



The Influence of Personal Communication and Principal Leadership on Teacher Performance Productivity at SMA Negeri 11 Medan

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ABSTRACT

This study analyses the influence of personal communication and principal leadership on teacher performance productivity at SMA Negeri 11 Medan. The research employed a quantitative ex post facto approach with total sampling of 72 respondents. Data were collected through a four-point Likert questionnaire, observation, and documentation. Construct validity was assessed using corrected item-total correlation (two items were dropped: PX2_11 and PY_12); reliability of each scale was acceptable (Cronbach's Alpha 0.663–0.684). Analysis began with descriptive statistics and cross-tabulation, followed by multiple linear regression with classical assumption testing (normality, homoscedasticity, multicollinearity), all of which were satisfied. Findings indicate that personal communication and principal leadership had no significant effect on productivity, either partially ($p = 0.093$; $p = 0.880$) or simultaneously ($p = 0.240$). The low coefficient of determination ($R^2 = 0.041$) suggests that only 4.1% of the variance in productivity was explained by the two predictors, implying that other factors outside the model are more dominant. Practical implications highlight the need to shift towards instructional leadership, teaching feedback, and structural support for learning. Future studies are recommended to incorporate mediators or moderators (e.g., efficacy, job satisfaction, school culture) and objective performance indicators, as well as to consider multilevel designs or SEM to capture indirect pathways.

INTRODUCTION

Group communication plays an important role in the continuity of an organization, especially in the context of public services that involve coordination between individuals and work units. Group communication in an organization reflects the process of information exchange that occurs between members who have a common goal (Kurilla, 2022). Good group communication will determine the extent to which an organization can carry out its functions optimally. The communication process in public service organizations, especially in handling complaints, requires clear information flow and efficient coordination to ensure that public complaints can be handled quickly and appropriately (Maggie Wang et al., 2024).

Public service is one of the most easily visible indicators for assessing government performance. The public can directly evaluate government performance based on the quality of services received, because public services touch various groups and their impact is felt directly (Mukarom & Laksana, 2015). According to Lestari and Santoso (2022), good public service must meet the quality expected by the community and encourage good governance practices, namely effective, efficient, transparent, accountable, and responsible governance. Public complaint management is a process of activities to accommodate, record, review, channel, confirm, clarify, provide alternative solutions to complainants, document and socialize the results of complaint management to the public (Aleksandrova & Minina, 2024).

Organizational communication plays an important role in implementing complaint management. Good organizational communication allows for smooth information flow, effective inter-unit coordination, and responsive decision-making in handling public complaints (Susita et al., 2020). The organizational communication process involves sending messages through certain channels or media to message recipients within the organization. According to Morgan, the hierarchical and formal structures within an organization often determine the flow of information and decision-making. Effective communication within an organization depends on a deep understanding of how these structures affect the interactions and flow of information among members of the organization (Salman et al., 2023)

According to (Myers & Sadaghiani, 2010), organizations can manage information more efficiently through clear and integrated communication channels. The organizational communication network is part of the organizational communication process. The larger the organization, the more complex and complex the communication that occurs within it. The better the flow of organizational communication networks carried out in the organization, the faster the organization will achieve the expected goals, especially in this study to improve the quality of public services. A good communication network flow makes every stage of complaint management from receipt to resolution can be carried out transparently and accountably, thus supporting the achievement of the principles of good governance and increasing public trust in government services.

The 2023 Indonesian Ombudsman Annual Report found overlapping functions between the Family Hope Program (PKH) Companions under the Ministry of Social Affairs and the SIKS-NG Operators under the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (Kemendes PDDT). This shows inefficiency in coordination and communication between agencies in dealing with poverty. This shows the need to identify coordination challenges and optimize a more responsive and efficient communication system in managing public complaints at the Ministry of Social Affairs (Regyta Juliani et al., 2023).

The Ministry of Social Affairs responded to this challenge by establishing a Control Center (Command Center) as an integrated service for fast and precise responses to monitoring results, public complaints, and assessments from Social Welfare HR. Regulation of the Minister of Social Affairs of the Republic of Indonesia Number 11 of 2022 concerning the Ministry of Social Affairs Control Center states that in order to carry out the duties of the Ministry of Social Affairs in providing services and information to the community, especially PPKS, it is necessary to implement information technology-based public services in the form of the Ministry of Social Affairs control center (Ahmed & Sheikh, 2021).

