



The Relationship Between Human Resource Management, Technology Adaptation, and Principal Leadership on Teacher Productivity

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ABSTRACT

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Human Resource Management, Technology, Leadership, Teacher Productivity

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This study examines the relationship between human resource management, technology adaptation, and principal leadership in influencing teacher productivity. Recognizing that teachers are central to effective educational implementation, the study explores how institutional HR practices, responsiveness to technological change, and school leadership contribute to enhancing teacher performance. A quantitative correlational approach was applied to test the hypothesis that all three variables positively affect teacher productivity. The findings reveal that the simultaneous F-test result ($F = 54.845$) exceeds the critical value (2.48) with a significance level of 0.000, indicating a statistically significant influence. Partial T-test results further confirm that each independent variable has a positive effect. The coefficient of determination ($R^2 = 0.674$) shows that 67.4% of teacher productivity is explained by the three variables. This study contributes to the development of strategic management practices in education by providing empirical evidence of key factors that enhance teacher productivity. However, the study is limited by its focus on internal school factors, excluding external elements such as policy, community involvement, or student characteristics.

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INTRODUCTION

Teacher productivity is an important element in determining the success of the learning process and the achievement of educational goals. However, in various elementary and secondary education units, there is still a gap between the demands of teacher professionalism and the reality of performance achieved in the field. Teachers are expected to be able to carry out their functions productively, namely, managing learning innovatively, effectively, and according to the needs of students (Clarence et al., 2021; Pettersson, 2021; Ramírez-Montoya et al., 2021). However, several studies have stated that many teachers still face obstacles in increasing their productivity, especially due to weak human resource management, low adaptation to technology, and the principal's leadership style that does not support teacher professional

development (Even & BenDavid-Hadar, 2021; Ignatescu et al., 2021; Hoven et al., 2021).

In various educational units, especially at the secondary school level, low teacher productivity is still found, reflected in the less-than-optimal implementation of learning, minimal innovation in technology-based teaching media, and weak teacher involvement in ongoing professional development programs (Bellibaş et al., 2021; Ingsih et al., 2021). On the other hand, the leadership style of the principal, which tends to be authoritarian or passive, is a factor that inhibits teacher collaboration and work motivation (Shava & Heystek, 2021). This phenomenon indicates that, despite various government policies supporting educational transformation, their implementation at the school level has not been fully effective, particularly in establishing a work ecosystem that fosters sustainable teacher productivity.

Theoretically, good human resource management should be able to provide systemic support for teachers through continuous planning, organizing, directing, and evaluation. Hanna et al. (2021), Ağalday & Dağlı (2021) say that technological adaptation is a primary need in the digital era, where teachers are required to be able to utilize digital devices and applications to support the learning process. In addition, Baglama et al. (2022), Zhou et al. (2022), & Tanzeh et al. (2021) agree and say that human resource management in several schools is still administrative and has not yet led to the strategic development of individual potential. However, in reality, not all teachers receive sufficient training or support to carry out digital transformation in learning. Principals as educational leaders also have a strategic role in creating a productive work climate, but many schools have not maximized this leadership potential optimally.

Previous studies have highlighted many single factors that influence teacher productivity, but are still limited in examining the relationship between three important elements in an integrated manner: human resource management, technology adaptation, and principal leadership. These three variables have a mutually influencing relationship and can create positive synergy if managed simultaneously. In this context, quantitative research is needed that is able to empirically test the extent to which these three factors contribute to increasing teacher productivity in the context of formal educational institutions.

Therefore, this study focuses on investigating the relationship between human resource management sources, technology adaptation, and principal leadership on teacher productivity. This research is important because until now, there has not been much research that simultaneously examines the relationship between these three variables in a complete conceptual framework, especially in the context of secondary schools in Indonesia. The originality of this study lies in

the integrative approach used to see the extent to which effective human resource management, teacher readiness in adapting learning technology, and principal leadership style can collectively influence teacher productivity. Amidst the flow of digital transformation and the increasing demands for educational performance, this research is expected to provide theoretical and practical contributions to the development of educational policies and school management strategies in improving the quality of teaching staff sustainably.

