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RESEARCH ARTICLE

Disparity in VUK Ratio Achievement against GDP among Provinces in Indonesia: Target Gap Analysis and Regional Quadrant Mapping

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Abstract: This study aims to analyze disparities in the achievement of the Volume Usaha Kredit (VUK; credit business volume)-to-Gross Regional Domestic Product (GRDP) ratio across provinces in Indonesia through target-achievement gap analysis and regional quadrant mapping. This study employs a descriptive-evaluative quantitative approach using secondary data from 38 provinces in Indonesia. The analysis covers historical data from 2020 to 2024, target and achievement data from 2025 to 2026, and target/projection data from 2027 to 2029 as a policy context. The analytical techniques include descriptive statistics, trend analysis, gap analysis, ranking analysis, and quadrant mapping. The results show that the national VUK-to-GRDP ratio declined from 1.10 in 2020 to 0.97 in 2024. National achievement also remained below the target, with a gap of -0.08 in 2025, widening to -0.13 in 2026. At the provincial level, substantial disparities were observed. Several provinces, including East Nusa Tenggara, West Kalimantan, Central Java, East Kalimantan, and South Sulawesi, recorded positive gaps in 2025, while Papua Highlands, Central Papua, South Papua, Papua, and Bali recorded the largest negative gaps. The 2025 quadrant mapping shows that 13 provinces are classified as leading regions, 6 as potential regions, 6 as under-optimized regions, and 13 as priority intervention regions. These findings indicate that policies to improve the VUK-to-GRDP ratio should be designed based on regional characteristics rather than a uniform national approach. This study contributes by integrating trend analysis, target-achievement gap analysis, and regional quadrant mapping as a basis for evaluating interprovincial disparities.

Keywords: Regional disparity; VUK ratio; GRDP; gap analysis; quadrant mapping

1. Introduction

The disparity in development achievements between regions remains one of the important issues in Indonesia's economic development. In this study, VUK refers to Volume Usaha Kredit (credit business volume), while the VUK-to-GRDP ratio is used to assess the relative contribution of credit business volume to provincial economic capacity. Differences in



economic capacity, production structure, infrastructure, investment, quality of human resources, and the ability of regions to optimize their economic potential cause achievements between provinces to not always progress in a balanced manner. In the context of regional economics, Gross Regional Domestic Product (GRDP) becomes one of the main indicators used to assess the capacity and performance of a region's economy. GRDP can be used to illustrate the added value generated by all economic activities in an area, making it an important basis for evaluating regional economic performance and the direction of regional development (Central Bureau of Statistics, 2024). GRDP not only serves as a measure of the economic capacity of a region but also as a basis for evaluating development and formulating regional economic policies. Therefore, the use of GDP as a benchmark in assessing the achievement of certain economic indicators becomes relevant, especially when the research aims to examine the relative contribution of an activity or economic variable to the regional economic capacity. In this study, the VUK to GDP ratio is used as an indicator to assess the relative contribution of VUK to the provincial economy.

The issue of regional economic inequality in Indonesia has been extensively studied in previous literature. Several studies show that income inequality and interregional development inequality are still influenced by variations in investment, economic capacity, labor, technology, and regional characteristics. Hakim and Rosini (2022) show that investment plays an important role in explaining the dynamics of regional inequality in Indonesia. Fazaalloh (2019) also found that foreign direct investment is related to income inequality in Indonesia. Meanwhile, Fathonah and Suseno (2024) emphasize that investment, labor, and technology influence per capita GDP and interprovincial income inequality. Another study by Mardhiyah and Fitrawaty (2025) also emphasizes that interprovincial income inequality remains an issue influenced by various regional economic factors.

Although these studies have provided important insights into regional economic disparities, most of the research still focuses on income inequality, GDP per capita, investment, or overall economic growth. Studies that specifically integrate the VUK ratio with GDP, target achievements, actual achievements, and regional quadrant mapping are still relatively limited. However, this approach is important because inequality cannot only be seen from the size of GDP, but also from the region's ability to achieve certain indicator targets compared to its economic capacity. Thus, the analysis of the gap between targets and achievements can provide a more evaluative picture compared to merely analyzing economic trends.

Preliminary research data indicate that the national achievement of the VUK to GDP ratio has not fully met the target. Based on data processing results, the national ratio for 2024 is 0.97, while the target ratio for 2025 is 1.10 and the achievement for 2025 is 1.02. This means there is a national gap of -0.08 or an achievement level of about 92.73%. In 2026, the national target ratio is 1.13, while the achievement is 1.00, resulting in an increased gap of -0.13 or an achievement level of about 88.50%. These initial findings indicate a national discrepancy between the target and the achievement, while also opening up further analysis on which provinces exceed the target and which provinces are still lagging behind.

The disparity in achievements between provinces is also evident from the distribution of the VUK to GDP ratio. Some provinces show relatively high ratios, while others have very low ratios. In 2024, provinces such as Bali, East Nusa Tenggara, West Kalimantan, Special Region of Yogyakarta, and Central Java are in the highest ratio group. Conversely, Mountain Papua, West Papua, Central Papua, Southwest Papua, and North Sulawesi are in the lowest ratio group. This disparity shows that the economic capacity of the region, as reflected in GDP, does not always align with the relative contribution of VUK. Therefore, ratio-based analysis needs to be combined with a regional mapping approach so that policy recommendations are not uniform across all provinces. The quadrant mapping approach becomes relevant because it can group provinces based on a combination of economic capacity and ratio achievement. This mapping allows for the identification of provinces that are classified as superior, potential, not yet optimal, and priority for intervention. Provinces with high GDP and high ratios can be positioned as superior regions, while provinces with high GDP but low ratios

indicate suboptimal conditions. Conversely, provinces with low GDP but high ratios can be categorized as potential regions, while provinces with low GDP and low ratios can become intervention priorities. Mapping models like this are important because regional development policies require different approaches according to the characteristics of each area's achievements.

The novelty of this research lies in the integration of achievement disparity analysis, target-realization gap, and regional quadrant mapping in assessing the VUK to GDP ratio between provinces in Indonesia. Unlike previous studies that focused more on income inequality or the determinants of per capita GDP, this research uses the VUK-to-GDP ratio as a tool to evaluate the relative contribution of VUK to the regional economy. In addition, this research not only examines historical data but also compares the targets and achievements for the years 2025–2026 and uses targets/projections up to 2029 as the context for policy direction.