There are 5,140 handlings that have been carried out from all complaints received, of which 2,031 complaints are the results of identification by the Control Center operator through news, social media and other sources of information (Herhausen et al., 2023). Meanwhile, 3,109 public complaints came in by telephone. Based on these data, the Control Center has achieved positive results in managing public complaints with a resolution rate of more than 60% and the remaining complaints are in the process of being followed up (Bae et al., 2023).

This achievement shows a significant contribution from the ongoing good organizational communication in complaint management activities (Kaur Bagga et al., 2023). These results are supported by awards received, including the Government Techno Marketing Awards 2023 Bronze Champion from MarkPlus Corp. 4 and receiving the Award of Compliance Assessment Predicate for Public Service Provision (Public Service Provision Supervision Opinion) in 2023 from the Indonesian Ombudsman .

Based on previous studies, this study has a novelty, namely focusing on the analysis of organizational communication network flow in public complaint management where previous studies emphasized communication network flow in organizational change. This study also fills the gap in previous research where in complaint management activities there are challenges in the use of multichannel communication which will be analyzed in this study through the use of SIKS-CC technology by the Control Center. This study will contribute both theoretically in the study of communication network flow in organizations and practically in improving the quality of public services, especially in the field of social welfare.

LITERATURE REVIEW

Communication and leadership represent two pivotal pillars in examining work productivity across institutions, including the educational sector. Interpersonal communication theory emphasises the significance of direct

interaction in fostering understanding, motivation, and engagement, while transformational leadership theory underscores the capacity of leaders to inspire, direct, and mobilise human potential. This study aims to analyse the influence of personal communication and school principal leadership on teacher performance productivity, particularly within formal educational settings where interpersonal dynamics and leadership styles directly shape the quality of learning (de Vries et al., 2010).

The research conducted by Hanafi, Nanis Hairunisya, Andik Wahyudi, Mohammad Ilham, and Moh. Shabri (2024), entitled *The Role of Leadership and Communication in Enhancing Work Productivity: A Study of the Village Tourism Festival*, employed a quantitative method using a Likert-scale questionnaire and documentation. Data were collected from 100 respondents through simple random sampling. Findings demonstrated that both leadership style and communication significantly influenced work productivity, both partially and simultaneously, with significance values < 0.05 . The distinction from the present study lies in the research context: Hanafi's work examined the tourism community, while the current study focuses on the formal education sector with teachers as the main subjects.

Research by Baliyah Munadjat, Ading Sunarto, and Putri Nilam Kencana (2022), entitled *Employee Productivity Based on Communication and Leadership at PT Douulton Indonesia*, applied a quantitative approach with rational sampling involving 100 employees. Data analysis included validity testing, reliability testing, classical hypothesis testing, and multiple linear regression. The results confirmed that communication and leadership had a significant positive effect on work productivity, with a determination coefficient of 30.7%. The difference with this study lies in the industrial sector investigated manufacturing whereas the present research is centred on education, using teacher performance productivity as the primary outcome indicator.

The study by Nur Azizah, Didi Mulyadi, and Partimah (2023), entitled *The Influence of Leadership on Employee Productivity at PT Simone Accessary Collection Cicadas*, used a descriptive quantitative method with 83 production employees as respondents. Findings confirmed a significant positive effect of leadership on employee productivity, with correlations indicating a very strong relationship between the variables. The distinction with this research lies in variable selection: Azizah's study focused solely on leadership, while the present study integrates both personal communication and school principal leadership to examine their influence on teacher performance productivity.

Research by Ella Handayani (2018), entitled *The Effect of Leadership and Interpersonal Communication on Decision-Making Processes in Improving Employee Performance*, employed a descriptive quantitative method with a survey of 48 respondents. Data were analysed using path analysis, revealing that leadership and interpersonal communication significantly influenced decision-making processes and employee performance, with a determination value of 81.78%. The difference from the current study is the analytical focus: Handayani examined decision-making processes within government bureaucracy, whereas

this study positions teacher productivity in educational institutions as the primary dependent variable.

METHODOLOGY

The research employed a quantitative approach with an ex post facto design to trace factors associated with teacher performance productivity based on events that had already occurred. The analytical objective was descriptive-associative, aiming to estimate the strength and significance of the influence of personal communication and school principal leadership on teacher performance productivity through standardised measurement and statistical testing. The study was conducted at SMA Negeri 11 Medan with a population of 72 active teachers; therefore, a total sampling strategy was adopted to ensure that all observational units were represented and to enhance the precision of estimation (Creswell & Creswell, 2022).

