



Examining the Influence of Principal Leadership on School Effectiveness : A Comprehensive Analysis in The Context of Primary Schools in Surabaya

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Abstract: This study aims to analyze the influence of principal leadership on the effectiveness of primary schools. This research used a quantitative method. The research targets teachers in Surabaya, utilizing a sample of 376 respondents selected through a systematic random cluster sampling technique. The research instrument Principal Leadership adapted "The Successful School Leadership Survey," comprising 22 items, and the school effectiveness instrument was adapted "PESOC," consisting of 17 items from previous studies. Data was collected using an online questionnaire administered through Google Forms. The analysis employed Structural Equation Modeling with Partial Least Squares (SEM PLS), encompassing both inner and outer model evaluations. The study's result was that principal leadership positively affected the effectiveness of schools. The research findings strongly supported the notion that the leadership exhibited by school principals was a critical factor in the establishment and maintenance of effective schools. The study emphasized the importance of leadership that specifically addresses the four dimensions outlined in the Successful School Leadership survey, highlighting their integral role in shaping and sustaining educational institutions that are deemed effective.

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Introduction

Education in Indonesia is currently oriented towards Emancipated Learning, aimed at enhancing students' learning achievements. The improvement in students' learning achievements is expected to lead to more effective schools. Furthermore, an effective school is one where the set goals and programs can be achieved and implemented. A school is considered effective if "the school process produces positive observable results among its students consistently over a specific period" (Iyer & Moore, 2017). Parameters for measuring the effectiveness of secondary schools include the level of school discipline, the school climate, teacher performance, and the number of students who successfully pass graduation exams (Cohen et al., 2009) (Uline et al., 1998).

A positive school climate is crucial to ensuring a positive school experience, and, along with quality leadership and teaching, the school climate is often associated with what has been defined as an effective school (Robert, 2005) (Dennis & Bocarnea, 2005). Improving school effectiveness is a priority for the government of Indonesia. The significance of school leadership is closely linked to the changing roles and structures of schools and the education system occurring in many countries. In addition to traditional tasks, new responsibilities have emerged. Being a school leader means fulfilling diverse and complex duties related to both professional and personal demands. Increasing attention is given to the role of school leaders in creating conditions for effective schools (Huber &

Hiltmann, 2011). A recent literature review (Preston et al., 2017) identifies learning-centered leadership, the extent to which leaders have a vision in the school for learning, as a crucial component for effective secondary schools.

Educational leadership has been identified as a crucial characteristic of school effectiveness (Kythreotis et al., 2010). This leadership is exemplified by the skills demonstrated by the school principal acting as an educational leader within the school. A skilled and competent school principal is one who facilitates the integration of input into the school, ensuring the attainment of desired objectives. The school principal oversees all processes involved in running the school for overall effectiveness. According to (Mangan et al., 2001), skills are used to denote expertise developed through training and experience. A common factor for various types, according to (Mangan et al., 2001), is that leaders must align the demands of specific tasks with the skills required for effective task accomplishment. Based on data released by World Top 20.org, Indonesia's education ranking in 2023 was 67th out of 203 countries worldwide, indicating that the quality of education in Indonesia is not yet sufficient. Schools as educational institutions have not been able to effectively promote the creation of effective schools with an improvement in the quality of students. One of the determining factors for school effectiveness is strong leadership within the school. Based on data from Google Scholar accessed from 2019 to 2023 with the keyword "school effectiveness" and analyzed using VOS viewer, a research pattern like the image below was obtained:

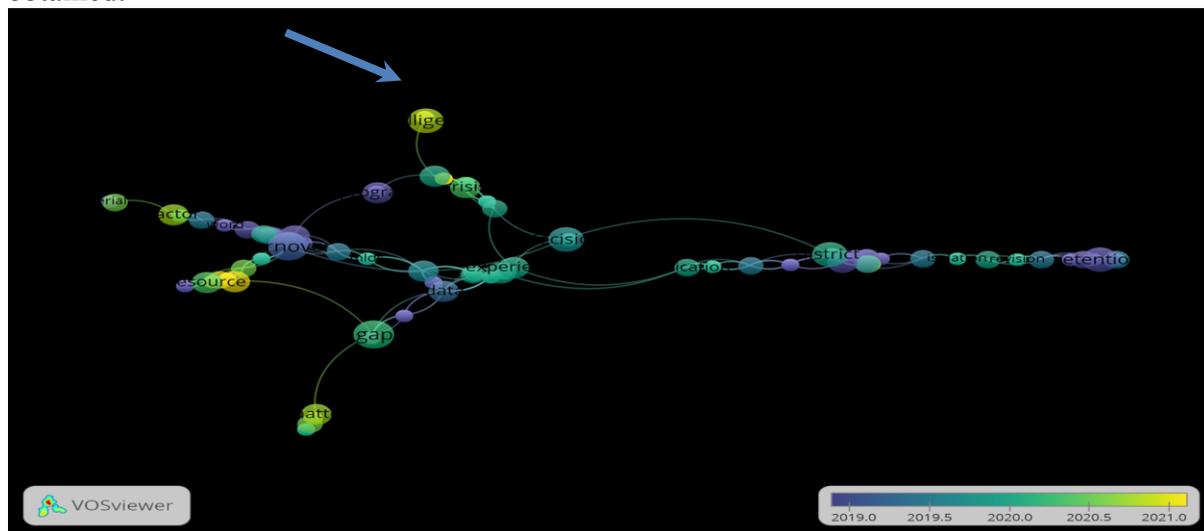


Figure 1. Research gap analysis

Based on the analysis above, recent research on school effectiveness associated with intelligence is highlighted by the arrow indicated in yellow. The yellow color indicates that this research was conducted within the timeframe from 2021 onwards. Furthermore, from this diagram, no research correlating school effectiveness with leadership has been found. The urgency of this research is that there is specific research to investigate the role of leadership in affected school effectiveness. This is one of the reasons why researchers analyze school effectiveness in relation to school leadership.

Research Method

This quantitative research investigates the relationship between principal leadership and school effectiveness among primary school teachers in Surabaya. Using an online



questionnaire distributed via Google Forms with a 5-point Likert scale, data collection spans four weeks. The study employed Structural Equation Modeling with Partial Least Squares (SEM PLS) to measure the simple regression effect of principal leadership on school effectiveness. Ethical considerations include informed consent and assurances of confidentiality. The expected outcomes aim to reveal significant relationships between principal leadership and school effectiveness, providing valuable insights for educational stakeholders.

In this quantitative research study, the population consisted of 700 teachers encompassing all primary schools in Surabaya, Indonesia. The sample consists of 376 primary school teachers, selected using a simple random sampling technique (Hair et al., 2017). This method ensures that every primary school teacher in Surabaya has an equal opportunity to be included in the study, enhancing the representativeness of the sample (Sugiyono, 2012). The research focuses on investigating the relationship between principal leadership and school effectiveness, utilizing an online questionnaire distributed through Google Forms with a 5-point Likert scale. This robust sampling approach aims to capture diverse perspectives and experiences among primary school teachers in Surabaya, contributing to the overall validity of the study.

In this quantitative research, the instruments used for data collection have been adapted from established surveys. The principal leadership instrument was derived from Leithwood's "The Successful School Leadership Survey," (Leithwood et al., 2023) comprising 22 items. The school effectiveness instrument was adapted from Hellstrom's "PESOC," (Hellström & Hagquist, 2021) consisting of 17 items. Both instruments employed a 5-point Likert scale with response options ranging from 'strongly disagree' to 'strongly agree,' allowing respondents, primarily the 376 selected primary school teachers in Surabaya, to express their opinions and perceptions on various aspects of principal leadership and school effectiveness.

This research employed Structural Equation Modeling with Partial Least Squares (SEM PLS) to scrutinize the influence of principal leadership on school effectiveness. Beginning with the specification of a path diagram, the study gathers data on principal leadership and school effectiveness from the selected sample. The measurement model was established by selecting indicators for each latent construct and assessing reliability and validity through factor loadings, Cronbach's alpha, composite reliability, and Average Variance Extracted (AVE). The structural model was then analyzed, focusing on estimating and bootstrapping path coefficients, and the overall model fit was evaluated using goodness-of-fit indices. The results were interpreted, emphasizing the significance and effect size of the path from principal leadership to school effectiveness.

Results and Discussion

The research outcomes encapsulate a comprehensive examination through three primary analyses: outer model analysis, inner model analysis, and path analysis. The outer model analysis scrutinizes the measurement model, evaluating the reliability and validity of the chosen indicators in capturing latent constructs. Simultaneously, the inner model analysis delves into the structural relationships between these constructs, assessing the model's overall explanatory power and goodness of fit. The path analysis further elucidates the direct and indirect connections between variables, providing a nuanced understanding of the intricate relationships within the research model. Together, these analyses collectively contribute to a robust and multifaceted evaluation of the research framework.