Based on the aforementioned description, this research aims to analyze the disparity in the VUK to GDP ratio achievements between provinces in Indonesia through target gap analysis and regional quadrant mapping. Specifically, this research aims to: first, analyze the development of the VUK to GDP ratio between provinces during the years 2020–2024; second, measure the gap between the target and the achievement of the VUK to GDP ratio for the years 2025–2026; third, map provinces based on the combination of the VUK to GDP ratio and GDP; and fourth, formulate policy recommendations based on regional categories.

2. Literature Review

2.1. Regional Economic Development and Interregional Disparities

Regional economic development is a process of increasing the economic capacity of a region characterized by output growth, productivity improvement, job opportunity expansion, and the strengthening of the regional economic structure. In the context of an archipelagic country like Indonesia, regional economic development faces complex challenges because each province has different geographical, demographic, infrastructure, resource, and institutional capacity characteristics. These differences cause the achievements of development between regions to not always progress evenly.

Regional disparities occur when there are significant differences in a region's ability to generate income, attract investment, develop infrastructure, and improve the welfare of its people. Suparman and Muzakir (2023) explain that regional disparities in Indonesia are related to factors such as human capital, unemployment, and economic growth. The study shows that regional economic development is not only determined by the magnitude of economic output but also by the quality of supporting development factors in each region.

The research by Hakim and Rosini (2022) also shows that investment plays an important role in explaining regional income inequality in Indonesia. Using provincial panel data, the study found that differences in public investment, domestic investment, and foreign investment can affect the level of inter-regional inequality. These findings strengthen the argument that regional inequality cannot be separated from variations in economic capacity and development policies in each region.

Additionally, Fazaalloh (2019) examined the relationship between foreign direct investment and income inequality in Indonesia. The research shows that foreign investment is related to economic growth and income inequality, although the impact is not always direct. This indicates that an increase in economic activity in a region does not necessarily reduce inequality automatically if the economic benefits are not evenly distributed.

Based on the study, regional inequality can be understood as a multidimensional issue that is not only related to economic growth but also to the ability of regions to utilize economic resources productively. Therefore, an analysis of the disparity in the VUK to GDP ratio is

important to see whether the contribution of VUK to the regional economic capacity has developed evenly or instead shows disparities between provinces.

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2.3. The VUK Ratio to GDP as an Indicator of Relative Contribution

A ratio is a comparative measure used to assess the relationship between two variables. In this study, the VUK to GDP ratio is used to assess the relative contribution of VUK to the region's economic capacity. The use of ratios becomes important because the absolute value of VUK alone is not sufficient to describe the position of a province. Provinces with a high VUK value do not necessarily have a high relative contribution if their GDP is also very large. Conversely, provinces with a lower VUK value can have a high ratio if the VUK is quite dominant in their economic structure. Conceptually, the VUK to GDP ratio can be used as a measure of the intensity of VUK's contribution to the regional economy. A high ratio indicates that VUK has a relatively large contribution to GDP, while a low ratio indicates that VUK's contribution to the regional economy is still limited. Thus, this ratio can serve as an evaluative indicator to compare achievements between provinces more proportionally.

A ratio-based approach also helps avoid economic size bias. If the analysis only uses the absolute value of VUK or GDP, provinces with a large economic scale tend to appear more dominant. However, by using ratios, the analysis can see how strong the position of VUK is compared to the economic capacity of each province. Therefore, the VUK to GDP ratio is relevant for assessing disparities in achievements between regions. In the context of this article, the VUK to GDP ratio is not only analyzed historically for the period 2020–2024 but

also compared with the targets and achievements for the years 2025–2026. This approach provides a more evaluative picture because the research not only assesses the position of the ratio between provinces but also examines the provinces' ability to achieve the set targets.

2.4. Target and Achievement Gaps as Tools for Regional Performance Evaluation

Regional development evaluation is not sufficient by merely looking at the actual value of an indicator. The analysis also needs to compare the actual achievement with the established target. The comparison between targets and actual achievements can show whether a region has reached its development goals, exceeded the targets, or is still lagging behind the targets.

Gap analysis is an approach used to measure the difference between the expected condition and the actual condition. In the context of this research, the gap is calculated as the difference between the achievement of the VUK to GDP ratio and the target VUK to GDP ratio. If the gap value is positive, then the province's achievement exceeds the target. If the gap value is negative, then the province's achievement does not meet the target. If the gap value is zero, then the province's achievement is in line with the target.

The target-achievement gap approach is important because it can provide sharper information compared to ordinary descriptive analysis. Provinces with high ratios do not necessarily have good performance if their targets are much higher than the actual achievements. Conversely, provinces with moderate ratios can be categorized as successful if they are able to meet or exceed the established targets. Therefore, gap analysis can be used to evaluate the effectiveness of target-based development achievements. In this study, gap analysis is used to assess the achievement of the VUK ratio against GDP for the years 2025 and 2026. The results of the gap analysis will show which provinces have successfully exceeded the targets, which provinces are close to achieving the targets, and which provinces still require policy intervention. Thus, this analysis can serve as a basis for formulating regional development policy priorities.

2.5. Mapping the Regional Quadrants

Quadrant mapping is an analytical approach used to classify regions based on the combination of two main indicators. In regional economic research, the quadrant approach is often used to classify areas based on economic growth, sectoral contribution, GDP per capita, or other development indicators. One commonly used approach in regional analysis is the Klassen typology, which classifies areas based on a combination of economic growth and per capita income. In this study, the quadrant mapping is used to classify provinces based on a combination of GDP and the VUK ratio to GDP. GDP is used as an indicator of the region's economic capacity, while the VUK ratio to GDP is used as an indicator of VUK's relative contribution. The combination of these two indicators results in four categories of regions: superior provinces, potential provinces, suboptimal provinces, and intervention priority provinces.

Superior provinces are provinces with high GDP and a high VUK-to-GDP ratio. This group indicates regions with significant economic capacity and relatively strong VUK contributions. Potential provinces are those with low GDP but a high VUK-to-GDP ratio. This group indicates regions with limited economic capacity, yet VUK has a relatively important contribution to the local economy. Suboptimal provinces are those with high GDP but a low VUK-to-GDP ratio. This group indicates that despite the region's large economic capacity, the relative contribution of VUK is still not optimal. Meanwhile, intervention priority provinces are those with low GDP and a low VUK-to-GDP ratio. This group needs policy attention because it has limited economic capacity and low VUK contribution.

The quadrant mapping approach has the advantage that its analysis results are easy to understand and can be directly translated into policy recommendations. Each category of region requires a different strategy. Superior provinces can serve as benchmarks for best practices, potential provinces need support to enhance their economic capacity, suboptimal

provinces require strategies to strengthen VUK contributions, while priority intervention provinces need affirmative policies and more intensive assistance.