The primary instrument consisted of a four-point Likert questionnaire (1 = Strongly Disagree to 4 = Strongly Agree), constructed from construct indicators and complemented by brief observation and institutional documentation for contextual support. The operationalisation of variables referred to three constructs: personal communication (X1), school principal leadership (X2), and teacher performance productivity (Y), encompassing pedagogical, professional, social, and personal competencies.

Table 1. Operationalisation of Variables

Variable	Brief Definition	Core Indicators	Scale
Personal Communication (X1)	Exchange of messages between principal and teachers that fosters mutual understanding and work support.	Internal-external attribution; post-interaction motivation; satisfaction; emotional barriers	Likert 1-5
School Principal Leadership (X2)	The capacity to direct, motivate, and align school resources effectively.	Style adjustment; teacher/staff readiness; effectiveness; environmental influence; interpersonal relations	Likert 1-5
Teacher Performance Productivity (Y)	Work output based on pedagogical, professional, social, and personal competencies.	Planning-implementation-evaluation; subject mastery; interaction; role modelling	Likert 1-5

Data collection was conducted during agreed working hours to avoid disrupting the teaching-learning process. Intensive monitoring was carried out to ensure a high response rate and to minimise the potential for missing data. Primary data were obtained through questionnaires constructed from the research variable indicators, while secondary data consisted of supporting documents from the school (Weyant, 2022).

Construct validity was assessed using the corrected item–total correlation technique on a pilot sample of 30 respondents. Results indicated that most instrument items had calculated r-values greater than the critical r-table value at the 5 percent significance level, thus meeting validity requirements. Two items – PX2_11 and PY_12 did not meet the threshold and were therefore removed. The removal of these items ensured construct validity and accurate measurement of the indicators against the conceptual definitions of each variable.

Internal consistency of the instrument was estimated using Cronbach’s Alpha after eliminating the invalid items. Alpha coefficients ranged from 0.663 to 0.684, exceeding the minimum threshold for reliability in applied research with a four-point scale and limited sample size. Accordingly, the instrument can be considered reliable and consistent, although future refinement remains possible through improved wording or the addition of items under specific indicators (Edmonds & Kennedy, 2020).

Data analysis began with descriptive statistics to map respondent characteristics and the distribution of responses for each variable. Cross-tabulations were employed exploratorily to observe preliminary patterns of relationships among variables. Inferential testing was conducted using multiple linear regression with the model $Y = a + b_1X_1 + b_2X_2 + \dots + e$. Partial tests (t-tests) were used to measure the significance of the individual effects of each independent variable on the dependent variable, while the simultaneous test (F-test) examined the joint influence of both predictors. The coefficient of determination (R^2) was interpreted as the proportion of variance in teacher performance productivity explained by personal communication and principal leadership.

RESEARCH RESULT

Description of Respondents

This study involved 72 teachers and staff members at SMA Negeri 11 Medan, categorised by employment status, educational attainment, gender, and position. These characteristics are essential for understanding the structural context of the respondents before assessing the main variables, namely personal communication, principal leadership, and teacher performance productivity.

Tabel 2. Respondent Characteristics

Characteristic	Category	Frequency	Percentage
Employment Status	Civil Servant (PNS)	52	72.2%
	Non-Permanent (Honorar)	20	27.8%
Educational Attainment	Bachelor’s Degree (S1)	54	75.0%
	Master’s Degree (S2)	18	25.0%
	Doctoral Degree (S3)	0	0.0%
Gender	Male	16	22.2%
	Female	56	77.8%
Position	Subject Teacher	38	52.8%
	Homeroom Teacher	27	37.5%
	Vice Principal/ Administrative Staff	7	9.7%

The distribution of employment status shows that the majority of respondents are Civil Servants (PNS) at 72.2%, while the remaining 27.8% are non-permanent staff (honorer). The dominance of civil servant teachers strongly indicates organisational stability and job security, which are often associated with higher levels of commitment and dedication. At the same time, the non-permanent group continues to play a significant role, despite frequently facing limitations in terms of employment benefits.

The implication of these findings highlights that principal leadership needs to adopt differentiated approaches for each group. Civil servant teachers may be guided through long-term career-based policies, whereas non-permanent teachers require affective motivation to feel recognised and fully integrated into the school ecosystem. Differentiated communication strategies thus become crucial to avoid uneven productivity between the two groups (Karakose & Tülübaş, 2023).