RESEARCH METHOD

This study employed a quantitative correlational research approach. Quantitative research involves the systematic empirical investigation of observable phenomena through statistical, mathematical, or computational techniques (Tan et al., 2021). Specifically, the correlational method was used to determine the extent and nature of the relationship between the independent variables Human Resource Management (X_1), Technology Adaptation (X_2), and Principal Leadership (X_3)—and the dependent variable, Teacher Productivity (Y).

In this study, the variables used consist of independent variables (X) and dependent variables (Y). Independent variables (X) cover three main aspects, namely Human Resource Management (X_1), Technology Adaptation (X_2), and Principal Leadership (X_3). These three variables were chosen because they are believed to have a significant role in influencing the dependent variable, namely Teacher Productivity (Y). Teacher Productivity is considered an outcome influenced by the quality of human resource management, the ability to adapt to technology in learning and management, and the effectiveness of principal leadership in creating a supportive work environment. Each variable in this study is measured using indicators that have been systematically arranged in the instrument blueprint, thus allowing for structured and accurate data collection to support the correlational analysis carried out.

This study involved all 86 teachers as the population, where each individual had certain characteristics and qualities according to the research objectives that had been set. For sampling, the researcher used a simple random sampling technique, which is a method that provides an equal opportunity for each member of the population to be selected as a sample. This technique was chosen so that the research results can represent the population fairly and objectively. In its implementation, the entire population consisting of 86 teachers was used as a research sample, so that the data obtained was considered capable of describing the conditions as a whole and supporting the validity of the findings produced.

This study used a data collection instrument in the form of a questionnaire. A questionnaire is a number of written statements that function to gather

information from respondents related to what is known by the respondents know (Rahtikawatie et al., 2021). The researcher used a closed questionnaire, where the statements and answers had been prepared by the researcher, so that the respondents answered the questionnaire that had been prepared by the researcher. The questionnaire used in this study was related to the research variables, namely human resource management, technology adaptation, principal leadership, and teacher productivity.

In compiling the questionnaire, there are two types of statements, namely Vavorable and Uvavorable. Vavorable contains statements that support positive variables, while Unfavorable contains statements that are contrary to the variable (Paramita, 2021). From the questionnaire presented, the researcher determined that be measured using a scale model. *Liked*. On a scale *Liked* has a gradation of answers ranging from very positive answers to very negative answers. The following table contains related answers to the questionnaire along with the score for each answer.

Table 1. Questionnaire Answer Scores (Likert Scale)

No	Answer	Score (Vavorable)	Score (Unfavorable)
1	Strongly Agree (SS)	5	1
2	Agree (S)	4	2
3	Neutral (N)	3	3
4	Disagree (TS)	2	4
5	Strongly Disagree (STS)	1	5

Then, the grid or indicators in compiling the research instrument are explained in the following Table 2.

Table 2. Instrument Compilation Indicators

Variables	Indicator
Human Resource Management	Planning
	Organizing
	direction
	Supervision
	evaluation
Technology Adaptation	Adjust yourself
	Application Usage
	Solving Problems
	effective and efficient
Principal Leadership	Giving Influence
	Directing and Guiding
	Achieving goals
	Moral Development Support
Teacher Productivity	Teacher's duties and functions
	Effective, innovative, and creative learning quality
	Learning outcomes

Primary data is collected directly from respondents. The technique used by researchers is a questionnaire. A questionnaire is a collection of written questions or statements submitted to respondents to obtain information from what respondents know about the researcher's research. The questionnaire used by researchers is closed, where statements and answers have been prepared by the researcher, and the respondents answer according to the statements and answers prepared by the researcher. Secondary data is obtained by researchers by collecting written sources or previous research. These sources are such as books, journals, and articles related to this research.

In this study, data analysis was carried out through several stages using statistical software, namely SPSS. The main purpose of this analysis is to test the feasibility and consistency of the research instrument used to measure each variable. The first stage carried out is the validity test, which aims to test whether each statement item in the questionnaire is suitable for use in research. An item is said to be valid if the r count value $\geq r$ table ($\text{count} > R_{table}$) or the significance value < 0.05 . In this testing process, the researcher sets a probability value of 0.05 and calculates the degrees of freedom (df) with the formula $df = N - 2$, where N is the number of samples. All data is calculated using SPSS and further managed with Excel to ensure the accuracy of the results.