2.6. Previous Research

Several previous studies have discussed regional disparities and the factors influencing regional economic development in Indonesia. Suparman and Muzakir (2023) examined the relationship between regional inequality, human capital, unemployment, and economic growth in Indonesia using a panel regression approach. The research shows that regional inequality is closely related to the quality of human capital and labor market conditions. These findings are relevant to this research because they show that differences in achievements between regions are not only caused by economic capacity but also by supporting development factors.

Hakim and Rosini (2022) analyzed the impact of investment on regional income inequality in Indonesia. The research distinguishes between public investment, domestic private investment, and foreign investment. The results show that different types of investment can have varying impacts on regional inequality. This study provides a basis that differences in economic capacity and investment between provinces can lead to disparities in development achievements.

Fazaalloh (2019) examined the impact of foreign direct investment on income inequality in Indonesia. The research found that foreign investment is related to inequality through the mechanism of economic growth. These findings indicate that an increase in economic activity does not automatically reduce inequality if the distribution of economic benefits is uneven. In the context of this research, this is relevant because the achievement of the VUK ratio to GDP also needs to be viewed inter-provincially, not just nationally.

Fathonah and Suseno (2024) examined the influence of investment, capital expenditure, labor, and technology on per capita GDP and income inequality in Indonesia. The research showed that per capita GDP and income inequality are influenced by various factors of economic development. This study supports the argument that GDP per capita, as an indicator of regional economic capacity, needs to be analyzed alongside other indicators to provide a more comprehensive picture of development.

Mardiyah and Fitrawaty (2025) also discuss the determinants of interprovincial income inequality in Indonesia. The research emphasizes that income inequality remains an important issue in regional development and is influenced by variations in economic conditions between provinces. This study reinforces the urgency of researching the disparity in the VUK to GDP ratio, especially because it employs a target-based evaluative approach.

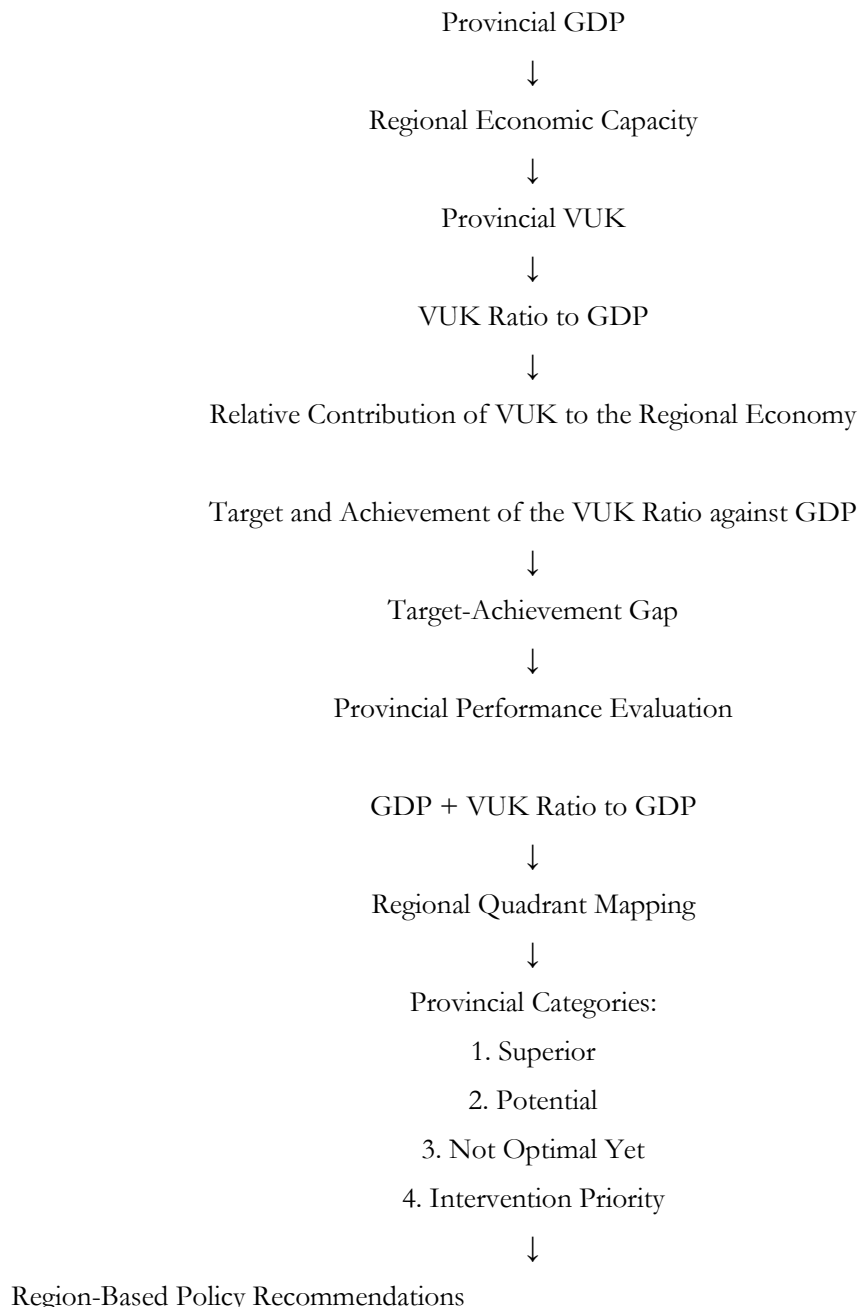
Based on previous research, it can be concluded that studies on regional disparities in Indonesia generally focus on income disparity, investment, GDP per capita, human capital, unemployment, and economic growth. However, studies that specifically analyze the disparity in the VUK to GDP ratio achievement by combining the target-achievement gap and regional quadrant mapping are still limited. Therefore, this research aims to fill that gap by offering an evaluative and spatial-descriptive approach to identify superior, potential, suboptimal, and intervention priority provinces.

2.7. Framework of This

This research is built on the idea that GDP reflects the economic capacity of the region, while the VUK-to-GDP ratio reflects the relative contribution of VUK to the provincial economy. The differences in the ratio values between provinces indicate variations in VUK's contribution to the regional economic structure. In addition, the comparison between the target and the achievement of the VUK to GDP ratio shows the level of success of the province in reaching the established goals.

The analysis begins by examining the development of the VUK ratio against GDP from 2020 to 2024. Next, the research measures the gap between the target and achievement for the years 2025–2026. The results of the gap analysis are used to identify provinces that exceed the target and those that have not yet reached the target. After that, the research conducts a quadrant mapping based on GDP and the VUK ratio against GDP to categorize provinces into superior, potential, suboptimal, and intervention priority categories.