The educational attainment profile reveals that 75% of respondents hold a Bachelor's degree (S1), followed by 25% with a Master's degree (S2), and none with a Doctoral degree (S3). This constellation reflects that the majority of teachers possess a higher education qualification sufficient to meet fundamental pedagogical requirements. Meanwhile, the smaller S2 group contributes added value through methodological enrichment and academic depth that support learning innovation.

The implications of educational qualifications for personal communication and principal leadership are significant. Teachers with higher levels of education tend to be more critical and reflective towards instructions, requiring principals to balance participatory communication with clear policy direction. Differences in educational qualifications also demand flexible leadership so that all teachers feel involved in the decision-making process (Ningsih et al., 2020).

The gender composition indicates that 77.8% of respondents are female and 22.2% are male. This pattern aligns with the historical trend of the teaching profession in Indonesia, which has traditionally been dominated by women. Gender differences in this context have the potential to influence interaction dynamics, particularly since previous research confirms that women are generally more responsive to empathy-based interpersonal communication. The implication of gender distribution for teacher productivity cannot be reduced merely to biological aspects but must be understood within the framework of social role construction. Principals, as leaders, need to recognise that the predominance of female teachers requires a supportive communication style, while the participation of male teachers, although a minority, remains vital to maintaining diversity of perspectives in the learning process (Ospel et al., 2023).

The distribution of positions shows that 52.8% are subject teachers, followed by 37.5% as homeroom teachers, and 9.7% as vice principals or administrative staff. This indicates that most respondents are primarily focused on specific teaching duties, while homeroom teachers assume a dual role with greater complexity, and structural staff are more engaged in school management.

The implication of position distribution underscores the importance of leadership styles tailored to the context of task responsibilities. Subject teachers require instructional support, homeroom teachers need affective guidance, and structural officers demand strategic communication. Adaptive leadership by the school principal will determine the effectiveness of cross-position communication and, consequently, collective performance productivity (Mahbob et al., 2019).

The overall synthesis of respondent characteristics illustrates diversity that necessitates flexible leadership and personal communication. Variations in employment status, education, gender, and position suggest that teacher performance productivity is not merely the product of individual factors, but rather the outcome of synergistic communication and well-directed leadership. Accordingly, the research variables are empirically grounded to test their significant influence on teacher performance at SMA Negeri 11 Medan.

Results of Classical Assumption Tests and Hypothesis Testing

1. Normality Test

The normality test aims to determine whether the data are normally distributed or not. The results of the normality test are presented in the table below:

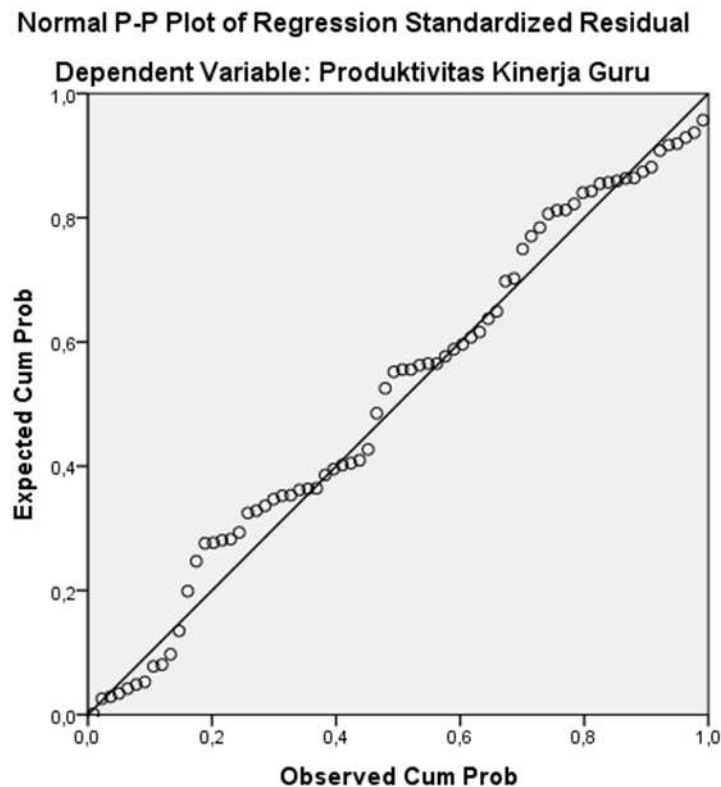


Figure 1. Results of Normality Test (P-Plot)
Source : Result Data Analys SPSS (2025)

Based on Figure 1, it can be observed that the standardized residual values (represented by dots) follow the direction of the line along the diagonal (red line). This indicates that the assumptions of normality and linearity have been met and not violated.

