

# Aligning Principal Leadership and Teacher Roles with the Demographic Bonus Towards Golden Indonesia 2045: The Case Study of a Vocational High School

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**Abstract**—This study aims to investigate the dynamic relationship among principal leadership, teachers' roles, and the impact of demographic bonuses in the context of vocational secondary schools in Indonesia. As Indonesia endeavors to achieve the vision of a Golden Indonesia by 2045, this research delves into the critical components of vocational education that contribute to educational transformation. Employing a correlational method with a quantitative approach, data were collected from vocational high schools in Lampung using a proportional random sampling technique. The research instrument, in the form of a questionnaire, underwent validation for content and constructs validity and was tested for reliability using Cronbach's alpha. Data analysis involved Pearson product-moment correlation and multiple correlations. The results showed that there is a significant relationship between the principal's leadership and demographic bonus, which is indicated by the correlation coefficient (R) value of 0.452.

In other variables, there is a deep relationship between the role of teachers and demographic bonus, which is supported by the correlation coefficient (R) value of 0.446. It is concluded that the level of relationship between principal leadership (X1) and the role of teachers (X2) with the demographic bonus (Y) simultaneously is quite strong, which is supported by the correlation coefficient (R) value of 0.541 and the Sig. F of 0.000 <0.05. This research underscores the importance of shared responsibility and collaboration among all stakeholders, especially principals and teachers, in facing demographic challenges as Indonesia progresses towards a Golden Indonesia in 2045.

**Keyword** — Aligning, principal leadership, teacher's role, demographic bonus, correlational method, quantitative.

## 1. Introduction

In Indonesia's ambitious pursuit of realizing its vision for a Golden 2045, the education system stands as a pivotal pillar for national development. Within this context, the alignment of principal leadership and teacher roles with demographic bonuses becomes a critical focal point [1], [2]. This case study delves into the dynamic landscape of vocational high schools, aiming to unravel the intricate relationship between leadership strategies, teacher responsibilities, and the demographic dividend in the Indonesian educational framework [3], [4].

The 2045 vision casts a vision of prosperity, innovation, and global competitiveness for Indonesia. To attain this, the nation recognizes the significance of a well-rounded and productive workforce, and vocational high schools play an indispensable role in cultivating the skills and knowledge required for this purpose [5], [6].

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At the heart of this endeavor is the synchronization of principal leadership and teacher roles, a synergy that holds the key to harnessing the full potential of demographic bonuses bestowed upon the nation [7], [8].

Demographic bonuses, marked by a significant youth population, present Indonesia with a distinctive window of opportunity [9].

However, capitalizing on this dividend requires strategic planning and effective execution within the education sector [10]. Principals and teachers, as central figures in this process, shoulder the responsibility of shaping the educational landscape that will mold the future workforce [11], [12]. This case study aims to explore the strategies, challenges, and outcomes of efforts to synchronize leadership and teacher roles in vocational high schools, specifically examining how these initiatives intersect with Indonesia's demographic bonuses.

The following are the questions this study attempts to answer: 1) Does principal leadership have a statistically meaningful correlation with demographic bonuses? 2) Is there a partially significant relationship between the role of teachers and demographic bonuses? 3) Is there a simultaneous significant relationship between principal leadership and the role of teachers with demographic bonuses in vocational high schools?

The subsequent sections will delve into the historical context of vocational education in Indonesia, the evolving roles of principals and teachers in response to demographic changes, and the policies and practices employed to align these elements. Through an in-depth examination of real-world case studies from vocational high schools across the archipelago, this study seeks to provide insights, best practices, and recommendations. These findings aim to guide Indonesia on its path to a Golden 2045 by optimizing the utilization of its demographic bonuses within the education sector.

## 2. Literature Review

The concept of synchronizing principal leadership and teacher roles with demographic bonuses in the context of vocational high schools is a critical aspect of Indonesia's journey towards its ambitious vision for a Golden 2045. In this literature review, we explore the key themes, theories, and research findings that underpin this subject matter, shedding light on the importance of effective leadership, the evolving roles of teachers, and the demographic challenges and opportunities facing Indonesia's education system [13].