The framework of this research can be explained as follows:



Region-Based Policy Recommendations

With that framework, this research not only explains the differences in achievements between provinces but also provides a basis for regional classification that can be used to formulate more targeted policy recommendations.

Research Position Summary

Aspect	Previous Research	This Research
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Main focus	Income inequality, investment, GDP per capita, economic growth	Inequality in VUK ratio achievement against GDP
Unit of analysis	Province/district/city	38 provinces in Indonesia
Approach	Panel regression, SEM-PLS, inequality analysis	Trend analysis, gap analysis, ranking, and quadrant mapping
Main indicators	GDP, GDP per capita, Gini ratio, investment, labor force	VUK ratio against GDP, targets, achievements, GDP
Contribution	Explaining the determinants of inequality	Identifying target achievements and regional categories
Output	Relationships between variables	Maps of superior, potential, suboptimal provinces, and intervention priorities

3. Research Method

3.1. Types and Approaches to Research

This research uses a descriptive-evaluative quantitative approach. The quantitative approach is used because this research analyzes numerical data in the form of the VUK ratio to GDP, VUK value, GDP, target ratio, achievement ratio, and the target-achievement gap between provinces in Indonesia. The descriptive approach is used to describe the development of the VUK ratio to GDP, the distribution of achievements between provinces, and the position of each province based on the analyzed indicators.

Meanwhile, the evaluative approach is used because this research not only describes the data conditions but also compares the actual achievements with the established targets. The evaluation was conducted thru a gap analysis between the target and the achievement of the VUK ratio against GDP in 2025 and 2026. Thus, this research is able to identify provinces that have exceeded the target, are close to reaching the target, or are still lagging behind the target.

3.2. Types and Sources of Data

The data used in this research is secondary data that includes the VUK to GDP ratio, VUK, GDP, targets, and achievements by province in Indonesia. The unit of analysis in this study is the 38 provinces in Indonesia, with national data used as an aggregate comparison.

The period of data used consists of three time groups. First, historical data from 2020–2024 is used to analyze the development of the VUK to GDP ratio before the target-achievement evaluation period. Second, data from 2025–2026 is used to evaluate the gap between the target and the achievement of the VUK to GDP ratio. Third, target/projection data from 2027–2029 is used as a context for future achievement directions, although it is not the main basis for evaluation because it is not actual realization data.

In summary, the structure of the research data can be seen in Table 1.

Table 1. Research Data Structure

Data Components	Description
Type of data	Secondary data
Unit of analysis	38 provinces in Indonesia
Comparative data	National total
Historical period	2020–2024
Target-achievement evaluation period	2025–2026
Target/projection period	2027–2029
Main variable	VUK ratio to GDP



Supporting variables	VUK and GDP
Evaluation variables	Target ratio, achievement ratio, gap, and percentage achievement

3.3. Population and Sample of the Study

The population in this study consists of all provinces in Indonesia included in the VUK to PDRB ratio dataset. Since all available provinces in the data are analyzed, this study uses a census technique, not sampling. Thus, all 38 provinces in Indonesia become the units of observation for the research.

The use of census techniques was chosen so that the research results could comprehensively depict the disparity in the VUK-to-GRDP ratio at the provincial level. National data are not included as part of the provincial units, but are used as an aggregate comparison to assess the position of national achievement against provincial achievements.

3.4. Variables and Operational Definitions

The main variable in this study is the VUK ratio to GDP. Additionally, this study also uses the variables VUK, GDP, target ratio, achievement ratio, target-achievement gap, and percentage of target achievement. The operational definitions of each variable are presented in Table 2.

Table 2. Operational Definitions of Variables

Variable	Symbol	Operational Definition	Unit/Measure
VUK to GDP Ratio	RATIO	The comparison between the value of VUK and the provincial GDP, indicating the relative contribution of VUK to the region's economic capacity	Percentage/ratio
VUK	VUK	The value or volume of VUK by province in a specific period	Absolute value
Gross Regional Domestic Product	GDP	The gross value added generated by economic activities in a province	GDP value
Target Ratio	TR	The VUK to GDP ratio value set as the target achievement	Percentage/ratio
Achievement Ratio	CR	The actual/realized VUK to GDP ratio value in the evaluation year	Percentage/ratio
Target-Achievement Gap	GAP	The difference between the achievement ratio and the target ratio	Percentage points
Achievement Percentage	PP	The level of achievement of the achievement ratio compared to the target ratio	Percentage

3.5. Data Processing Techniques

Data processing is carried out thru several stages. First, the data is cleaned by separating national data and provincial data. National data is used as a comparison, while data from the 38 provinces is used as the main unit of analysis. Second, a column structure check is conducted to identify historical data, targets, achievements, VUK, and PDRB. Third, derivative variable calculations are performed, including ratio changes, target-achievement gaps, target achievement percentages, and regional quadrant categories.

The stages of data processing in this research include:

Stage	Process	Output
1	Data cleaning	Provincial and national data separated
2	Variable identification	Ratio, VUK, PDRB, target, and achievement columns identified



3	Trend calculation	Changes in the VUK ratio to PDRB from 2020–2024
4	Gap calculation	Difference between achievement and target for 2025–2026
5	Achievement calculation	Percentage of achievement against target
6	Provincial ranking	Provinces with the highest and lowest achievements
7	Quadrant mapping	Classification of provinces into four regional categories

3.6. Data Analysis Techniques

The data analysis techniques used in this research consist of descriptive statistics, trend analysis, gap analysis, ranking analysis, and quadrant mapping. The combination of these techniques is employed so that the research not only explains the condition of the data but also evaluates achievements and groups provinces based on regional performance characteristics.

3.6.1. Descriptive Statistics

Descriptive statistics are used to describe the characteristics of the VUK to GDP ratio data, VUK, GDP, targets, and achievements. This analysis includes the average value, minimum value, maximum value, and the distribution of achievements between provinces. Descriptive statistics are used as an initial basis to observe the variation in achievements between regions.

3.6.2. Trend Analysis

Trend analysis is used to observe the development of the VUK ratio against GDP during the period 2020–2024. This analysis is conducted by comparing the ratio values at the beginning and end of the historical period, namely the years 2020 and 2024. The change in the ratio is used to identify provinces that have experienced an increase, decrease, or stagnation.