2. Heteroscedasticity Test

The heteroscedasticity test aims to examine whether there is an inequality of residual variance across all observations in the regression model. The results of the heteroscedasticity test can be seen in the figure below:

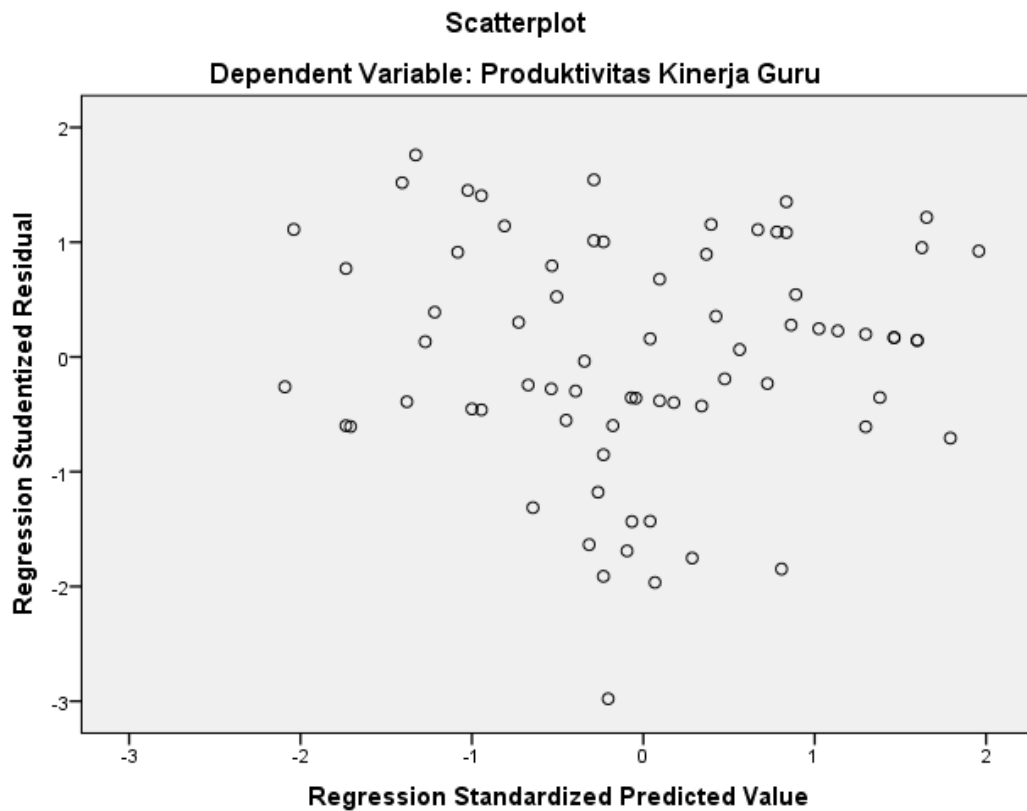


Figure 2. Results of Heteroscedasticity Test
 Source: Data Analys Result of SPSS (2025)

Based on Figure 2, the residuals are distributed randomly and evenly around the baseline. In the scatterplot, the heteroscedasticity pattern appears irregular, with points scattered randomly. This graphical representation indicates that heteroscedasticity does not occur.

3. Multicollinearity Test

In the multicollinearity assumption test, if the VIF value is < 10 , there is no indication of multicollinearity among the independent variables. However, if the VIF value is > 10 , multicollinearity is present among the independent variables. The results of the multicollinearity test are presented as follows:

Tabel 3. Results of Multicollinearity Test

Variable	Collinearity Statistics	VIF	Description
Personal Communication (X1)	Tolerance = 0.979	1.021	No Multicollinearity Detected
Principal Leadership (X2)	Tolerance = 0.979	1.021	No Multicollinearity Detected

Source : Data Analys Result of SPSS (2025)

Based on Table 3, the Personal Communication variable has a VIF value of 1.021, and the Principal Leadership variable also has a VIF value of 1.021. The VIF values for both independent variables are below the threshold of 10. This indicates that no multicollinearity occurs in the Personal Communication and Principal Leadership variables.