Demographic Bonuses and Educational Imperatives. Indonesia is currently experiencing a demographic dividend characterized by a substantial youth population [14]. This demographic bonus, if harnessed effectively, can be a driving force behind

economic growth and development. However, it also presents significant challenges, particularly in the education sector. The literature underscores the urgent need for strategic educational planning to capitalize on this demographic dividend.

Vocational high schools are vital in this endeavor, as they play a crucial role in equipping the youth with practical skills for the workforce [15].

Effective leadership is a cornerstone of educational success. Principals are not only administrators but also instructional leaders who set the tone for the entire school community [16], [17]. In the context of vocational high schools, research has emphasized the importance of principals who can foster a culture of innovation, adaptability, and relevance [18]. Leadership theories such as transformational leadership and distributed leadership have been explored to understand how principals can effectively synchronize their roles with the changing needs of the demographic landscape [19].

Teachers in vocational high schools have distinct roles compared to their counterparts in general education. They are responsible for imparting practical skills and preparing students for careers in various industries. Research has highlighted the significance of teacher professionalism, continuous development, and adaptability in responding to the demands of vocational education [20]. Additionally, the concept of teacher leadership has gained traction, showcasing how teachers can contribute to the overall improvement of schools and student outcomes [21].

Indonesia has undergone several reforms in its vocational education system in recent years [22]. These reforms have aimed to align curriculum, pedagogy, and school management with the needs of the labor market. Literature has analyzed the impact of these policies and practices, including the implementation of the 2013 Curriculum and partnerships with industry stakeholders [23], [24]. Case studies and empirical research have offered insights into the successes and challenges faced by vocational high schools in adapting to these changes [25].

The literature also recognizes the challenges faced in synchronizing principal leadership and teacher roles with demographic bonuses in vocational high schools. These challenges encompass issues of resource allocation, teacher training, curriculum relevance, and the digital divide. Future directions call for a holistic approach that considers not only educational reforms but also broader socio-economic factors that influence educational outcomes.

As Indonesia strives towards its vision for a Golden 2045, the synchronization of principal leadership and teacher roles in vocational high schools emerges as a pivotal element in achieving educational excellence and capitalizing on the demographic dividend.

The literature underscores the importance of effective leadership, the evolving roles of teachers, and the need for responsive policies and practices in vocational education.

This literature review serves as a foundation for the subsequent case study analysis, offering a comprehensive understanding of the subject matter and its significance in Indonesia's educational landscape.

### 3. Methodology

The research design employed in this study is correlational, utilizing a quantitative approach. Within this quantitative framework, specific theories are scrutinized by assessing the associations between various variables [26]. These interconnected variables are investigated without any intervention or manipulation by the researcher. This research methodology is employed to investigate the extent of the relationship between principal leadership and teacher roles concerning demographic bonuses within vocational high schools.

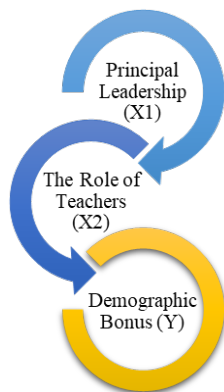


Figure 1. Correlational research design

#### 3.1. Participants

The research population represents a certain area chosen by the researcher because it has certain characteristics as a research target. In this study, the population consists of 364 vocational high school teachers in Lampung, spread across 34 vocational high schools (SMK). The researcher decided to choose a sample from the population because of its size, and this sample would serve as the primary source of data for this investigation.

The population is subdivided into the research sample. The selection of the research sample was carried out utilizing a proportional random sampling technique, ensure equality of opportunity in sampling. [27]. The formula used to calculate the sample size (n) with a 5% margin of error in proportional random sampling is often derived from the following general formula:

$$s = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2 (N - 1) + \lambda^2 \cdot P \cdot Q}$$

Description:

s= Number of samples;  $\lambda^2$ = Chi squared (3.841); P= Chance of being correct (0.5); N= Total population; Q= Chance of being wrong (0.5);  $d^2$ = Difference between sample mean and population mean (0.05).

$$s = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2 (N - 1) + \lambda^2 \cdot P \cdot Q}$$

$$s = \frac{3,841 \cdot 364 \cdot 0,5 \cdot 0,5}{0,05^2 (364 - 1) + 3,841 \cdot 0,5 \cdot 0,5}$$

$$s = \frac{349,531}{1,86775}$$

$$s = 187,14$$

Based on the formula's computation, 187 teachers were selected as the study's sample size. The distribution of samples for each school was calculated based on the number of teachers in each school once the sample size was determined.