The change in ratio is calculated using the formula: $\text{Change in Ratio} = \text{Ratio 2024} - \text{Ratio 2020}$ The interpretation of the change in ratio is as follows:

Ratio Change Value	Interpretation
Positive	VUK ratio to GDP increases
Zero	VUK ratio to GDP remains unchanged
Negative	VUK ratio to GDP decreases

3.6.3. Gap Analysis

Gap analysis is used to measure the difference between the target and the achievement of the VUK ratio against the GDP. This analysis is conducted for the years 2025 and 2026 because both years have target and achievement data. The gap is calculated using the formula:

$\text{Gap} = \text{Achievement Ratio} - \text{Target Ratio}$ The interpretation of the gap value is as follows:

Gap Value	Interpretation
$\text{Gap} > 0$	Achievement exceeds the target
$\text{Gap} = 0$	Achievement meets the target
$\text{Gap} < 0$	Achievement does not meet the target

In addition to calculating the absolute gap, this study also calculates the target achievement percentage using the formula:

$\text{Achievement Percentage} = (\text{Achievement Ratio} / \text{Target Ratio}) \times 100\%$



The target achievement categories are presented in Table 3.

Table 3. Target Achievement Percentage Categories

Achievement Percentage	Category
≥ 100%	Achieved
80%–99.99%	Almost achieved
50%–79.99%	Quite low
< 50%	Very low

3.6.4. Ranking Analysis

Ranking analysis is used to identify provinces with the highest and lowest achievements. Ranking is conducted based on several indicators, namely the VUK to GDP ratio for 2024, the target-achievement gap for 2025, the target-achievement gap for 2026, and the percentage of target achievement. Ranking analysis helps to show provinces that serve as benchmarks and provinces that need policy attention.

3.6.5. Quadrant Mapping

Quadrant mapping is used to map provinces based on the combination of GDP and the VUK-to-GDP ratio. In this study, GDP is used as an indicator of the region's economic capacity, while the VUK-to-GDP ratio is used as an indicator of the relative contribution of VUK to the provincial economy.

Quadrant mapping is carried out using two main axes:

Axis	Indicator	Meaning
X Axis	GDP	Regional economic capacity
Y Axis	VUK ratio achievement to GDP	Relative contribution of VUK to GDP

The quadrant boundaries are determined using the median GDP value and the median achievement ratio of VUK to GDP. The use of the median was chosen because interprovincial data tends to have significant differences, especially in GDP. The median is more appropriate than the average because it is more resistant to the influence of extreme values.

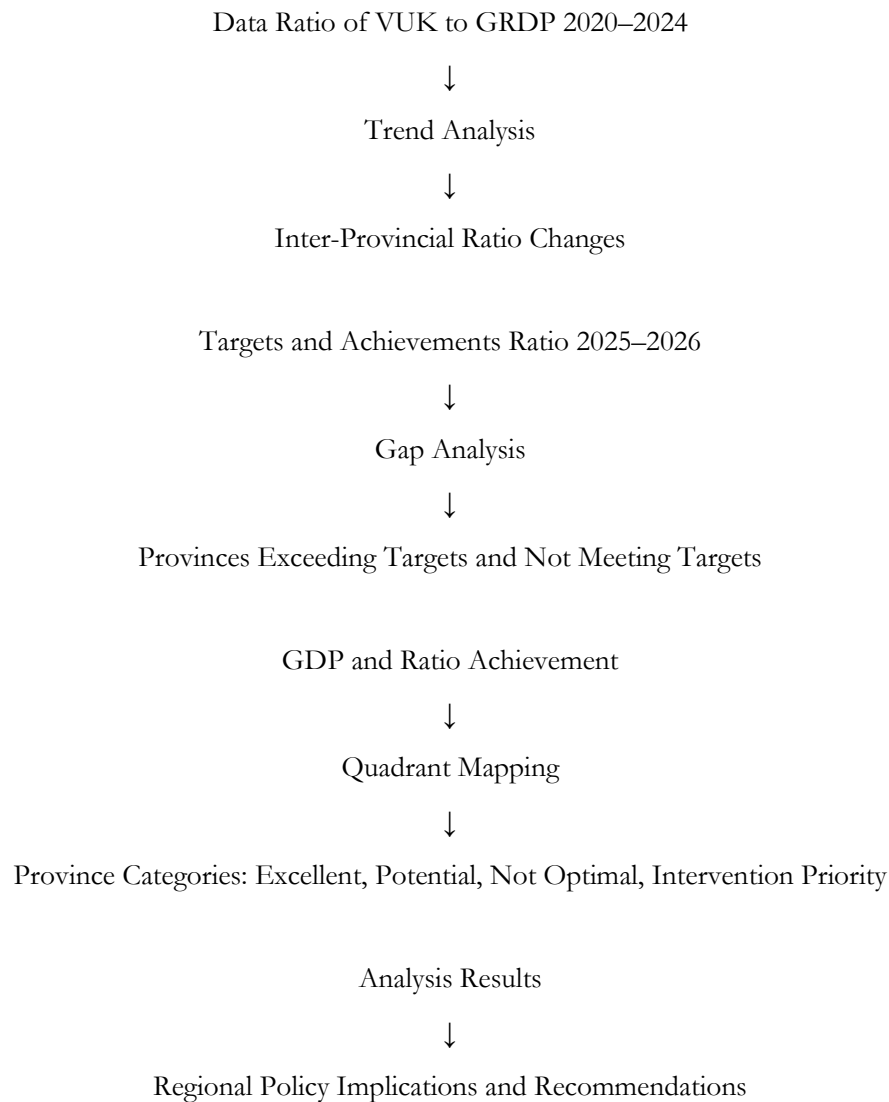
The quadrant classification is presented in Table 4.

Table 4. Regional Quadrant Classification

Quadrant	Condition	Region Category	Interpretation
I	High GDP, high ratio contribution	Excellent	The province has a large economic capacity and a relatively high VUK
II	Low GDP, high ratio	Potential	The province has a high VUK ratio despite its economic capacity not being large
III	High GDP, low ratio	Not optimal	The province has a large economic capacity, but the relative VUK contribution is still low
IV	Low GDP, low ratio	Intervention priority	The province has low economic capacity and low relative VUK contribution

The framework of this research analysis begins with the processing of historical data on the VUK ratio against GDP for the years 2020–2024. This data is used to observe the development of the ratio between provinces. Next, target and achievement data for the years 2025–2026 are used to calculate the gap and percentage of target achievement. After that, GDP data and ratio achievements are used to map provinces into regional quadrants.

The research analysis framework can be explained as follows:



3.7. Validity and Limitations of the Analysis

The validity of the analysis is maintained through the use of consistent data at the provincial level and the processing of the same indicators for all units of analysis. All provinces were analyzed using a uniform formula, so that the results of inter-regional comparisons could be conducted proportionally.