The communication process in complaint management at the Control Center begins when the complaint is received until the evaluation of its handling (Salih Yousif Sharaf Mohamed & Alimuddin Rivai, 2023). Based on the research results, this process is in line with the four-stage Public Relations model according to Cutlip, Center and Broom (2009), namely: fact-finding (gathering facts), planning (action planning), communicating (implementing and communicating actions), and evaluating (evaluating results). This finding shows that these four stages take place sequentially by involving one-way and two-way communication processes and various forms of organizational communication (vertical, horizontal, and diagonal).

Overall, the communication process in public complaint management at the Control Center takes place simultaneously at various levels ("Complaint Management in the Public Sector Organization in the Philippines," 2019). This finding is in accordance with the theory of organizational communication which states that communication in public organizations requires a clear flow of information and efficient coordination so that complaints can be handled quickly and appropriately (Suryanto, 2015). During the process, there is an exchange of messages, feedback, and noise (obstacles) that must be managed. For example, obstacles can arise if the initial data is incomplete (noise that is overcome at the fact-finding stage).

The combination of processes and forms of communication in the organization shows that complaint handling involves a broad organizational communication network. This finding is in line with Dini Agustina's opinion (2020) that in the flow of communication networks in public institutions, the communication process includes one-way and two-way communication at once with complete communication elements, while the formal forms of communication that occur can include vertical, horizontal, and diagonal relationships. In other words, all forms and directions of organizational communication play a role in supporting the smooth management of complaints at the Ministry of Social Affairs Control Center. When compared to similar research by Sari (2020) on communication systems in public service agencies in DKI Jakarta, the Control Center shows uniqueness in the implementation of more dynamic and responsive diagonal communication through digital media, such as WhatsApp and SIKS-CC. This reflects the adaptation of the communication structure to the needs of handling complaints in real time.

4. *Partial Test (T Test)*

The following are the results of the Partial Test (t-test) on the influence of the Personal Communication variable (X1) and the Principal Leadership variable (X2) on the Teacher Performance Productivity variable at SMA Negeri 11 Medan:

Tabel 4. Partial Test (Uji T)

Variabel	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
X1	-0,255	0,149	-0,203	-1,705	0,093
X2	0,016	0,104	0,018	0,151	0,880

Source : Data Analys Result of SPSS (2025)

Based on the results of the Partial Test (t-test) in Table 4.48, it is shown that variable X1 (Personal Communication) has a regression coefficient of -0.255 with a t-value of -1.705 and a significance (Sig.) value of 0.093. Since the significance value is greater than 0.05 ($0.093 > 0.05$), statistically variable X1 does not have a significant effect on teacher performance productivity. Meanwhile, variable X2 (Principal Leadership) has a regression coefficient of 0.016 with a t-value of 0.151 and a significance value of 0.880. This value is also far above 0.05, indicating that variable X2 likewise does not have a significant effect on teacher performance productivity when tested partially.

Thus, although both independent variables were included in the regression model, the results of the t-test indicate that, partially, there is no significant influence of either personal communication or principal leadership on teacher performance productivity in the context of this study.

5. Simultaneous Test (F Test)

The following are the results of the Simultaneous Test (F-test) on the influence of the Personal Communication variable (X1) and the Principal Leadership variable (X2) on the Teacher Performance Productivity variable at SMA Negeri 11 Medan:

Table 5. Simultaneous Test Result (Uji F)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	42,937	2	21,469	1,457	,240 ^b
Residual	1016,716	69	14,735		
Total	1059,653	71			

Source : Data Analys Result of (2025)

Based on the results of the Simultaneous Test (F-test) presented in Table 4.49, the calculated F-value is 1.457 with a significance (Sig.) level of 0.240. Since the significance value is greater than 0.05 ($0.240 > 0.05$), it can be concluded that the regression model is not statistically significant simultaneously. This means that, taken together, the independent variables Personal Communication (X1) and Principal Leadership (X2) do not have a significant effect on the dependent variable, namely Teacher Performance Productivity. Thus, although both variables were tested within the same model, their joint contribution to teacher performance productivity was not found to be significant in the context of this study.