#### 3.2. Research Instruments

This research instrument is purposefully crafted to gather data and insights pertaining to the demographic bonus and its influence across several key facets, including demographic profile, education and employment, demographic bonus, economic development, educational and career aspirations, and additional comments. Your responses will significantly contribute to enhancing our comprehension of the connection between the demographic dividend and specific outcomes [28].

Table 1. Demographic bonus research instrument

Aspect	Indicator
Demographic Profile	Age
	Gender
	Location
Education and Employment	Enrollment in educational institution
	Level of education (if enrolled)
	Employment status
Demographic Bonuses	Occupation (if employed)
	Awareness of demographic bonuses
	Impact on educational opportunities
Economic Development	Open-ended response
	Influence on economic growth and development
Education and Career Aspirations	Open-ended response
	Aspirations in the context of demographic bonuses
Additional Comments	Open-ended response
	Additional comments or insights

The data presented in Table 1 depict an instrument tailored for collecting insights regarding respondents' perceptions, comprehension, and perspectives concerning the demographic dividend and its implications across various domains, such as education, employment, and the economy. The gathered responses will aid researchers in comprehending the nexus between the demographic bonus and specific outcomes within the context of pertinent research.

Table 2. Principal leadership research instrument [29]

Aspect	Indicator
Demographic Information	Name (Optional)
	Position/Title
Demographic Bonus Awareness	How well you understand the concept of demographic dividend in the context of education
	Believe that the demographic dividend has a significant impact on your school
Principal Leadership Practices	Active involvement of the principal in curriculum design demographic bonus challenges in schools
	Effective human resource management
	Support and motivate the professional development of teaching staff to address the changes brought about by the demographic dividend
	Collaborating with other stakeholders, such as parents and the community, to create a conducive learning environment and provide student learning experiences in the context of the demographic dividend.
Challenges and Opportunities	The biggest challenge your school faces because of the demographic dividend
	Contributing to preparing students with the necessary skills and knowledge for the future
Additional Suggestions and Comments	Additional suggestions or comments regarding the principal's leadership in dealing with the demographic bonus at school

Table 3. Teacher role research instrument [30]

Aspect	Indicator
Demographic Information	Name (Optional)
	Subjects Taught
	Length of Teaching Experience
Demographic Bonus Awareness	How well you understand the concept of demographic dividend in the context of education
	Believe that the demographic dividend has a significant impact on your school
Teachers' Role in Facing Demographic Bonus	The crucial part that educators play in creating and carrying out curricula that are in line with industry demands
	Motivate students and participate in efforts to develop teaching strategies that meet the needs of demographically diverse students
	Actively communicate with students, parents, and colleagues to support student academic achievement in the context of the demographic dividend
Challenges and Opportunities	Develop students' skills and engage in extracurricular or other educational activities that help students develop their potential to capitalize on the demographic dividend
	The biggest challenge your school faces because of the demographic dividend
Additional Suggestions and Comments	Capitalizing on the demographic dividend as an opportunity to improve the quality of education
	Additional suggestions or comments regarding the principal's leadership in dealing with the demographic bonus at school

#### 4. Result and Discussion

This study involved 187 respondents who were teachers at Vocational High Schools (SMK) in Lampung. Data collection took place from January 8 to March 18, 2023, during which a set of questionnaires was distributed to the respondents. The characteristics of the respondents were categorized into two groups, namely by gender and by length of service. Some characteristics of respondents were obtained through questionnaires and the data is presented in Table 4 below.