Furthermore, the researcher conducted a reliability test to assess the extent to which the research instrument can provide consistent results when used in various situations. This reliability test is very important in ensuring that the data collected truly reflects the actual conditions without being influenced by instrument instability. In this process, the researcher also used the SPSS application to calculate the Cronbach's Alpha value and utilized Excel in data management. If the Cronbach's Alpha value is > 0.6 , then the instrument is considered reliable or consistent. Conversely, if the value is < 0.6 , then the instrument is declared unreliable and needs to be reviewed. Overall, these two stages of testing validity and reliability are the main foundations in ensuring that the research instruments used are truly valid and reliable. This process is very important to ensure the integrity of the data obtained, especially in quantitative studies that rely heavily on numbers and relationships between variables. By using SPSS as the main analysis tool, researchers are able to carry out calculations systematically and objectively, and obtain accurate and accountable results. This stage is also the basis for continuing to the regression analysis and hypothesis testing stages to prove the relationship between previously determined variables.

Hypothesis testing is conducted to find out and prove the statements submitted by researchers related to the variables being tested. In conducting hypothesis testing, researchers use multiple linear regression analysis to determine the effect of two or more independent variables on the dependent

variable. Hypothesis testing is conducted through statistical application software, namely SPSS. In decision making, researchers conduct analysis through the results of the Determination Coefficient Test, F Test (simultaneous test), and T Test (Partial test). The hypothesis in this study is as follows.

H₁: There is a positive influence of good Human Resource Management on Teacher Productivity

H₂: There is a positive influence of effective technology adaptation on teacher productivity

H₃: There is a positive influence of the Principal's Leadership on Teacher Productivity

H₄: Human Resource Management, Technology Adaptation, and Principal Leadership are interrelated and influence Teacher Productivity

RESULT AND DISCUSSION

Result

Characteristics and Number of Respondents

In this section, the researcher tries to explain the findings related to the data obtained regarding the number and characteristics of the respondents. The researcher distributed the questionnaire through *Google Forms*. From the results of the questionnaire distribution through *g-form* the researcher obtained 86 respondents. Where the respondent targeted by the researcher was a teacher.

In the distribution of the questionnaire, the researcher provided criteria that include Gender, Educational Background, and length of service as a teacher. The data from the respondents is explained as follows.

Table 3. Number of Respondents

Type Sex	Amount Respondent	Presentation (%)
Man	12	14%
Woman	74	86%
Total	86	100%

From the table three above regarding the gender of the respondents, it is known that there are 12 male respondents and 74 female respondents. In this case, the data obtained from the respondents is dominated by women.

Table 4. Educational Background

Background Education	Amount Respondent	Presentation (%)
S1/D4	82	95%
S2	1	1%
SMA/SMK/MA/ Equivalent	3	3%
Total	86	100%

Table 4 above shows the educational background of respondents who are willing to fill out the questionnaire that has been distributed by the researcher. From the table, it is known that teachers as respondents in this study with an educational background of SMA/SMK/MA/equivalent amounted to three respondents, from S1 or D4 amounted to 82 respondents, and S2 amounted to one respondent. This means that respondents in this study are dominated by teachers with an educational background of S1 or D4.

Table 5. Age Range

Age Range	Amount Respondent	Presentation (%)
< 20 Years	2	2%
21 - 30 Years	80	93%
31 - 40 Years	3	3%
41 - 50 Years	1	1%
Total	86	100%

In Table five related to, the age range of respondents obtained by researchers. It can be seen that respondents with an age range under 20 years old numbered two respondents, aged 21 to 30 years old numbered 80 respondents. Then, ages 31 to 40 years old numbered three respondents, and ages 41 to 50 years old numbered one respondent.

Table 6. Working Time as a Teacher

Working Time As a Teacher	Amount Respondent	Presentation (%)
< 5 Years	76	88%
> 20 Years	2	2%
10 - 20 Years	3	3%
5 - 10 Years	5	6%
Total	86	100%

Table 6 explains the length of service as a teacher for respondents obtained by the researcher. The table above shows that respondents with a length of service as a teacher of less than five years amounted to 76 respondents, and more than 20 years amounted to 2 respondents. Then, the length of service in the range of five to 10 years there were five respondents, and 10 to 20 years was represented by three respondents. In this case, respondents who were willing to fill out the questionnaire were dominated by teachers whose length of service was still under five years.