6. Coefficient of Determination (R^2)

Berikut hasil dari Uji Determinasi (R^2) pengaruh Variabel Komunikasi Personal (X_1) dan Variabel Kepemimpinan Kepala Sekolah (X_2) terhadap Variabel Produktivitas Kinerja Guru di SMA Negeri 11 Medan, yaitu:

Table 6. Coefficient of Determination (R^2)

Model	R	R^2	Adjust R^2	RMSE
M1	0,201 ^a	0,041	0,013	3,839

Source: Data Analys Result of SPSS (2025)

Based on the results of the Coefficient of Determination (R^2) shown in Table 4.50, the R value of 0.201 indicates a low level of correlation between the independent variables (Personal Communication and Principal Leadership) and the dependent variable (Teacher Performance Productivity). The R^2 value of 0.041 suggests that only about 4.1% of the variance in teacher performance productivity can be explained jointly by the two independent variables. Meanwhile, the Adjusted R^2 value of 0.013 shows that, after adjusting for the number of variables and sample size, the contribution is even smaller, at only about 1.3%. In addition, the Root Mean Square Error (RMSE) value of 3.839 indicates the degree of deviation of the model in predicting teacher performance productivity. Overall, these results demonstrate that the regression model employed has not been able to explain productivity variation significantly, thereby indicating the need to consider other factors that may exert a stronger influence.

7. Multiple Linear Regression Analysis

$$Y = a + b_1X_1 + b_2X_2 + \dots + e$$

$$Y = 40,684 + (-0,255X_1) + 0,016X_2$$

Explanation:

- Y : Teacher Performance Productivity
- A : Constant
- X_1, X_2 : Personal Communication and Principal Leadership
- b_1, b_2 : Coefficients of the independent variables
- e : Error term outside the model

It can be explained that the constant value of 40.684 indicates that if the values of the personal communication variable (X_1) and the principal leadership variable (X_2) are zero, then the baseline or average value of teacher performance productivity (Y) is estimated at 40.684. The regression coefficient for the personal communication variable (X_1) is -0.255, which shows that for every one-unit increase in personal communication, teacher performance productivity is predicted to decrease by 0.255 points, assuming the other variable remains constant. Meanwhile, the regression coefficient for the principal leadership variable (X_2) is 0.016, which means that every one-unit increase in leadership is predicted to increase teacher performance productivity by 0.016 points, with the other variable held constant.

DISCUSSION

The main findings indicate that personal communication (X_1) and principal leadership (X_2) do not have a significant effect on teacher performance productivity (Y), either partially (t-test: $p = 0.093$; $p = 0.880$) or simultaneously (F-test: $p = 0.240$), with a low R^2 value (4.1%). Methodologically, the classical assumptions were met (normality, homoscedasticity, and no multicollinearity; $VIF \approx 1.02$), meaning that the non-significant results are not attributable to model assumption violations. Statistically, this implies that variation in teacher productivity in this school context is scarcely explained by these two predictors; other factors beyond X_1 and X_2 are more substantial in driving productivity.

These results contradict several prior studies. Hanafi et al. (2024) and Baliyah et al. (2022) reported a significant positive effect of communication and leadership on productivity; Handayani (2020) even found an exceptionally high determination coefficient in bureaucratic contexts, while Azizah et al. (2023) emphasised the impact of leadership on productivity in the garment manufacturing sector. The discrepancy can be traced to the domain context: those studies operated in community festivals, manufacturing, and government bureaucracy – ecosystems that are more hierarchical, target-driven, and reliant on top-down coordination. In contrast, secondary schools grant substantial classroom pedagogical autonomy, where teacher productivity is shaped more by micro-level instructional practices, student readiness, curriculum demands, and resource support – variables not modelled in this study.

From a measurement perspective, the instruments were reliable ($\alpha = 0.663$ – 0.684) and valid on most items after item purification, but the “adequate” (rather than high) alpha range opens the possibility of attenuation bias: true population correlations may be reduced by moderate reliability, weakening regression coefficients. Furthermore, the use of a four-point Likert scale may have induced a ceiling effect in the dependent variable (Y), as many indicators of competence clustered in “agree/strongly agree” categories, compressing outcome variance and reducing power to detect predictor effects. In a single-sample context ($N = 72$, total sampling), range restriction may also occur, since the teachers were relatively homogeneous (e.g., majority civil servants, female, bachelor’s degree), limiting variation in X and Y needed to produce detectable effects.

Theoretically, these findings suggest that personal communication and leadership may not operate as direct predictors, but rather through mediating mechanisms (e.g., job satisfaction, affective commitment, teaching self-efficacy) or moderating factors (e.g., school culture, workload, psychological climate, infrastructure support). Transformational leadership theory predicts performance improvement via enhanced work meaning and motivation – two mediating constructs not measured in the model. Similarly, interpersonal communication theory emphasises quality (clarity, feedback, empathy) rather than mere intensity; if indicators primarily captured general perceptions, the effect on performance may have been muted (Siangchokyo et al., 2020).