Table 4. Characteristics of research respondents

Working Period	Frequency	Percentage (%)
≤ 5 years	54	29
5 - 10 years	60	32
≥ 10 years	73	39
Total	187	100

Referring to Table 5, it is evident that most respondents were female teachers, comprising 124 individuals or 66.3%, while male teacher respondents numbered 63 individuals, approximately 33.7%. Regarding their length of service, the highest number of research respondents had over 10 years of experience, totaling 73 individuals, followed by teachers with 5-10 years of service, totaling 60 individuals, and those with less than 5 years of service, totaling 54 individuals.

This study encompasses three sets of data, including principal leadership, teacher roles, and demographic bonuses. The interpretations of respondents' responses to each variable based on the study's findings are as follows:

**Principal Leadership (X1).** Data on principal leadership were collected using a questionnaire comprising 30 statement items. The questionnaire utilized a scoring system with five alternative responses each assigned a value within the range of 1-5. The statistical description of the principal leadership data, calculated using SPSS 25 software, is presented below.

Table 5. Results of descriptive analysis of principal leadership

Statistics	
N	187
Mean	132,15
Std. Deviation	5,592
Variance	31,26
Range	23
Minimum	122
Maximum	145

Furthermore, each score obtained from the principal leadership questionnaire is grouped into a frequency distribution graphic as presented in Figure 2.

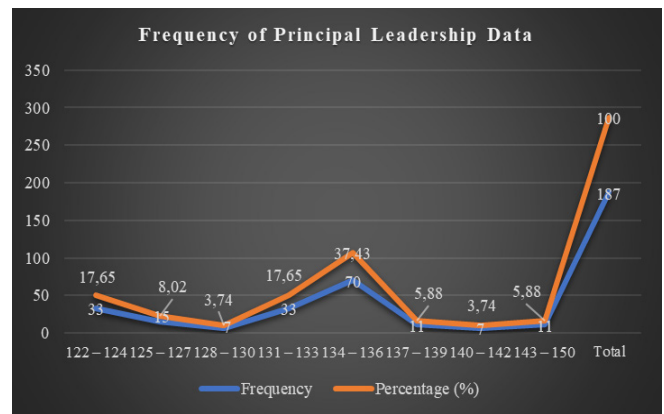


Figure 2. Frequency distribution chart of principal leadership data

After obtaining the frequency distribution table, proceed to create a score tendency table for the principal's leadership variable. This table will aid in determining the score ranges and the number of respondents falling into the categories of good, sufficient, and less. The categorization is based on calculations involving the mean and standard deviation. Subsequently, present the results of the principal leadership variable's score tendency calculation in category Table 6 as follows:

Table 6. Principal leadership data tendency categories

Category	Frequency	Percentage	Description
$x > 140,54$	18	9,63	Good
$123,76 < X < 140,54$	136	72,73	Enough
$x < 123,76$	33	17,65	Less

Based on Table 6, most (72.73%) of the principal's leadership scores are in the moderate category, 9.63% are in the good category, and 17.65% are in the less category.

**Teacher's Role (X2).** Data pertaining to the role of teachers was collected through a questionnaire containing 30 statement items. The questionnaire employed a scoring system featuring five alternative responses, each assigned a numerical value within the range of 1-5. The ensuing statistical description of the teacher role data, computed utilizing SPSS 25 software which is presented as follows.

Table 7. Results of descriptive analysis of teacher role data

Statistics	
N	187
Mean	126,36
Std. Deviation	6,105
Variance	37,276
Range	27
Minimum	115
Maximum	142

Furthermore, each score obtained from the teacher role questionnaire has been organized into a comprehensive frequency distribution table, as presented in figure 3 below.