However, this study has several limitations. First, the research uses provincial aggregate data, so it is not able to explain variations at the district/city level. Second, this research is descriptive-evaluative in nature, so it is not intended to test causal relationships between variables. Third, the target data for the years 2027–2029 are projections, so they are only used as a context for policy direction and not as a basis for evaluating actual realization. Fourth,

the research has not included other explanatory variables such as investment, labor, infrastructure, education, or regional policies.

3.8. Analysis Tools

Data processing is carried out using spreadsheet software to clean the data, calculate derived variables, create rankings, and perform quadrant mapping. The processed results are then presented in the form of tables, graphs, and narrative interpretations to support the discussion.

Summary of Research Methods

Component	Description
Approach	Descriptive-evaluative quantitative
Type of data	Secondary data
Unit of analysis	38 provinces in Indonesia
Historical period	2020–2024
Evaluation period	2025–2026
Target/projection period	2027–2029
Analysis techniques	Descriptive statistics, trend analysis, gap analysis, ranking analysis, quadrant mapping
Quadrant basis	Median GDP and median achievement ratio of VUK to GDP
Main output	Categories of superior, potential, suboptimal, and intervention priority provinces

4. Results and Discussion

4.1. Descriptive Statistics of VUK Ratio Achievement against GDP

The data processing results show that the achievement of the VUK to GDP ratio between provinces in Indonesia has a significant variation. At the national level, the VUK to GDP ratio in 2020 was recorded at 1.10, then decreased to 0.97 in 2024. This decrease of -0.13 points indicates that the relative contribution of VUK to the national GDP weakened during the historical period of 2020–2024.

In 2025, the national ratio target was set at 1.10, while the actual achievement was only 1.02. Thus, there was a gap of -0.08 or an achievement rate of 92.73%. This condition continued in 2026, when the national target was 1.13, but the achievement was only 1.00. The gap in 2026 increased to -0.13, with an achievement rate of 88.50%. Table 5. Summary of National VUK Ratio Achievement against GDP

Indicator	Value
National ratio 2020	1.10
National ratio 2024	0.97
Change in national ratio 2020–2024	-0.13
Target national ratio 2025	1.10
Achievement of national ratio 2025	1.02
Gap in national ratio 2025	-0.08

Achievement of national target 2025	92.73%
Target national ratio 2026	1.13
Achievement of national ratio 2026	1.00
Gap in national ratio 2026	-0.13
Achievement of national target 2026	88.50%

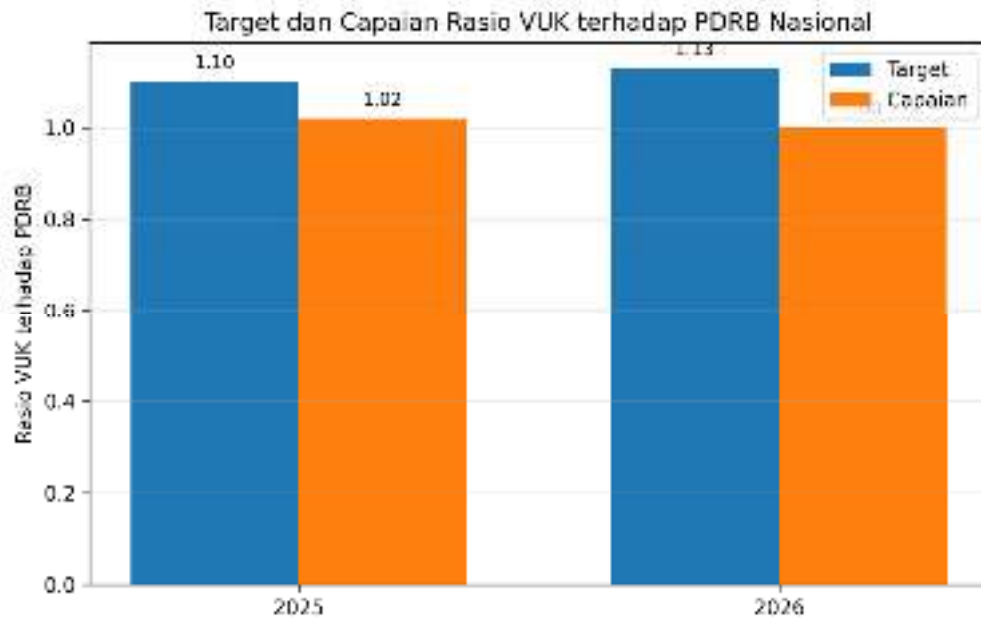


Figure 1. Target and Achievement of VUK Ratio against National GDP for 2025–2026.

These findings indicate that, on a national aggregate level, the achievement of the VUK ratio against the GDP has not fully met the target. The decrease in the achievement level from 92.73% in 2025 to 88.50% in 2026 indicates a weakening of the achievement relative to the target. Thus, further analysis at the provincial level is needed to identify which regions are driving national achievements and which regions are still lagging behind.

4.2. Trend of VUK Ratio to GDP from 2020–2024

Trend analysis shows that the development of the VUK ratio to GDP between provinces does not move uniformly. Some provinces experienced an increase in the ratio, while the majority of others experienced a decrease. This indicates an imbalance in the dynamics of VUK's contribution to GDP across regions.

The province with the largest ratio increase during the 2020–2024 period is East Nusa Tenggara, with an increase of 3.00 points, from 3.17 in 2020 to 6.17 in 2024. This increase indicates that the relative contribution of VUK to the GDP in East Nusa Tenggara has strengthened significantly. Other provinces that experienced an increase are Central Java, South Papua, South Sulawesi, Papua, Central Papua, Southwest Papua, Maluku, South Sumatra, and East Kalimantan.

Table 6. Provinces with Increased VUK Ratio to GDP 2020–2024

Rank	Province	Ratio 2020	Ratio 2024	Change
1	Nusa Tenggara Timur	3,17	6,17	3,00
2	Jawa Tengah	1,90	2,16	0,26
3	Papua Selatan	0,00	0,21	0,21

4	Sulawesi Selatan	0,68	0,86	0,18
5	Papua	0,15	0,30	0,15
6	Papua Tengah	0,00	0,10	0,10
7	Papua Barat Daya	0,00	0,10	0,10
8	Maluku	0,33	0,43	0,10
9	Sumatera Selatan	0,39	0,48	0,09
10	Kalimantan Timur	0,34	0,42	0,08

On the contrary, several provinces experienced a significant decrease in their ratios. Bali experienced the largest decline, from 7.03 in 2020 to 6.20 in 2024, a decrease of -0.83 points. Although Bali still has a high ratio, the decline indicates that the relative contribution of VUK to GDP has weakened. Other provinces that experienced significant declines are Aceh, West Sumatra, Special Region of Yogyakarta, Central Sulawesi, West Sulawesi, Banten, Central Kalimantan, Bengkulu, and West Java.