Validity Test

Validity testing in this study was conducted to assess the feasibility and appropriateness of each item or statement related to the variables being

measured. The researcher utilized the SPSS application to perform the validity analysis. The process began with the calculation of degrees of freedom (df) using the formula $df = N - 2$, where N represents the number of respondents. With a sample size of 86 teachers, the resulting df was 84. Based on this value, the corresponding r-table value at a significance level of 0.05 was determined to be 0.212. A statement item is considered valid if the r-count (rcount) obtained from SPSS output is equal to or greater than the r-table value ($r \geq 0.212$). Items that meet this criterion are deemed appropriate for inclusion in further analysis, as they demonstrate a significant correlation with the total score of their respective variable. The results of the tests carried out by researchers using SPSS are as follows.

Table 7. Validity Test Results

Variables	Item	<i>R_{count}</i>	<i>R_{table}</i>	Information
Management Resource Human (X1)	X1.1	0.456**	0.212	Valid
	X1.2	0.437**	0.212	Valid
	X1.3	0.397**	0.212	Valid
	X1.4	0.474**	0.212	Valid
	X1.5	0.312**	0.212	Valid
	X1.6	0.508**	0.212	Valid
	X1.7	0.382**	0.212	Valid
	X1.8	0.321**	0.212	Valid
	X1.9	0.277**	0.212	Valid
	X1.10	0.746**	0.212	Valid
	X1.11	0.690**	0.212	Valid
	X1.12	0.773**	0.212	Valid
	X1.13	0.664**	0.212	Valid
	X1.14	0.777**	0.212	Valid
	X1.15	0.809**	0.212	Valid
	X1.16	0.693**	0.212	Valid
	X1.17	0.762**	0.212	Valid
	X1.18	0.704**	0.212	Valid
Adaptation Technology (x2)	X2.1	0.364**	0.212	Valid
	X2.2	0.419**	0.212	Valid
	X2.3	0.284**	0.212	Valid
	X2.4	0.1900	0.212	Invalid
	X2.5	0.414**	0.212	Valid
	X2.6	0.393**	0.212	Valid
	X2.7	0.461**	0.212	Valid
	X2.8	0.415**	0.212	Valid
	X2.9	0.776**	0.212	Valid
	X2.10	0.744**	0.212	Valid
	X2.11	0.706**	0.212	Valid
	X2.12	0.674**	0.212	Valid

Leadership Principal (x3)	X2.13	0.793**	0.212	Valid
	X2.14	0.613**	0.212	Valid
	X2.15	0.728**	0.212	Valid
	X2.16	0.618**	0.212	Valid
	X3.1	0.305**	0.212	Valid
	X3.2	0.503**	0.212	Valid
	X3.3	0.593**	0.212	Valid
	X3.4	0.481**	0.212	Valid
	X3.5	0.411**	0.212	Valid
	X3.6	0.507**	0.212	Valid
	X3.7	0.566**	0.212	Valid
	X3.8	0.499**	0.212	Valid
	X3.9	0.643**	0.212	Valid
	X3.10	0.800**	0.212	Valid
	X3.11	0.846**	0.212	Valid
	X3.12	0.861**	0.212	Valid
	X3.13	0.862**	0.212	Valid
	X3.14	0.826**	0.212	Valid
Teacher Productivity (Y)	X3.15	0.867**	0.212	Valid
	X3.16	0.857**	0.212	Valid
	Y1	0.216*	0.212	Valid
	Y2	0.441**	0.212	Valid
	Y3	0.286**	0.212	Valid
	Y4	0.380**	0.212	Valid
	Y5	0.220*	0.212	Valid
	Y6	0.399**	0.212	Valid
	Y7	0.455**	0.212	Valid
	Y8	0.413**	0.212	Valid
	Y9	0.298**	0.212	Valid
	Y10	0.746**	0.212	Valid
	Y11	0.750**	0.212	Valid
	Y12	0.797**	0.212	Valid
	Y13	0.773**	0.212	Valid
	Y14	0.806**	0.212	Valid
	Y15	0.843**	0.212	Valid
	Y16	0.861**	0.212	Valid
	Y17	0.847**	0.212	Valid
	Y18	0.799**	0.212	Valid

Based on table seven above, it can be seen and known that of all the statement items for each variable, there is only one item in variable X2 which is invalid due to the results $r_{\text{count}} < r_{\text{table}}$. Therefore, from all statement items, one item was removed so that it could be distributed to be used as a tool or instrument for data collection in this study.

