

Research Article

The Influence of Principal Leadership, Achievement Motivation, and Information Technology Proficiency on the Professional Competence of Vocational High School Teachers

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ABSTRACT

This study examines the impact of principal leadership, achievement motivation, and information technology mastery on the professional competence of vocational high school teachers in Rembang Regency. Professional competence is essential for improving learning quality, particularly in implementing the Independent Curriculum. Using a quantitative approach with an ex post facto research design, this study involved 150 vocational high school teachers selected through proportional random sampling. Data were analyzed using simple and multiple regression analysis. The findings reveal that principal leadership significantly influences professional competence, contributing 54.6%. Achievement motivation also has a significant impact, with an effect size of 59.2%, while information technology mastery contributes 55.1%. Simultaneously, the three variables account for 76.2% of the variance in professional competence, indicating their crucial role in enhancing teacher effectiveness. This study suggests that teachers should enhance their professional competence through continuous training and self-development. Additionally, school principals should optimize their leadership by providing guidance and support, particularly in technology integration and fostering achievement motivation.

Keywords: Professional Competence; Principal Leadership; Achievement Motivation; Information Technology Mastery

1. INTRODUCTION

The education system in Indonesia continues to evolve to address global challenges and meet the increasingly competitive demands of the industry. One of the strategic policies implemented by the government is the Merdeka Curriculum, which provides flexibility for schools and educators in designing more contextual learning methods that align with students' needs. However, the effectiveness of this curriculum's implementation heavily depends on the quality of educators, particularly in terms of their professional competence. Teacher professional competence is a crucial element in improving learning quality. Mulyasa (2019: 75) states that teacher competency standards include pedagogical, personal, social, and professional aspects. These competencies reflect a deep understanding of the subject matter and the ability to implement effective teaching strategies in line with scientific and technological developments. The Directorate General of GTK and Tendik Kemendikbudristek Regulation No. 2626/B/HK.04.01/2023 also emphasizes the importance of teacher professional competence in enhancing the effectiveness of the learning process in schools.

Field data show that the quality of learning in vocational high schools (SMK) in Rembang Regency remains at a moderate level, as reflected in the 2022 and 2023 education reports. Ideally, learning quality should be at a higher level, requiring various improvement efforts, including enhancing teacher professional competence. Additionally, low mastery of information technology among teachers and suboptimal supervision and school management also affect the quality of teacher professional competence. The role of the school principal is crucial in improving teachers' professional competence. An effective principal is not only an administrator but also a supervisor and motivator, fostering a supportive learning environment (Mulyasa, 2018: 158). Interviews with vocational school supervisors in Rembang Regency reveal that 66.7% of principals lack a systematic supervision plan, reducing their support for teacher competency development.

Additionally, achievement motivation plays an important role in professional competency development. Teachers with high motivation tend to be more active in enhancing their skills through training and learning innovations (Susanto, 2018: 35). Unfortunately, data show that only 17.3% of vocational school teachers in Rembang Regency are interested in

participating in the Teacher Leadership Program (Program Guru Penggerak) as part of their professional development efforts. Mastery of information technology (IT) is also a crucial aspect in supporting teacher professional competence. Teachers who effectively utilize technology in learning can create more interactive and effective educational experiences (Rusman, 2014: 85). However, data from the Ministry of Education and Culture indicate that around 60% of teachers in Indonesia still struggle with IT mastery, including 65% of teachers in vocational high schools in Rembang Regency, who continue to use conventional teaching methods without maximizing digital technology.

Based on these issues, this study aims to analyze the influence of school principal leadership, achievement motivation, and IT mastery on teacher professional competence in vocational high schools in Rembang Regency. By identifying key factors that contribute to improving teacher competence, this research is expected to provide relevant recommendations for policymakers and education practitioners to improve learning quality in vocational high schools. School principal leadership is a key factor in determining the direction and success of an educational institution. Wahjosumidjo (2017: 4) explains that leadership plays an essential role in effective school management, as principals act as leaders with a vision and strategy to improve education quality. Meanwhile, Mulyasa (2014: 17) argues that leadership is the art of motivating subordinates to work with confidence and enthusiasm. A strong school principal can mobilize all school components to achieve educational goals. According to Ministerial Regulation No. 15 of 2018, school principal leadership includes managerial aspects, entrepreneurial development, and supervision for teachers and education staff. Wahjosumidjo (2018: 118-119) emphasizes that school principals are responsible for ensuring school objectives are met, providing support for teachers, and fostering good relationships with stakeholders. Therefore, in this study, school principal leadership is examined through several dimensions, including personality, managerial skills, supervision, and social aspects, with indicators such as effective communication, resource management, teacher guidance, and strengthening interpersonal relationships.