Table 7. Provinces with Decreased VUK Ratio to GDP 2020–2024

Rank	Province	Ratio 2020	Ratio 2024	Change
1	Bali	7,03	6,20	-0,83
2	Aceh	1,06	0,45	-0,61
3	Sumatera Barat	1,68	1,08	-0,60
4	Daerah Istimewa Yogyakarta	2,97	2,44	-0,53
5	Sulawesi Tengah	0,60	0,14	-0,46
6	Sulawesi Barat	0,54	0,20	-0,34
7	Banten	0,86	0,52	-0,34
8	Kalimantan Tengah	1,63	1,32	-0,31
9	Bengkulu	0,71	0,43	-0,28
10	Jawa Barat	0,91	0,65	-0,26

These findings indicate that the trend of the VUK to PDRB ratio does not always directly correlate with the economic scale of the province. Some provinces with relatively large economic scales actually experienced a decrease in the ratio, while some provinces with smaller economic scales showed an increase. This reinforces the importance of using the ratio as a measure of relative contribution, not just the absolute value of VUK or PDRB.

4.3. Ranking of VUK to PDRB

Ratio in 2024 In 2024, the province with the highest VUK to PDRB ratio is Bali, at 6.20. The next positions are occupied by Nusa Tenggara Timur at 6.17, Kalimantan Barat at 4.38, Daerah Istimewa Yogyakarta at 2.44, and Jawa Tengah at 2.16.

Table 8. The Ten Provinces with the Highest VUK to GDP Ratios in 2024

Rank	Province	Ratio 2024	Quadrant 2025
1	Bali	6,20	Superior
2	Nusa Tenggara Timur	6,17	Potential
3	West Kalimantan	4,38	Superior
4	Special Region of Yogyakarta	2,44	Potential
5	Central Java	2,16	Superior
6	Central Kalimantan	1,32	Superior
7	East Java	1,29	Superior
8	West Sumatra	1,08	Superior
9	Sulawesi Selatan	0,86	Superior
10	Nusa Tenggara Barat	0,80	Potential

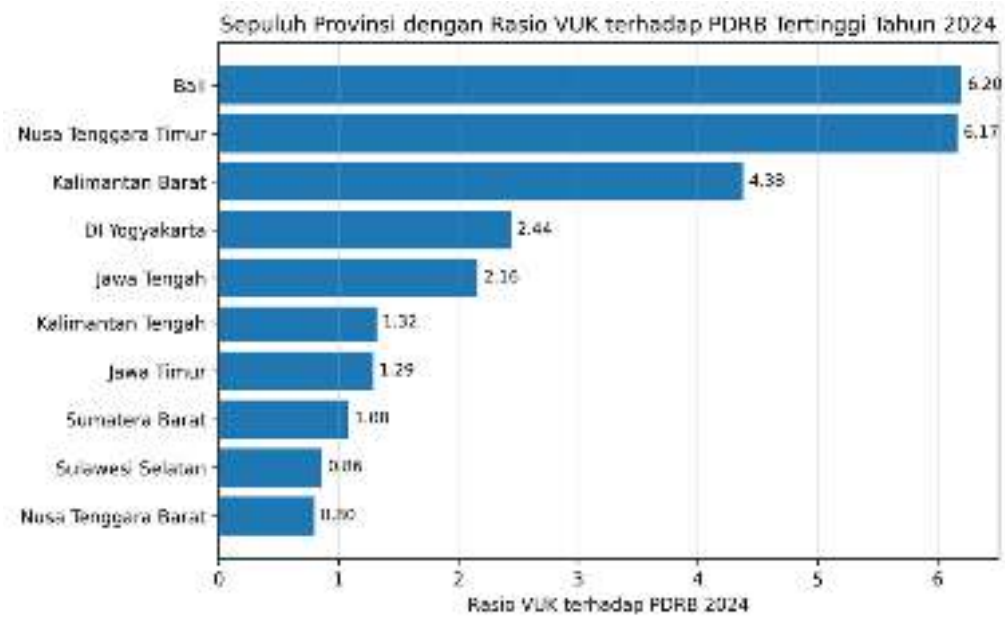


Figure 2. Ten Provinces with the Highest VUK to GDP Ratio in 2024.

Provinces with high ratios do not all come from regions with the largest GDP. East Nusa Tenggara and the Special Region of Yogyakarta, for example, are in the high ratio group but in the 2025 mapping are categorized as potential provinces. This means that VUK's relative contribution to GDP in the region is quite strong, even though its economic capacity is not as large as that of major provinces such as DKI Jakarta, West Java, or East Java.

These findings show that the ratio of VUK to GDP provides different information from absolute GDP. Provinces with large economies do not necessarily have the highest ratio, while provinces with smaller economies can have a relatively dominant contribution of VUK to the regional economy.

4.4. Target Gap and Achievement of the VUK to GDP Ratio in 2025

The results of the gap analysis in 2025 show that not all provinces are able to achieve the target ratio of VUK to GDP. Some provinces managed to exceed the target, while others are still below the target.

The province with the largest positive gap in 2025 is East Nusa Tenggara, with a gap of 1.55. The target ratio of East Nusa Tenggara in 2025 is 3.48, while the achievement reaches 5.03. The second position is occupied by West Kalimantan, with a gap of 1.53, followed by Central Java at 0.37, East Kalimantan at 0.11, and South Sulawesi at 0.10.

Table 9. Provinces with the Largest Positive Gap in 2025

Rank	Province	Target 2025	Achievement 2025	Gap
1	Nusa Tenggara Timur	3,48	5,03	1,55
2	West Kalimantan	3,86	5,39	1,53
3	Central Java	2,00	2,37	0,37
4	East Kalimantan	0,33	0,44	0,11
5	Sulawesi Selatan	0,75	0,85	0,10
6	East Java	1,28	1,34	0,06
7	North Kalimantan	0,41	0,43	0,02

Meanwhile, the province with the deepest negative gap is Mountainous Papua, with a gap of -1.17. The target ratio of Mountainous Papua in 2025 is 1.17, but the achievement is still 0.00.

Other provinces with large negative gaps are Central Papua, South Papua, Papua, Bali, North Sulawesi, Central Sulawesi, West Papua, North Maluku, and Southwest Papua.