Reliability Test

The reliability test aims to see the stability and consistency of respondents' answers to the research variables, so that the questionnaire used in this study can be said to be reliable or not. The research questionnaire can be said to be a variable if the Cronbach's Alpha value in the test results is greater than 0.6. The results of the reliability test obtained through the test in SPSS are as follows.

Table 8. Reliability Test Results

Variables	Cronbach's Alpha	Value Range Coefficient Reliability	Information
Human Resource Management (X1)	,886	0,60	Reliable
Technology Adaptation (X2)	,850	0,60	Reliable
Leadership Principal (X3)	,917	0,60	Reliable
Teacher Productivity (Y)	,901	0,60	Reliable

Based on the Table 8, it can be seen that the results of the values of Cronbach's *Alpha* on each variable show varying results. From these results, the value of Cronbach's *Alpha* for each variable is greater than 0.60, so it can be said that the instrument prepared by the researcher based on the research variables can be said to be reliable or trustworthy.

Hypothesis Testing

From the data obtained by researchers through the distribution of questionnaires obtained from respondents, the data were processed and tested using SPSS software version 21. Researchers conducted linear regression tests on the data. The goal is to find the relationship between variable X and variable Y. The results of the tests carried out by the researcher are as follows.

Table 9. Coefficient of Determination

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.821 ^a	.674	.662	5.782

A. Predictors: (Constant), Principal Leadership, Technology Adaptation, Human Resource Management

From Table 9 above, the values show *R-squared*. Where is the value *R-Square* shows how much influence the X or Independent variable has on the Y or

dependent variable. It is known from the table that the value of 0.674. It can be interpreted that Human Resource Management, Technology Adaptation, and Principal Leadership have an influence on the level of teacher productivity by 67.4% when viewed from the test results in the table above. Meanwhile, if the three variables tested by the researcher have an influence of 67.4% on the level of teacher productivity, then the other 32.6% can be influenced by other factors outside the variables that have been tested by the researcher.

Table 10. F Test Results (Simultaneous Test)

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	5659.112	3	1886.371	56.424	.000b
Residual	2741.446	82	33.432		
Total	8400.558	85			

a. Dependent Variable: Teacher Productivity
b. Predictors: (Constant), Principal Leadership, Technology Adaptation, Human Resource Management

Table 10 shows the significance value of the influence of variable X (HR, Technology Adaptation, and Principal Leadership) on variable Y (teacher productivity). The value can be seen from the table in the table *sig.* and *f*. It can be seen from the table that the value f_{count} of 56,424 with a significance value of 0.000. while the significance value *F-table* with a probability of 0.05 is 2.72.

The value *table* is obtained by finding two values of degrees of freedom, namely *df1* (counter) and *df2* (denominator). To determine it through a formula, $df1 = k - 1$, $df2 = n - k$. *k* is the number of variables in the study, namely four, and *n* is the number of samples in the study, namely 86. So, $df1 = 4 - 1 = 3$, and $df2 = 86 - 4 = 82$. With a probability of 0.05, the value can be obtained *table* is 2.72. Therefore, it means the value $f_{\text{count}} > f_{\text{table}}$ ($54.845 > 2.48$), and the significance value is $0.000 < 0.05$. This can be interpreted that the variables X1, X2, and X3 have a positive influence on variable Y. So that human resource management, technology adaptation, and principal leadership have a positive influence on the level of teacher productivity.

Table 11. T-Test Results (Partial Test)

Coefficients ^a				
Model	Unstandardized Coefficients		Standardized Coefficients	t
	B	Std. Error	Beta	
(Constant)	5.484	5.147		1.065

Sig. .290

Human resources management	.282	.106	.289	2.670	.009
Technology adaptation	.385	.121	.294	3.190	.002
Principal leadership	.333	.115	.325	2.890	.005
a. Dependent Variable: Teacher Productivity					

Table eleven shows the results related to the partial or individual influence of each X variable tested on the Y variable. To see the test results from this table, you can look at the test results column t_{count} and column $Sig.$ The test results for each variable X show the following results.