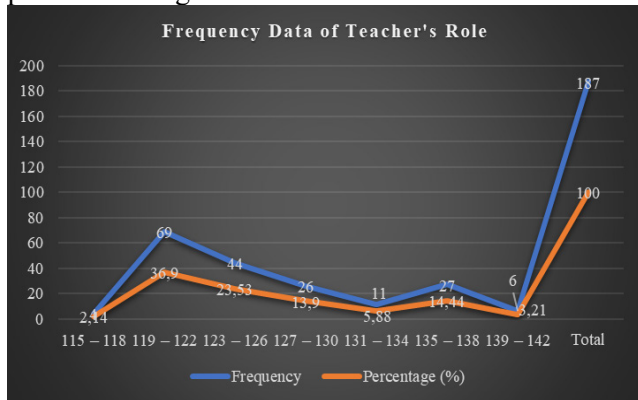


Figure 3. Frequency distribution of teacher role data

After obtaining the frequency distribution table, proceed to create a score tendency table for the teacher role variable. This table aims to determine the range of scores and the number of respondents falling into the categories of good, sufficient, and less. Categorization is determined using mean and standard deviation values. Additionally, present the results of the calculation of the tendency of the teacher role variable in Table 8 as follows:

Table 8. Teacher role data tendency category

Category	Frequency	Percentage	Description
$x > 133,97$	33	17,65	Good
$117,20 < X < 133,97$	150	80,21	Enough
$x < 117,20$	4	2,14	Less

Based on the data presented in Table 8 above, most (80.21%) of the teacher role scores are in the moderate category. In addition, 17.65% are classified as good, and only 2.14% are categorized as less.

**Demographic Bonus (Y).** Data relating to demographic bonuses were collected through a questionnaire consisting of 24 statement items. The questionnaire uses a scoring system with five alternative answers, each of which is given a numerical value with a range of 1-5. The statistical description of demographic bonus data calculated using SPSS 25 software is presented in Table 9.

Table 9. Results of descriptive analysis of demographic bonus data

Statistics	
N	187
Mean	102,07
Std. Deviation	4,027
Variance	16,220
Range	18
Minimum	95
Maximum	113

In addition, each score obtained from the demographic bonus questionnaire has been organized into a comprehensive frequency distribution table, as shown in Figure 4.

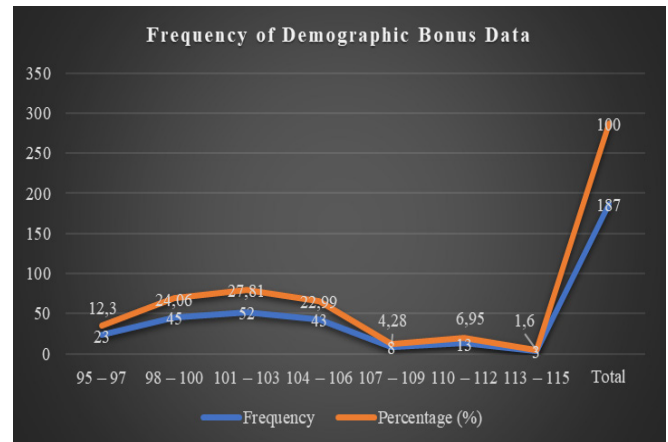


Figure 4. Frequency distribution of demographic bonus data

After obtaining the frequency distribution table, proceed to create a score tendency table for the demographic bonus variable. This table aims to establish the score ranges and the quantity of respondents falling into the good, sufficient, and insufficient categories. The categorization is determined through the utilization of mean and standard deviation values. Subsequently, the results of the demographic bonus variable's tendency calculation are presented in Table 10 as follows:

Table 10. Demographic bonus data trend categories

Category	Frequency	Percentage	Description
$x > 108,11$	19	10,16	Good
$96,03 < X < 108,11$	150	80,21	Enough
$X < 96,03$	18	9,63	Less

Referring to the data presented in Table 14 above, it becomes evident that the majority, accounting for 80.21% of the demographic bonus scores fall within the moderate category. Additionally, 10.16% are classified as good, while 9.63% are categorized as poor.

#### 4.1. Hypothesis Analysis Prerequisite Test

**Normality Test:** This test determines whether the research data displays a normal distribution. Conducted using the Kolmogorov-Smirnov test on unstandardized residual values via SPSS 25, a Sig. (2-tailed) > 0.05 indicates normal distribution, while a Sig. (2-tailed) < 0.05 suggests otherwise. The normality test results are shown in Table 11.