Outer model analysis

This research employed outer model analysis as part of Structural Equation Modeling with Partial Least Squares (SEM PLS) methodology. The outer model analysis involved examining the measurement model, assessing the relationships between observed indicators and latent constructs, and ensuring the reliability and validity of the measurement instruments used in the study. The factor loading analysis assesses the validity of measurement items in the research model. Based on the results:

Table 1. Factor loading analysis

Variable	Item	Result	Criteria	Conclusion
School Effectiveness	BA	0,793		
	PL	0,761		
	SA	0,820		
	SE	0,777		
	SEXP	0,827		
	SH	0,837	>0.70	Valid
	SM	0,822		
	T	0,806		
	TC	0,815		
	TD	0,737		
UN	0,793			
Principal Leadership	SLDO1	0,861		
	SLDO1	0,832		
	SLDO2	0,865		
	SLDO2	0,832		
	SLDO3	0,864		
	SLDO3	0,812		
	SLDO4	0,793		
	SLDO4	0,712		
	SLDO5	0,807		
	SLDO5	0,712		
	SLDP1	0,808		
	SLDP1	0,776	>0.70	Valid
	SLDP2	0,835		
	SLDP2	0,793		
	SLDP3	0,802		
	SLDP3	0,740		
	SLDP4	0,848		
	SLDP4	0,808		
SLDP5	0,837			
SLDP5	0,811			
SLDP6	0,818			
SLDP6	0,812			



SLII1	0,840
SLII1	0,822
SLII2	0,837
SLII2	0,784
SLII3	0,857
SLII3	0,814
SLII4	0,773
SLII4	0,732
SLII5	0,853
SLII5	0,820
SLII6	0,850
SLII6	0,813
SLII7	0,801
SLII7	0,792
SLSD1	0,867
SLSD1	0,768
SLSD2	0,884
SLSD2	0,801
SLSD3	0,852
SLSD3	0,787
SLSD4	0,855
SLSD4	0,813

For the item BA, the factor loading is 0.793, exceeding the recommended threshold of 0.70, indicating its validity. Similarly, items PL, SA, SE, SEXP, and SH exhibit factor loadings of 0.761, 0.820, 0.777, 0.827, and 0.837, respectively, all surpassing the threshold and demonstrating their validity. The SLDO, SLDP, SLII, and SLSD items also display consistent validity, as their factor loadings consistently exceed 0.70 across multiple indicators. Notably, SLDO4 and SLDO5, along with SLDP4 and SLDP5, exhibit slightly lower factor loadings (0.712), which may warrant further examination for potential refinement. Overall, the majority of the items demonstrate strong validity, supporting their reliability in measuring the respective latent constructs. The findings underscore the robustness of the measurement model, providing a solid foundation for subsequent structural equation modeling.

The Analysis of Variance Extracted (AVE) assesses the convergent validity of latent constructs. In this analysis:

Table 2. Analysis of AVE

Variable	Result	Criteria	Conclusion
Principal leadership	0.626	AVE>0.50 Chin & Dibbern (2010)	Valid
School Effectiveness	0.639		

For the variable "Principal Leadership," the AVE value is 0.626, surpassing the threshold of 0.50 recommended by Chin and Dibbern (2010). This indicates a satisfactory level of convergent validity, suggesting that the measurement items associated with Principal Leadership share a substantial proportion of variance with the latent construct. Similarly, the variable "School Effectiveness" has an AVE value of 0.639, which also exceeds the 0.50 threshold, supporting its convergent validity. This suggests that the measurement items



related to School Effectiveness collectively capture a significant amount of variance in the latent construct. Overall, the AVE results for both variables indicate acceptable convergent validity, reinforcing the reliability and consistency of the measurement model in capturing the underlying constructs of Principal Leadership and School Effectiveness. For the reliability analysis, the researcher employed a dual-pronged approach, utilizing both Cronbach's alpha and composite reliability. This comprehensive assessment ensured a thorough evaluation of the internal consistency and reliability of the measurement instruments employed in the study as follows:

Table 3. Reliability result

Reliability test	Result	Criteria	Conclusion
Cronbach Alpha			
Principal leadership	0.971	>0.70	Reliable
School Effectiveness	0.943		Reliable
Composite Reliability			
Principal leadership	0.973	>0.70	Reliable
School Effectiveness	0.951		Reliable

The results of the reliability analysis, employing both Cronbach's Alpha and Composite Reliability, demonstrate the consistent and stable nature of the measurement instruments. For the construct of Principal Leadership, Cronbach's Alpha yielded a value of 0.971, surpassing the recommended threshold of 0.70, indicating a high level of reliability. Similarly, the Composite Reliability for Principal Leadership was determined to be 0.973, providing additional confirmation of its reliability. In the case of School Effectiveness, the obtained Cronbach's Alpha score of 0.943 and Composite Reliability of 0.951 both meet the criteria for reliability. Consequently, these results substantiate the dependable and stable attributes of the measurement instruments for both Principal Leadership and School Effectiveness.