X1 (Human Resource Management)

Test results for Variable X1 (Human resource management) on Variable Y (Teacher productivity), the results obtained t_{count} 2,670 and the value t_{table} 1.664 with probability 0.05. Then, the significance value obtained is 0.009, which is smaller than 0.05. With the value $t_{\text{count}} > t_{\text{table}}$ ($2.670 > 1.664$) and the significant value is smaller than $0.007 < 0.05$, then it can be interpreted that the hypothesis is accepted. Human resource management has a positive effect on the level of productivity of a teacher.

X2 (Technology Adaptation)

Test results for Variable X2 (Technology adaptation) on Variable Y (Teacher productivity) obtained results t_{count} 3.190 and value t_{table} 1.664 with probability 0.05. Then, the significance value obtained is 0.002, which is smaller than 0.05. With the value $t_{\text{count}} > t_{\text{table}}$ ($3.190 > 1.664$) and the significant value is smaller $0.005 < 0.05$, then it can be interpreted that the hypothesis proposed by the researcher is accepted. Where adaptation to technology has a positive influence on the level of productivity of a teacher.

X3 (Principal Leadership)

Test results for Variable X3 (Principal leadership) on Variable Y (Teacher productivity) obtained results t_{count} 2,890 and the value t_{table} 1.664 with probability 0.05. Then, the significance value obtained is 0.005, which is smaller than 0.05. With the value $t_{\text{count}} > t_{\text{table}}$ ($2.890 > 1.664$) and the significant value is smaller $0.003 < 0.05$, then it can be interpreted that the researcher's hypothesis is accepted. This shows that the principal's leadership has a positive influence on.

Discussion

From the test results on the three X variables, namely HR Management, technology adaptation, and principal leadership on Variable Y, namely teacher productivity, the significance value is $0.000 < 0.05$. This means that the three X

variables have a positive influence on teacher productivity. This can be said that the fourth hypothesis stated by the researcher can be accepted. The three X variables, namely HR Management, Technology Adaptation, and Principal Leadership, are interrelated and influence teacher productivity. Then, the partial test results also show that each variable has a positive influence on a teacher's productivity.

Where the HR variable obtained a significance value of 0.009, which is smaller than 0.05, with a value of t_{count} by 2,670 $> t_{\text{table}}$ 1.664. This means that HR Management has a positive effect on teacher productivity. This answers the researcher's first hypothesis that there is a positive effect of good human resource management on teacher productivity.

In this case, in line with research that has been conducted by previous researchers, Challenges and strategies in managing small schools: A case study in Perak, Malaysia by Mansor et al. (2022) the results of his research showed that human resource management significantly has a positive influence on the quality of teacher performance. So, in this study, it is concluded that HR is very necessary to improve the ability of knowledge, educational skills according to the fields possessed by teachers.

Then, in the variable of technology adaptation to teacher productivity, it shows a value t_{count} 3.190 $>$ value t_{table} 1.664 and a significance value of 0.002 $<$ 0.05. This means that technology adaptation has a significant positive effect on teacher productivity. So the second hypothesis in this study is accepted, because there is a positive effect of technology adaptation on teacher productivity.

This is in line with research conducted by Yani, et al., en titled The Influence of Technology Mastery and Work Discipline on Teacher Performance with Productivity as an Intervening Variable at School Xxx. The results of this study also show that teachers who can understand, master and apply technology-based media well, then the teacher also has good productivity (Ghafur, 2021; Jassim & Abd, 2020; Ramírez-Montoya et al., 2021). Then, in another study conducted by Gad & Yousif (2021), it was shown that the use of technology can encourage teachers to be creative, innovative, and varied in providing learning or in solving educational administration.

In the variable of Principal Leadership towards teacher productivity in this study, the value obtained was t_{count} 2890 $>$ value t_{table} 1.664, and the significance value obtained is 0.005 $<$ 0.05. It can be interpreted that the principal's leadership has a significant influence on teacher productivity. So that the third hypothesis proposed by the researcher is accepted, because the test results show that there is a positive influence of the principal's leadership on teacher productivity.