Table 11. Normality test results

One Sample Kolmogorov Smirnov Test		
		Unstandardized Residual
N		187
Normal-Parameter	$\bar{x}$	0,0000000
	s	3,55846437
Most-Extreme Differences	Absolute	,039
	Positive	,039
	Negative	-,025
Test Statistic		,039
Asymp. Sig. (2-tailed)		0,200

Based on Table 11, the significance value of Asymp. Sig (2-tailed) is 0.200, exceeding the threshold of 0.05. Therefore, it can be concluded that the data in this study exhibits a normal distribution.

**Linearity Test:** Evaluates the presence of a significant linear relationship between independent and dependent variables. Strong correlation implies linearity. Assessed by examining Sig. value, where Sig. > 0.05 indicates a linear relationship, while Sig. < 0.05 suggests its absence. The results of the linearity test are elaborated in Table 12.

Table 12. Linearity test results

Relation	Sig.	Probability	Description
X1-Y	0,105	0,05	Linearity
X2-Y	0,768	0,05	Linearity

Referring to Table 12, it is evident that principal leadership, teacher roles, and demographic bonuses exhibit a significant linear relationship, as indicated by the fact that all Sig. values obtained are greater than 0.05.

**Multicollinearity Test:** Determines correlations between independent variables. Ideally, robust correlation models exhibit no correlation among independent variables. Assessed using tolerance and VIF values. Tolerance >0.10 and VIF <10.00 indicate no multicollinearity; tolerance <0.10 and VIF >10.00 suggest multicollinearity. The results of the multicollinearity test are detailed in Table 13.

Table 13. Multicollinearity test results

Variables	Collinearity-Statistic		Description
	Tolerance	VIF	
Principal Leadership (X1)	0,855	1,169	No multicollinearity
Teacher's Role (X2)	0,855	1,169	No multicollinearity

Referring to Table 13, the tolerance value for the principal leadership variable (X1) and the role of the teacher (X2) is 0.855, exceeding the threshold of 0.10. Simultaneously, the VIF value for the principal leadership variable (X1) and the role of the teacher (X2) is 1.169, falling below the limit of 10.00. Consequently, it can be conclusively inferred that there is no multicollinearity between the independent variables.

**Heteroscedasticity Test:** Aims to identify variance disparity among observations. Ideally, heteroscedasticity should not exist in a robust correlation model. In this study, the Glejser test was employed, regressing the independent variable on the absolute residual value (Abs-RES). The Sig. value determines the presence or absence of heteroscedasticity; Sig. > 0.05 indicates its absence, while Sig. < 0.05 indicates its presence. The heteroscedasticity test results are in Table 14.

Table 14. Heteroscedasticity test results

Variables	Collinearity Statistic		Description
	Tolerance	VIF	
Principal Leadership (X1)	0,429	0,05	No Heteroscedasticity
Teacher's Role (X2)	0,371	0,05	No Heteroscedasticity

Based on Ttable 14, the Sig. value of the two independent variables is >0.05. So, it can be concluded that there is no heteroscedasticity.

#### 4.2. Hypothesis Test

The analytical techniques utilized to test the hypothesis include Pearson product-moment correlation analysis and multiple correlation. The results of the hypothesis testing are presented as follows:

**Pearson Product-Moment:** Correlation analyzes the relationship between independent variables, principal leadership (X1) and teacher roles (X2), and the dependent variable, demographic bonus (Y). A Sig. value < 0.05 indicates correlation, while Sig. (2-tailed) > 0.05 suggests no correlation. The results of the Pearson product-moment correlation are presented in Table 15.

Table 15. Correlation test results

Relation	Pearson-Correlation (R)	Sig. (2-tailed)
X1-Y	0,452	0,000
X2-Y	0,446	0,000

The first correlation test in Table 15 reveals an R value of 0.452 with Sig. of 0.000, indicating a significant correlation between principal leadership and demographic bonuses in vocational high schools. The second correlation test shows an R value of 0.446 with Sig. of 0.000, signifying a significant relationship between teacher roles and demographic bonuses in vocational high schools.

**Multiple Correlation:** Examines the relationship between principal leadership and teacher roles (independent variables) with demographic bonuses (dependent variable) simultaneously. The Sig. F change determines the simultaneous relationship, with  $< 0.05$  indicating significance and  $> 0.05$  suggesting no significant relationship (Table 16).