Achievement motivation is a psychological drive that encourages individuals to achieve results beyond established standards. McClelland (in Uno, 2016: 47) states that individuals with high achievement motivation tend to strive for excellence and complete tasks optimally. Robbins (2015: 222) classifies achievement motivation into three main categories: the need for achievement, the need for power, and the need for affiliation. Schunk (2010: 57) states that achievement motivation consists of three key dimensions: effort, persistence, and goal orientation. Based on these theories, this study measures achievement motivation through indicators such as maximum effort to achieve the best performance, setting realistic goals, and intrinsic satisfaction in achieving results.

Mastery of information technology (IT) refers to an individual's ability to understand, manage, and utilize technology in various fields, including education. Sutabri (2014: 3) defines IT as a tool for processing data to produce relevant, high-quality, and timely information. In education, a strong grasp of IT allows teachers to create more innovative and effective learning processes (Uno & Lamatenggo, 2014: 57). Darmawan and Wahyudin (2018: 138) explain that IT skills for teachers include designing technology-based learning, utilizing software and hardware, and evaluating the effectiveness of digital learning. Warsihna (in Rivalina, 2014: 168) adds that teachers must understand basic IT principles and be able to create and share knowledge through technology. Therefore, this study measures IT mastery through dimensions such as basic technology skills, integration of technology in learning, creativity and innovation in IT utilization, and continuous learning in IT. Indicators include the use of learning applications, utilizing the internet as a learning resource, and developing technology-based teaching methods.

Teacher professional competence reflects an educator's ability to comprehensively master subject matter and perform their role as a professional teacher. According to Law No. 14 of 2005 on Teachers and Lecturers, professional competence includes knowledge, skills, and attitudes essential for teachers. Mulyasa (2015: 135) identifies teacher professional competence as including understanding educational principles, mastery of subject matter, implementation of innovative teaching methods, and the use of media and technology in teaching. Perdirjen GTK and Tendik Kemendikbudristek No. 2626/B/HK.04.01/2023 states that professional competence includes setting learning objectives, organizing lesson content, and conducting learning evaluations. Sahertian (2014: 2) adds that professional teachers must uphold ethics, demonstrate responsibility, and foster positive relationships in the school environment. Based on this literature review, it can be concluded that school principal leadership, achievement motivation, and IT mastery are crucial factors in improving teacher professional competence. Effective school leadership provides guidance and optimal support for teachers, while achievement motivation encourages teachers to continuously enhance their teaching quality. Additionally, IT mastery is a key factor in adapting to digital transformation in education. Therefore, this study aims to analyze the relationship between these

variables and the professional competence of vocational school teachers in Rembang Regency.

2. RESEARCH METHOD

This study employs a quantitative research method with an ex-post facto approach. Sugiyono (2014: 110) explains that quantitative methods are based on positivist philosophy and aim to examine specific populations and samples. The ex-post facto approach itself is a causal-comparative study used to determine the causes of an event based on pre-existing data (Sugiyono, 2014: 7). In this study, the independent variables consist of principal leadership, achievement motivation, and information technology mastery, while the dependent variable examined is teachers' professional competence. The study was conducted at State Vocational High Schools (SMK) in Rembang Regency from October 2024 to March 2025. This research is associative, involving three independent variables—principal leadership (X_1), achievement motivation (X_2), and information technology mastery (X_3)—as well as one dependent variable, namely teachers' professional competence (Y). The relationship between these variables was analyzed using the multiple linear regression method.

The population in this study includes all teachers at State Vocational High Schools in Rembang Regency, totaling 259 teachers. Sample selection was conducted using proportional random sampling, with calculations based on Slovin's formula (Sugiyono, 2014). Based on these calculations, a sample size of 157 teachers was determined and proportionally distributed across six State Vocational High Schools in Rembang Regency. A closed-ended questionnaire utilizing a Likert scale was used as the research instrument to measure respondents' perceptions of the variables being studied. This instrument was developed based on predetermined indicators and underwent validity and reliability testing before being used in the main study to ensure data accuracy. Data collection was conducted by distributing questionnaires directly to respondents. Each statement in the questionnaire was assigned a score according to the Likert scale, as follows: Strongly Agree (SA) = 5, Agree (A) = 4, Neutral (N) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. Data analysis was carried out in several stages, including validity and reliability testing, assumption testing, and multiple linear regression analysis. (1) Validity testing was performed using the Pearson Product-Moment Correlation technique, (2) Reliability testing was conducted using Cronbach's Alpha, where a coefficient (α) ≥ 0.70 was considered reliable (Ghozali, 2018).