In line with other studies, conducted by Dorrer & Boyarskaya (2020), it shows that with good principal leadership, teacher performance also improves. This means that there is an influence between principal leadership and teacher performance (Leão & Ferreira, 2021; Wang, 2021). The principal is the main controller in an educational institution. The principal with the ability to carry out management functions such as planning, organizing, implementing, and supervising the course of education properly, of course, teachers as members of the educational institution will be encouraged to work better.

Based on the explanation, the results of this study are that human resource management, technology adaptation, and principal leadership directly and indirectly have a positive influence on teacher productivity. With good HR Management, including good planning, organizing, implementing and supervising, and evaluating, it will also affect the performance and productivity of teachers. Then, the utilization and ability to adapt to technological developments encourage teachers to be creative, innovative, and varied in developing education, both learning and administration. And it is possible that the role of good principal leadership will motivate all members in special teacher education institutions. So that a teacher will be able to improve their performance and productivity as a teacher.

CONCLUSION

Based on the findings and discussion of the research related to the relationship between human resource management, technology adaptation, and principal leadership on teacher productivity, it can be concluded that the three independent variables have a significant positive influence on teacher productivity. Good human resource management, through the right recruitment process, career development, and systematic performance evaluation, can improve the quality and enthusiasm of teachers in carrying out educational tasks. Likewise, the utilization and adaptation to technological developments play an important role in encouraging teachers to create innovation and variation in the learning methods applied. Meanwhile, effective principal leadership—with the ability to provide motivation, direction, and physical and psychological support—can improve teacher satisfaction and performance. Thus, the three variables are interrelated in creating a conducive educational environment and supporting the development of teacher professionalism, thus having a direct impact on increasing productivity and learning quality.

REFERENCES

- Ağalday, B., & Dağlı, A. (2021). The Investigation of the Relations Between Paternalistic Leadership, Organizational Creativity and Organizational Dissent. *Research in Educational Administration and Leadership*, 6(4), 748–794. <https://doi.org/10.30828/REAL/2021.4.1>
- Baglama, B., Z., Dagli, G., Jemni, M., Shadiev, & Celebi, M. (2022). Analysis of Digital Leadership in School Management and Accessibility of Animation-Designed Game-Based Learning for Sustainability of Education for Children with Special Needs. *Sustainability (Switzerland)*, 14(13). <https://doi.org/10.3390/su14137730>
- Bellibaş, M. Ş., Gümüş, S., & Liu, Y. (2021). Does School Leadership Matter for Teachers' Classroom Practice? The Influence of Instructional Leadership and Distributed Leadership on Instructional Quality. *School Effectiveness and School Improvement*, 32(3), 387–412. <https://doi.org/10.1080/09243453.2020.1858119>
- Clarence, M., Devassy, V. P., & George, T. S. (2021). The Effect of Servant Leadership on Ad Hoc Schoolteachers' Affective Commitment and Psychological Well-Being: The Mediating Role of Psychological Capital. *International Review of Education*, 67(3), 305–331. <https://doi.org/10.1007/s11159-020-09856-9>
- Dorrer, M., & Boyarskaya, T. (2020). Approach to Assessing the Maturity Level of an Educational Institution of Secondary Vocational Education. In *Journal of Physics: Conference Series* (Vol. 1515, Issue 3). <https://doi.org/10.1088/1742-6596/1515/3/032029>
- Even, U., & BenDavid-Hadar, I. (2021). Teachers' Perceptions of their School Principal's Leadership Style and Improvement in their Students' Performance in Specialized Schools for Students with Conduct Disorders. *Management in Education*. <https://doi.org/10.1177/08920206211054654>
- Gad, S., & Yousif, N. B. A. (2021). Public Management in the Education Sphere: Prospects for Realizing Human Capital in the Development of Knowledge Management Technologies. *Administratie Si Management Public*, 37, 151–172. <https://doi.org/10.24818/amp/2021.37-10>
- Ghafur, H. S. (2021). Analysis of ICT Development Supporting the E-Learning Implementation on Nadhatul Ulama Universities in Indonesia. *Journal of Social Studies Education Research*, 12(4), 121–143.
- Hanna, A. A., Smith, T. A., Kirkman, B. L., & Griffin, R. W. (2021). The Emergence of Emergent Leadership: A Comprehensive Framework and Directions for Future Research. *Journal of Management*, 47(1), 76–104. <https://doi.org/10.1177/0149206320965683>