Table 16. Multiple correlation test results

Variable Relationship	R	Sig. F change
X1, X2-Y	0,541	0,000

Based on Table 16, the Sig. F value of  $0.000 < 0.05$ , it can be concluded that the principal leadership variable (X1) and the role of teachers (X2) simultaneously have a significant relationship with the demographic bonus (Y).

## 5. Discussion

Based on the results of the hypothesis testing conducted in this study, it was determined that the principal's leadership and the role of teachers exhibit a significant relationship with demographic bonuses, both in partial and simultaneous analyses. The discussion of the hypothesis test results is presented as follows:

### 5.1. Principal Leadership Relationship with Demographic Bonus

The data analysis results reveal a significant association between principal leadership and demographic bonuses in vocational high schools, as evidenced by the Sig. value of 0.000, which is less than 0.05. Furthermore, the correlation coefficient (R) value of 0.452 falls within the range of 0.40 to 0.599, indicating a moderate-level relationship between principal leadership and demographic bonuses. This substantiates the first working hypothesis, affirming a positive connection between the two variables. The findings underscore that as the role of principal leadership increases, so does the attainment of demographic bonuses in the school. School principals emerge as pivotal figures in leveraging the demographic bonus, contributing significantly by

shaping educational policies that align with the needs of human resource development tied to the demographic bonus. In line with previous research, their involvement in curriculum design, effective human resource management, teacher motivation, and the creation of a conducive learning environment all contribute to preparing students with the necessary skills and knowledge for the future [31]. In essence, principals go beyond their role as administrators, evolving into strategic leaders who are critical to realizing the full potential of the demographic dividend. As another study explains [32], [33], principals' commitment is crucial in producing a generation capable of contributing to Indonesia's economic development and growth, in line with the vision of achieving a Golden Indonesia 2045.

### 5.2. The Relationship Between Teacher Roles and Demographic Bonus

The data analysis results reveal a significant relationship between the role of teachers and demographic bonuses in vocational high schools, as indicated by the Sig. value of 0.000, which is less than 0.05. Furthermore, the categorization of the correlation coefficient (R value of 0.446) falls within the range of 0.40- 0.599, showing a moderate level of relationship between teacher roles and demographic bonuses. This affirms the validity of the second working hypothesis. The data elucidates a positive association between the role of teachers and the demographic bonus in realizing the vision of a Golden Indonesia 2045, emphasizing that an increased role of teachers in imparting an understanding of the demographic bonus enhances the likelihood of achieving it. The role of teachers in the context of the demographic bonus is pivotal, extending beyond classroom instruction to shaping and preparing the upcoming generation for optimal utilization of the demographic bonus. Teachers, in fulfilling this role, are tasked with designing, and implementing a curriculum aligned with labor market needs, instilling motivation in students, and fostering the necessary skills and knowledge to leverage the demographic bonus. In line with the research [34], [35], teachers serve as mentors, inspiring students to explore their potential and create opportunities for maximizing the demographic bonus within the framework of economic growth and sustainable development. Therefore, the opinion [36] regarding the role of teachers is not only to deliver subject matter, but also to shape character and guide students towards a deep understanding of their contribution in realizing the vision of a Golden Indonesia 2045 through strategic utilization of the demographic bonus.



### 5.3. *The Relationship between Principal Leadership and Teacher Role with Demographic Bonus in Achieving Golden Indonesia 2024*