Respondent characteristics provide additional context. The dominance of civil servants (72.2%) and subject teachers (52.8%) reflects a relatively stable

structure; in such settings, productivity variation is likely driven more by instructional practices (planning, differentiated teaching, assessment) and academic support (ICT training, teacher learning communities) than by generic communication or aggregated leadership style. Cross-tabulation results also showed a high proportion of “high productivity” across categories, reinforcing the suspicion of a ceiling effect and limited variance available to be explained by X_1 – X_2 .

Practically, these non-significant results do not imply that communication and leadership are unimportant; rather, they signal the need for sharper interventions. First, the focus should shift from generic communication to instructional communication: structured teaching feedback, rubric-based classroom observation, and pedagogical coaching (Ito et al., 2021). Second, leadership should move from symbolic to instructional leadership: setting learning targets, managing curriculum, monitoring assessment, and promoting continuous professional development. Third, structural support should be strengthened (proportional teaching load, availability of learning resources, data-driven classroom management), as these factors are likely to explain a much larger proportion of variance in Y .

From a methodological standpoint, future research should incorporate mediating constructs (e.g., job satisfaction, teacher efficacy, collaborative climate) and moderators (e.g., school culture, class size, teaching experience), as well as employ more objective measures of performance (classroom observation scores, student achievement outcomes, attendance records, lesson plan portfolios) to reduce perceptual bias. Using five- or seven-point scales, or extended item banks, could increase reliability and mitigate ceiling effects. Multilevel designs (teachers nested within schools/classes) or structural equation modelling (SEM) would be more suitable for testing indirect pathways and cross-level interactions (Dash & Paul, 2021).

Theoretically, this study enriches the literature by highlighting a boundary condition: in secondary school contexts with relatively stable structures and already high performance levels, general personal communication and leadership do not automatically translate into greater productivity, unless mediated by instructional processes and specific work climates. Thus, the study contributes a corrective perspective to cross-sector generalisations and reinforces the importance of analytical precision – shifting from macro-level leadership to micro-level instructional practices – in explaining teacher performance.

CONCLUSION AND RECOMMENDATION

Research on 72 teachers and staff members at SMA Negeri 11 Medan shows that personal communication (X_1) and principal leadership (X_2) do not have a significant effect on teacher performance productivity (t-test: $p_{x_1} = 0.093$; $p_{x_2} = 0.880$; F-test: $p = 0.240$), with $R^2 = 0.041$. All classical assumptions were satisfied (normality, homoscedasticity, and no multicollinearity), indicating that the non-significant results are not due to model misspecification. These findings suggest that variations in productivity are more strongly explained by factors outside X_1 – X_2 such as instructional practices, workload and work climate,

resource support, teacher efficacy, and school culture – and point to the possible role of unmodelled mediators and moderators.

Practically, principals are advised to shift their focus towards instructional leadership: rubric-based classroom observation, structured teaching feedback, continuous professional development, curriculum and assessment management, and the provision of learning resources. At the same time, strengthening specific instructional communication (rather than generic communication) is critical. Future research should incorporate mediators (e.g., job satisfaction, affective commitment, efficacy), moderators (e.g., school culture, class size, teaching experience), and more objective performance indicators (e.g., classroom teaching observations, student assessment outcomes) to minimise perceptual bias. Improving reliability through additional items and the use of 5–7 point scales is recommended; multilevel designs or structural equation modelling (SEM) are also relevant to test indirect pathways and cross-level interactions.

ADVANCED RESEARCH

Future research should expand this study by integrating mediating and moderating variables such as teacher efficacy, job satisfaction, and school culture to clarify the indirect pathways through which communication and leadership affect productivity. Employing a mixed-method or multilevel design combining quantitative analysis with qualitative interviews or observations would yield richer insights into contextual and behavioral nuances. Researchers are also encouraged to adopt Structural Equation Modelling (SEM) to test complex relationships and latent constructs more precisely. Moreover, incorporating objective performance indicators (e.g., student outcomes, classroom evaluations) and using broader measurement scales could enhance reliability and validity. Comparative studies across schools with different leadership models and digital communication systems would further strengthen the generalisability of findings and offer deeper implications for educational management practices.

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