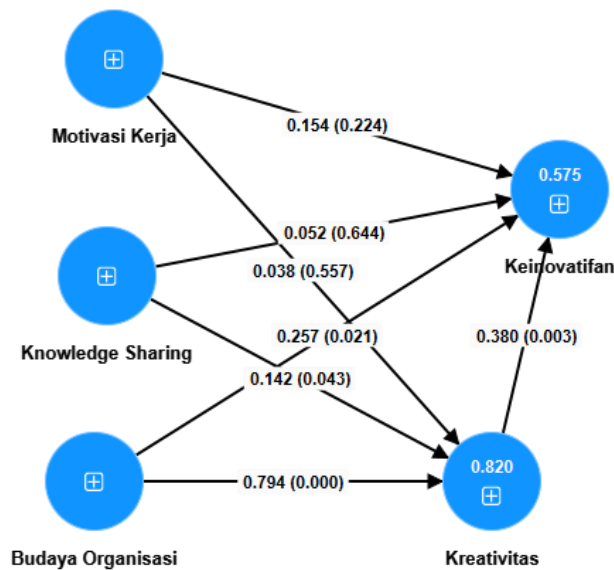


Figure 7 Results of the Structural Model Test of Teacher Innovation

Table 2 R Square and Adjusted R Square Values

Endogenous and Intervening Variables	R-square	R-square adjusted
Creativity	0.575	0.565
Teacher Innovation	0.820	0.816

In general, a higher  $R^2$  value indicates a better model, but the interpretation of this value also depends on the context and field of study.  $R^2 < 0.19$ : Very weak influence,  $0.19 \leq R^2 < 0.33$ : Weak influence,  $0.33 \leq R^2 < 0.67$ : Moderate influence, and  $R^2 \geq 0.67$ : Strong influence.

Table 3 Predictive Relevance Score ( $Q^2$ )

Endogenous and Intervening Variables	SSO	SSE	$Q^2 (=1-SSE/SSO)$
Creativity	815.000	522.558	0.359
Keinovatifan Guru	815.000	400.733	0.508

Teacher innovativeness ( $Q^2 = 0.508$ ). A  $Q^2$  value of 0.508 indicates that the model has strong predictive power for the teacher innovativeness variable. This means that approximately 50.8% of the variation in teacher innovativeness can be predicted by the model based on the comparison between SSO and SSE. A  $Q^2$  value above 0.35 indicates high predictive relevance, so the model is considered highly capable of explaining and predicting changes in the Creativity variable.

Teacher Innovation ( $Q^2 = 0.359$ ). A  $Q^2$  value of 0.359 indicates that the model has moderate predictive power for the Teacher Innovation variable. With a  $Q^2$  of 0.359, it means that approximately 35.9% of the variation in Teacher Innovation can be predicted by the model. This value falls into the moderate predictive relevance category, indicating that the model is adequate in explaining how changes in exogenous variables can affect Teacher Innovation.

Alternative Structural Model 1. Addition of a path from the Work Motivation variable to Knowledge Sharing

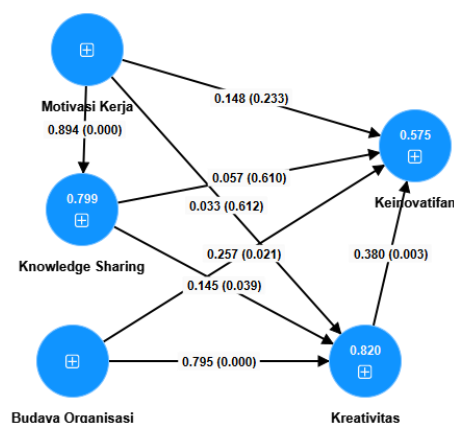


Figure 8 Alternative Structure Model 1

Alternative Structural Model 2. Addition of Work Motivation path to Organizational Support

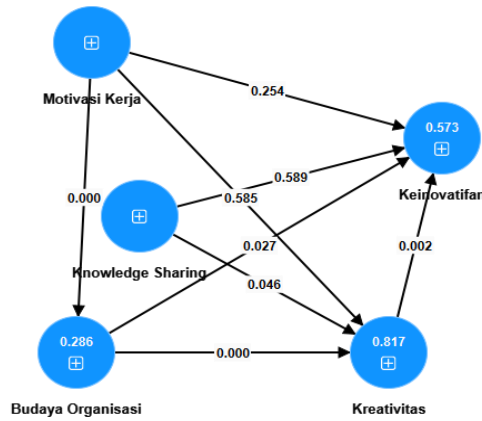


Figure 9 Alternative Structure Model 2

Alternative Structure Model 3. Addition of a path from the Knowledge Sharing variable to Organizational Support

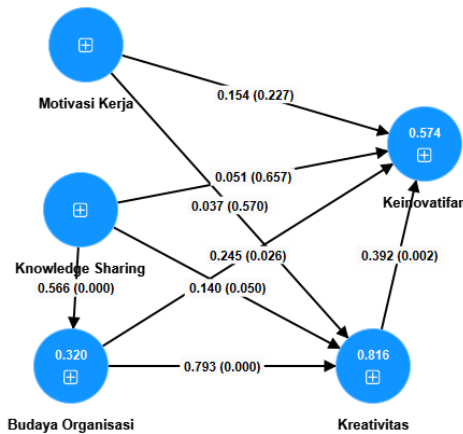


Figure 10 Alternative Structure Model 3

The following are the BIC (Bayesian Information Criterion) values of the 4 models of Teacher Innovation Structure using the PLS algorithm iteration in SmartPLS 3.

Table 4 BIC Values of the 4 Structural Models of Teacher Innovation

No.	Model	Kriteria Bayesian Information Criterion (BIC)
1	Initial Model	-115.125
2	Alternative 1	-115.037
3	Alternative 2	-114.366
4	Alternative 3	-114.662

From Table 4 above, the lowest BIC (Bayesian Information Criterion) value is in the initial model, thus the initial model selected in this study is the best model.

## CONCLUSION

Based on the results of the calculations using SEM PLS 3, which included assessments of both the outer model and the inner model as well as comparisons with several alternative structural models, it can be concluded that the initially proposed model is the most appropriate and reliable for predicting

teacher innovation. The analysis demonstrates that the relationships among work motivation, knowledge sharing, organizational culture, and creativity form a coherent and robust framework that effectively explains variations in teacher innovation. Each variable contributes meaningfully to the overall structure, indicating that the theoretical foundation of the model is strong and empirically supported.

Furthermore, the evaluation criteria such as validity, reliability, path coefficients, and goodness-of-fit indicators collectively confirm that the model fulfills the required standards for predictive relevance. The successful comparison with alternative models reinforces the conclusion that the original structural model provides the best explanatory power and alignment with empirical data. Therefore, it can be asserted that the variables analyzed in this study are well-suited for predicting teacher innovation and offer valuable insights for educational institutions aiming to enhance innovative practices among teachers. This model may serve as a foundation for future research and strategic interventions designed to strengthen teacher performance and creativity.

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