The results of the data analysis reveal a significant simultaneous relationship between principal leadership and teacher roles with demographic bonuses in vocational high schools, as indicated by the Sig.  $0.000 < 0.05$ . Examining the categorization value of the correlation coefficient, the R value of 0.541 falls within the interval of 0.40-0.599, indicating a moderate-level relationship between principal leadership, teacher roles, and demographic bonuses in vocational high schools. Consequently, the data substantiates the validity of the hypothesis posited in the third research hypothesis. The analysis results elucidating a positive relationship between the leadership of principals and the roles of teachers with demographic bonuses suggest that elevated levels of principal leadership and teacher roles contribute maximally to achieving the demographic bonus and, consequently, realizing the vision of a Golden Indonesia 2045. This underscores the pivotal connection between principal leadership and teacher roles as critical factors supporting the attainment of the demographic bonus, aligning with the overarching goal of a Golden Indonesia 2045. This study [37], [38], in line with the research results, by exploring and evaluating this relationship, aims to examine the potential for collaboration between principals' leadership and teachers' roles in optimizing the impact of the demographic bonus on education, employment and economic development. In line with similar research [39], Through an understanding of the influential role of principals in shaping education policies and motivating teaching staff, coupled with the role of teachers in knowledge transfer and character development, this research emphasizes the significance of an effective partnership between school-level leadership and the roles of teachers in achieving demographic bonus objectives in Indonesia.

## 6. Conclusion

Based on the study's findings, there is a significant relationship between principal leadership and the role of teachers with the demographic bonus in the vocational high schools of Lampung. This relationship is confirmed through both partial and simultaneous analyses, aligning with Indonesia's objective of achieving a Golden Indonesia by 2045. Analyzing the association between principal leadership and demographic bonus revealed a significant connection in vocational high schools (Sig. value: 0.000), indicating a relationship beyond chance (Sig.  $< 0.05$ ).

The correlation coefficient (R) value of 0.452, falling within the range of 0.40 to 0.599, signifies a moderate relationship, supporting the first hypothesis. This affirms a positive correlation, indicating that enhanced principal leadership is associated with an increase in the demographic bonus in schools. Principals play a pivotal role in optimizing the demographic bonus by actively contributing to shaping education policies aligned with the needs of human capital development. Their engagement in curriculum design, effective human resource management, teacher motivation, and the creation of a conducive learning environment prepares students with essential skills for the future. Principals transcend mere administrative roles, evolving into strategic leaders critical for realizing the full potential of the demographic dividend and achieving the vision of a Golden Indonesia 2045.

Similarly, in examining the relationship between teacher roles and demographic bonuses, the data highlights a significant connection in vocational high schools, with a Sig. value of 0.000. The correlation coefficient (R) value of 0.446, falling within the 0.40-0.599 range, indicates a moderate level of relationship, confirming the second hypothesis. This reasserts a positive association between the role of teachers and the demographic bonus in realizing the vision of a Golden Indonesia 2045. A heightened role of teachers in imparting an understanding of the demographic bonus enhances the likelihood of its achievement. The pivotal role of teachers extends beyond classroom instruction, encompassing the shaping and preparation of the upcoming generation for the optimal utilization of the demographic bonus. Teachers, in fulfilling this role, are tasked with designing, and implementing a curriculum aligned with labor market needs, instilling motivation in students, and fostering the necessary skills and knowledge to leverage [40] the demographic bonus. Teachers serve as mentors, inspiring students to explore their potential and create opportunities for maximizing the demographic bonus within the framework of economic growth and sustainable development. This role transcends mere subject delivery, embracing character shaping and guiding students towards a profound understanding of their contribution to realizing the vision of a Golden Indonesia 2045 through the strategic use of the demographic bonus.

Additionally, this study explored the concurrent relationship between principal leadership and teachers' roles concerning the demographic bonus, focusing on vocational high schools in Lampung. The findings revealed a significant simultaneous relationship (Sig. value: 0.000), affirming the validity of the third research hypothesis.

With a correlation coefficient (R) of 0.541 falling within the 0.40-0.599 range, it indicates a moderate-level relationship between principal leadership, teacher roles, and the demographic dividend. This underscores that heightened principal leadership and teacher roles will contribute maximally to achieving the demographic bonus, aligning with the overarching goal of golden Indonesia 2024. The study's subjective is to investigate the potential collaboration between principal leadership and teachers' roles in optimizing the demographic bonus's impact on education, employment, and economic development. By comprehending the influential role of principals in shaping education policy and motivating teaching staff, coupled with the role of teachers in knowledge transfer and character development, this research underscores the importance of effective partnerships between school-level leadership and teachers in achieving Indonesia's demographic bonus objectives.

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