- Ignatescu, C., & Kosece, P. (2021). Ethical Leadership Role and Behaviors of Teachers in the Context of Effective Classroom Management. *Revista de Cercetare Si Interventie Sociala*, 73, 34–56. <https://doi.org/10.33788/rcis.73.3>
- Ingsih, K., Astuti, D., Suhana, S., & Ali, S. (2021). Improving Teacher Motivation and Performance through Communication, Work Discipline, Leadership, and Work Compensation. *Academy of Strategic Management Journal*, 20(1), 1–16.
- Jassim, I. M., & Abd, A. S. (2020). The Role of Business Intelligence Techniques in Enhancing Requirements of Knowledge Management: An Applied Analytical Study of the Teachers' Opinions of the Northern Technical University and Some of Its Formations. In *Proceedings - 2020 2nd Annual International Conference on Information and Sciences, AiCIS 2020* (pp. 191–202). <https://doi.org/10.1109/AiCIS51645.2020.00039>
- Leão, C. P., & Ferreira, A. C. (2021). Engineering Student Attitude Towards New Technologies Employed in Active Teaching. In *Advances in Intelligent Systems and Computing* (Vol. 1329, pp. 647–656). https://doi.org/10.1007/978-3-030-68201-9_63
- Mansor, A. N., Hamid, A. H. A., & Alias, B. S. (2022). Challenges and Strategies in Managing Small Schools: A Case Study in Perak, Malaysia. *Educational Management Administration and Leadership*, 50(4), 694–710. <https://doi.org/10.1177/1741143220942517>
- Pettersson, F. (2021). Understanding Digitalization and Educational Change in School by Means of Activity Theory and the Levels of Learning Concept. *Education and Information Technologies*, 26(1), 187–204. <https://doi.org/10.1007/s10639-020-10239-8>
- Rahtikawatie, Y., Chalim, S., & Ratnasih, T. (2021). Investigating The Role of Religious Leadership at Indonesia's Islamic Boarding Schools in The Sustainability of School Management. *Eurasian Journal of Educational Research*, 2021(96), 51–65. <https://doi.org/10.14689/ejer.2021.96.4>
- Ramírez-Montoya, M. S., Loaiza-Aguirre, M. I., Zúñiga-Ojeda, A., & Portuguez-Castro, M. (2021). Characterization of the Teaching Profile within the Framework of Education 4.0. *Future Internet*, 13(4). <https://doi.org/10.3390/fi13040091>
- Ratna Wijayanti Daniar Paramita, dkk. (2021). Quantitative research methods. *Widya Gama Press*.
- Shava, G., & Heystek, J. (2021). Managing teaching and learning: integrating instructional and transformational leadership in the South African Schools Context. *International Journal of Educational Management*, 35(5), 1048–1062. <https://doi.org/10.1108/IJEM-11-2020-0533>

- Tan, S. F., Din Eak, A., Ooi, L. H., & Abdullah, A. C. (2021). Relationship between Learning Strategies and Academic Performance: a Comparison between Accreditation of Prior Experiential Learning (APEL) and Regular Entry Undergraduates. *Asian Association of Open Universities Journal*, 16(2), 226–238. <https://doi.org/10.1108/AAOUJ-08-2021-0081>
- Tanzeh, A., Fadhilah, D. A., Chotimah, C., & Sukur, M. (2021). The Importance of Improving Education Quality and Principal Leadership in Improving School Competitiveness. *Malaysian Online Journal of Educational Management*, 9(4), 17–31.
- van der Hoven, A. G., Mahembe, B., & Hamman-Fisher, D. (2021). The Influence of Servant Leadership on Psychological Empowerment and Organisational Citizenship on a Sample of Teachers. *SA Journal of Human Resource Management*, 19. <https://doi.org/10.4102/sajhrm.v19i0.1395>
- Wang, H. (2021). English Teaching Ability Evaluation Algorithm based on Management, Leadership and Entrepreneurship Including Education, Data Fusion and Notch Filtering. *Journal of Commercial Biotechnology*, 26(2), 89–99. <https://doi.org/10.5912/jcb1060>
- Zhou, G., Gul, R., & Tufail, M. (2022). Does Servant Leadership Stimulate Work Engagement? The Moderating Role of Trust in the Leader. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.925732>