Inner Model Analysis

The inner model analysis was conducted to examine the effects of principal leadership on school effectiveness using Structural Equation Modeling with Partial Least Squares (SEM PLS). This analysis focused on assessing the strength and significance of the relationships between the latent construct of principal leadership and school effectiveness within the proposed model. Through path coefficients and statistical tests, the inner model analysis aimed to provide insights into how variations in principal leadership contribute to variations in school effectiveness, thereby offering a comprehensive understanding of the impact of principal leadership on the overall effectiveness of the school.

Table 4. Inner model analysis

Inner Model	Criteria	Result	Conclusion
R Square	0.25 (weak) 0.50 (medium) 0.75 (strong)	0.692	Medium
SRMR	SRMAR<0.10 (fit)	0.060	Model Fit
F Square (Effect size)	0.02 (low) 0.15 (medium) 0.35 (strong)	2.24	Strong
Path Coefficient	P values <0.05	0.000	Significantly affected

The inner model assessment reveals several key findings regarding the structural equation model employed in the research. The R Square value of 0.692 indicates a moderate level of explanatory power, capturing a substantial proportion of the variance in the model. The Standardized Root Mean Square Residual (SRMR) was commendable low at 0.060,



indicating a good fit between the observed and predicted covariance matrices. Furthermore, the F Square, representing effect size, was notably strong at 2.24, signifying a substantial impact of predictor variables on the dependent variable. Finally, the path coefficient analysis underscores the model's robustness, with a significant p-value of 0.000, indicating a strong and statistically significant relationship between the variables under examination. Collectively, these results affirm the model's validity, providing valuable insights into the relationships within the structural equation model used in the research. From the results of this research, the path coefficient analysis is presented in the table below, offering a detailed depiction of the relationships and magnitudes of effects between the variables within the proposed mode

Table 5. Path Analysis

	Sample (O)	T statistic	P Values	Criteria	Conclusion
Principal Leadership -> School Effectiveness	0,832	16,938	0,000	P values <0.05	Affected
SLDO -> School Effectiveness	0,199	14,930	0,000		
SLDP -> School Effectiveness	0,233	16,059	0,000		
SLII -> School Effectiveness	0,284	16,120	0,000		
SLSD_ -> School Effectiveness	0,164	15,280	0,000		

A comprehensive statistical analysis was conducted to scrutinize the impacts of various factors on School Effectiveness. Employing original sample data (O), the outcomes revealed substantive insights. Principal Leadership emerged as a significant influence, attested by a correlation coefficient of 0.832, a T-statistic of 16.938, and a highly significant p-value of 0.000 (with p-values < 0.05 denoting significance). Similarly, other variables including SLDO, SLDP, SLII, and SLSD_ exhibited noteworthy effects on School Effectiveness, supported by respective T-statistics and p-values of 14.930, 16.059, 16.120, and 15.280, all with p-values of 0.000. The applied testing criteria considered p-values below 0.05 as indicative of statistical significance. These findings underscore the pivotal role of Principal Leadership and the identified factors in shaping School Effectiveness, furnishing a robust foundation for judicious decision-making within educational contexts. The path diagram of this research is represented in the figure as follows:

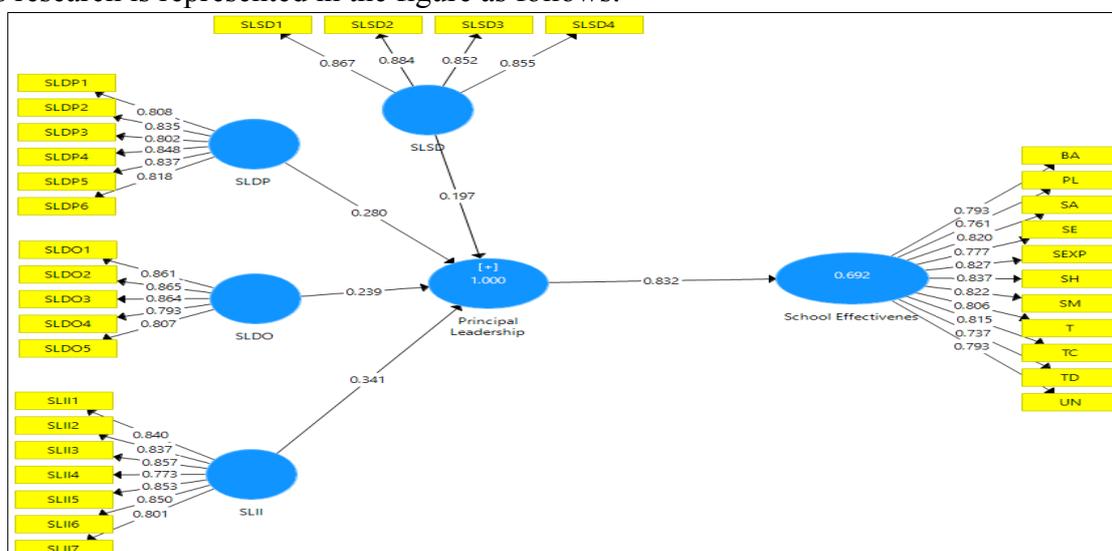


Figure 2. Research model output



Based on the results, the hypothesis of this research was confirmed, indicating that school leadership significantly influences school effectiveness. The regression analysis yielded a P-value of 0.000. It is less than the conventional significance level of 0.05. This result signifies that the school leadership variable has a statistically significant impact on school effectiveness.

The leadership model employed in this study utilizes SSL (Successful School Leadership), which consists of four primary dimensions: Setting Direction (SLSD), Building Relationships and Developing People (SLDP), Developing the Organization to Support Desired Practices (SLDO), and Improving the Instructional Program (SLII). From the above analysis, it showed that SSL significantly influences school effectiveness. Furthermore, each dimension, including SLSD, SLDP, SLDO, and SLII, individually exerts a significant impact on school effectiveness. This study aligns with the findings of prior research (Hidayat & Wulandari, 2020) that showed the leadership of the school significantly influenced students' academic achievement. An effective school is characterized by students who demonstrate commendable academic performance (Javornik & Klemenčič Mirazchiyski, 2023). Research indicates that one of the strategies to enhance students' academic performance is through the leadership of the school principal (Huguet, 2017). As asserted by (Marks & Printy, 2003) in their study, school principals with a high commitment to leadership are associated with better organizational performance.

In the dimension of setting direction, a leader providing guidance towards school goals has a significant impact on creating an effective school. This is in line with the assertion by (Leithwood, K. & Jantzi, 2000) that positive leadership contributes to an optimistic academic environment. Furthermore, Building Relationships and Developing People (SLDP) also influences school effectiveness. A school principal who facilitates the development and encouragement of teachers enhances school effectiveness. As mentioned by (Khun-Inkeeree et al., 2022), teachers play a crucial role in improving school effectiveness. Effective leadership also acts as a trigger for teachers to enhance performance and school effectiveness, as emphasized by (Mulyani et al., 2020). Developing the Organization to Support Desired Practices (SLDO) has an impact on school effectiveness. Collaborative activities among teachers contribute to the formation of an effective school (Slater, 2004). Furthermore, based on the findings of this research, Improving the Instructional Program (SLII) will also influence school effectiveness. This aligns with the research by (Olaifa & Awodiji, 2023), indicating that the principal's responsibility as a leader in managing instructional programs significantly affects school effectiveness. Therefore, leadership that promotes teacher development, focuses on instructional programs and initiates collaborative work is consequential in creating an effective school. This research highlights that leadership is one of the crucial factors in improving the better school effectiveness. The practical action to follow up this research is that leaders should be concerned with improving the leadership style which can affect the school's effectiveness.

Conclusion

This study concluded that principal leadership positively affects the effectiveness of schools. The research findings strongly support the notion that the leadership exhibited by school principals is a critical factor in the establishment and maintenance of effective schools. The study emphasizes the importance of leadership that specifically addresses the four dimensions outlined in the Successful School Leadership survey, highlighting their integral role in shaping and sustaining educational institutions that are deemed effective.



Recommendation

The study's findings lead to the conclusion that school principals should prioritize several key aspects. First and foremost, building strong relationships is imperative for creating a positive and collaborative school environment. Additionally, fostering the ongoing development of teachers contributes to a more skilled and motivated teaching staff. Enhancing organizational effectiveness is crucial for the overall efficiency and functionality of the school. Moreover, placing a specific focus on improving instructional leadership is deemed essential for ensuring a comprehensive and impactful approach to school management. These priorities collectively contribute to the creation of an effective and thriving educational institution.

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