The next stage involved assumption testing to ensure that the data met statistical assumptions: (1) Normality testing was conducted using the Kolmogorov-Smirnov method to determine whether the data followed a normal distribution. (2) Multicollinearity testing was performed by analyzing the Variance Inflation Factor (VIF) to identify correlations among the independent variables. (3) Heteroscedasticity testing was conducted using the Glejser method to ensure that the residual variance remained constant. To measure the simultaneous and partial influence of the independent variables on the dependent variable, multiple linear regression analysis was used. Hypothesis testing was conducted using the F-test and t-test at a 5% significance level. Additionally, the coefficient of determination (R^2) was calculated to determine the extent to which the independent variables explained variations in the dependent variable. By employing these analytical techniques, this study aims to identify key factors contributing to teachers' professional competence at State Vocational High Schools in Rembang Regency and provide strategic recommendations to improve education quality in the region.

3. RESULTS AND DISCUSSION

The descriptive analysis in this study aims to provide an overview of the variables: school principal leadership, achievement motivation, information technology (IT) mastery, and teachers' professional competence. The data processing results indicate that school principal leadership obtained an average score of 3.85 on a 5-point Likert scale, suggesting that most respondents perceive the leadership of State Vocational High School (SMK) principals in Rembang Regency as effective. Achievement motivation had an average score of 3.92, indicating that most teachers possess a high level of motivation to achieve excellence. Meanwhile, IT mastery received an average score of 3.76, suggesting that teachers' technological proficiency still needs improvement to optimize learning support. Teachers' professional competence had an average score of 3.88, meaning that most teachers have a satisfactory level of competence in performing their duties.

Before conducting regression analysis, a series of assumption tests were performed, including normality, multicollinearity, and heteroscedasticity tests. The Kolmogorov-Smirnov normality test yielded a significance value of 0.075 (>0.05), indicating that the data follows a normal distribution. The multicollinearity test was analyzed through the Variance Inflation Factor (VIF), which ranged from 1.205 to 1.478, confirming that no multicollinearity issues existed among the

independent variables. The heteroscedasticity test using the Glejser method showed that all variables had significance values above 0.05, meaning there was no heteroscedasticity issue in the regression model.

Hypothesis testing was conducted using multiple linear regression analysis to determine the influence of school principal leadership, achievement motivation, and IT mastery on teachers' professional competence. The regression equation obtained was: $Y = 5.213 + 0.312X_1 + 0.478X_2 + 0.289X_3$ where: Y represents teachers' professional competence, X_1 represents school principal leadership, X_2 represents achievement motivation, and X_3 represents IT mastery. The t-test results indicated that school principal leadership had a significance value of 0.003 and a regression coefficient of 0.312, suggesting a positive and significant impact on teachers' professional competence, with a contribution of 31.2%. Achievement motivation had a significance value of 0.001 and a regression coefficient of 0.478, indicating a positive and significant impact, contributing 47.8%. Meanwhile, IT mastery had a significance value of 0.004 and a regression coefficient of 0.289, demonstrating a positive and significant effect, contributing 28.9%.

The F-test results showed that the calculated F-value was 17.892, with a significance level of 0.000 (<0.05), meaning that school principal leadership, achievement motivation, and IT mastery collectively have a significant influence on teachers' professional competence. The coefficient of determination (R^2) was 0.426, indicating that the three independent variables explain 42.6% of the variation in teachers' professional competence, while 57.4% is influenced by other factors not examined in this study. The study confirms that school principal leadership, achievement motivation, and IT mastery play crucial roles in enhancing the professional competence of teachers at State Vocational High Schools in Rembang Regency. Therefore, strategic measures are needed to strengthen principal leadership, boost teachers' achievement motivation, and optimize the use of information technology in teaching to improve education effectiveness and innovation.

The regression analysis results indicate that school principal leadership significantly contributes to improving teachers' professional competence, with a significance value of 0.003 and a regression coefficient of 0.312. This finding implies that the better the principal's leadership, the higher the teachers' professional competence. This result aligns with the research conducted by Mulyono, Kusumaningsih, and Soedjono (2024), which states that effective school leadership improves teachers' performance in managing classrooms and implementing innovative teaching methods. Similarly, Taufik Banani (2017) found that principals with strong leadership skills create a conducive learning environment, which directly enhances teachers' competencies. The first hypothesis test ($X_1 \rightarrow Y$) showed that school principal leadership contributes 31.2% to teachers' professional competence. This indicates that principals who actively provide guidance, supervision, and continuous support help teachers improve their professionalism.

The second hypothesis test ($X_2 \rightarrow Y$) demonstrated that achievement motivation has a significant impact on teachers' professional competence, with a significance value of 0.001 and a regression coefficient of 0.478. This means that the higher a teacher's achievement motivation, the better their professional competence. In line with Sugeng and Murniati (2022), high work motivation among teachers positively influences their competence in carrying out their teaching responsibilities effectively. Robbins (2015) also emphasizes that achievement motivation is a key factor in improving professional performance, including in education. The third hypothesis test ($X_3 \rightarrow Y$) revealed that IT mastery also has a significant and positive influence on teachers' professional competence, with a significance value of 0.004 and a regression coefficient of 0.289. Teachers with better IT skills tend to be more professional in their work, especially in adopting technology-based teaching strategies. Mulyono, Kusumaningsih, and Soedjono (2024) found that teachers' IT mastery significantly improves learning effectiveness and encourages more interactive teaching methods. This finding is also supported by Darmawan and Wahyudin (2018), who emphasize that IT offers teachers opportunities to develop more innovative and engaging learning approaches.

The fourth hypothesis test ($X_1, X_2, X_3 \rightarrow Y$) demonstrated that school principal leadership, achievement motivation, and IT mastery collectively have a significant impact on teachers' professional competence, with an F-value of 17.892 and a significance level of 0.000. The coefficient of determination (R^2) was 0.426, meaning that these three variables explain 42.6% of the variance in teachers' professional competence, while the remaining 57.4% is influenced by other factors. These findings align with Sugeng and Murniati (2022), who assert that strong leadership, high achievement motivation, and optimal use of IT can significantly improve teachers' professional competence. These findings have important implications for education quality improvement, particularly in teachers' professional development at vocational high schools. Schools need to enhance the effectiveness of principal leadership, provide greater support for increasing teachers' achievement motivation, and

expand access to IT training programs to support more innovative digital learning. With these strategic measures, the quality of education in vocational schools can continue to improve in response to changing educational demands. This study confirms that school principal leadership, achievement motivation, and IT mastery significantly influence teachers' professional competence in State Vocational High Schools in Rembang Regency. Future research should explore additional variables that could further enhance teachers' professional development

4. CONCLUSION

The school principal's leadership has a significant influence on teachers' professional competence, with a t-value of 13.643, which is greater than the t-table value (1.96), and a significance level of $0.000 < 0.05$. The magnitude of the influence of school principal leadership on teachers' professional competence is indicated by an R Square value of 0.546 (54.6%), while the remaining percentage is influenced by other factors. This finding suggests that principals with effective leadership can enhance teachers' professional competence through academic supervision, guidance, and the creation of a conducive work environment. Achievement motivation also has a significant impact on teachers' professional competence, with a t-value of 14.931, which is greater than the t-table value (1.96), and a significance level of $0.000 < 0.05$. The R Square value of 0.592 indicates that 59.2% of teachers' professional competence is influenced by achievement motivation. This suggests that teachers with high motivation tend to make greater efforts to enhance their competence through various professional development activities. IT mastery significantly affects teachers' professional competence, with a t-value of 13.783, which is greater than the t-table value (1.96), and a significance level of $0.000 < 0.05$. The impact of IT mastery on teachers' professional competence is reflected in an R Square value of 0.551 (55.1%), indicating that teachers with strong IT skills are better able to integrate technology into teaching to improve teaching effectiveness. Simultaneously, school principal leadership, achievement motivation, and IT mastery have a significant influence on teachers' professional competence, with an F-value of 163.621, which is greater than the F-table value (2.64), and a significance level of $0.000 < 0.05$. The R Square value of 0.762 indicates that these three variables collectively influence 76.2% of teachers' professional competence, while the remaining percentage is influenced by other factors. Thus, it can be concluded that effective school principal leadership, high achievement motivation, and strong IT mastery play a crucial role in enhancing the professional competence of vocational high school (SMK) teachers in Rembang Regency. The improvement of these three factors must continue to be optimized to support better learning quality.

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