Table 10. Provinces with the Deepest Negative Gap in 2025

Rank	Province	Target 2025	Achievement 2025	Gap
1	Papua Pegunungan	1,17	0,00	-1,17
2	Central Papua	1,17	0,03	-1,14
3	Papua Selatan	1,17	0,17	-1,00
4	Papua	1,17	0,22	-0,95
5	Bali	7,43	6,57	-0,86
6	North Sulawesi	0,85	0,19	-0,66
7	Sulawesi Tengah	0,65	0,08	-0,57
8	West Papua	0,53	0,04	-0,49
9	North Maluku	0,60	0,11	-0,49
10	Southwest Papua	0,53	0,07	-0,46

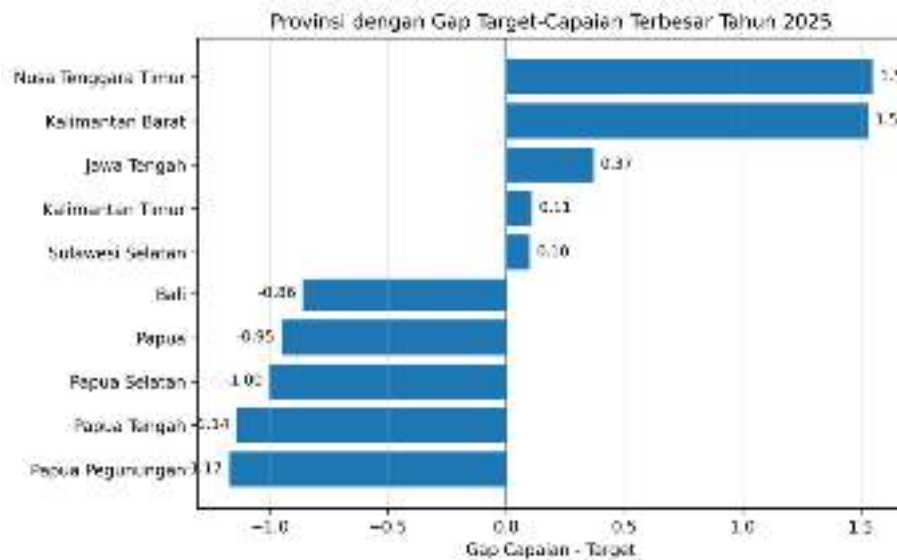


Figure 3. Provinces with the Largest Target-Achievement Gap in the VUK to GDP Ratio in 2025.

These results show that there is a sharp inequality of achievement between provinces. Some provinces were able to significantly exceed the target, while other provinces still had achievements that were very far from the target. The condition of the Papuan provinces is an important concern because most of them are in the deepest negative gap group. This indicates the need for affirmative strategies and policy interventions that are more specific to the region.

4.5. Target Gap and Achievement of the VUK to GDP Ratio in 2026

In 2026, the pattern of achievement inequality is still visible. The province with the largest positive gap is West Kalimantan, with a gap of 2.93. This shows that West Kalimantan not only has a high ratio, but is also able to exceed the target significantly. Other provinces that recorded a positive gap in 2026 are North Maluku, West Java, Central Java, and South Sulawesi.

Table 11. Provinces with the Largest Positive Gap in 2026

Rank	Province	Gap 2026
1	West Kalimantan	2,93
2	North Maluku	0,22
3	West Java	0,18
4	Central Java	0,10
5	Sulawesi Selatan	0,04

However, some provinces still recorded large negative gaps. Bali has the deepest negative gap in 2026, which is -1.31. Although Bali has a high ratio, the target set is also high, so the actual achievement has not been able to meet the target. Other provinces with the deepest negative gaps are Mountainous Papua, Central Papua, Papua, South Papua, North Sulawesi, Central Sulawesi, South Sumatra, West Sumatra, and Bengkulu.

Table 12. Provinces with the Deepest Negative Gap in 2026

Rank	Province	Gap 2026
1	Bali	-1,31
2	Papua Pegunungan	-1,17
3	Central Papua	-1,14
4	Papua	-1,09
5	Papua Selatan	-1,02
6	North Sulawesi	-0,68
7	Sulawesi Tengah	-0,61
8	South Sumatra	-0,55
9	West Sumatra	-0,51
10	Bengkulu	-0,49

Compared to 2025, the national gap in 2026 will widen from -0.08 to -0.13. This shows that national achievements are moving further away from the target. In other words, although there are several provinces that have managed to exceed the target, the number and contribution of provinces that have not reached the target is still large enough to affect the overall national achievement.

4.6. Regional Quadrant Mapping in 2025

The quadrant mapping is carried out using two indicators, namely the revised 2025 GDP as the X axis and the achievement of the 2025 VUK to GDP ratio as the Y axis. The median GDP in 2025 is 251,184, while the median achievement ratio in 2025 is 0.445.

Based on the mapping results, there are four categories of areas, namely superior, potential, not optimal, and priority interventions.

Table 13. Number of Provinces by Quadrant in 2025

Quadrant	Category	Number of Provinces
I	Superior	13
II	Potential	6
III	Not optimal yet	6
IV	Intervention priority	13

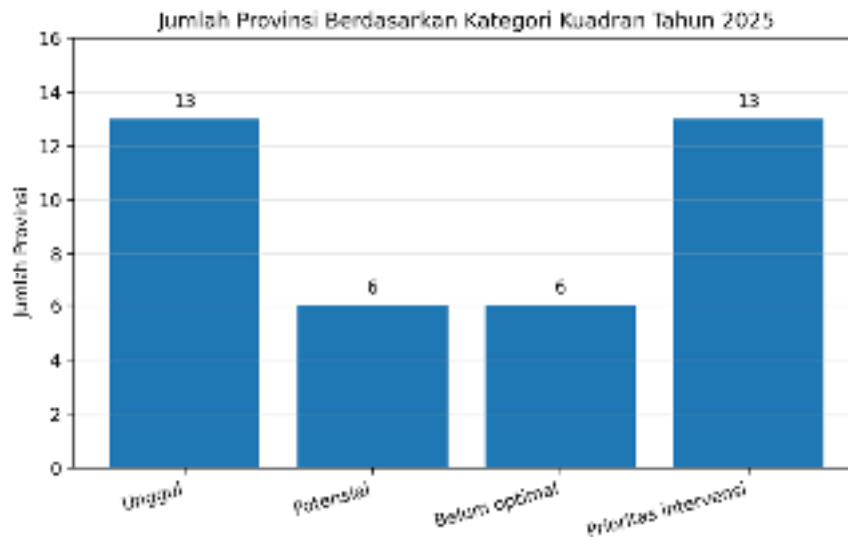


Figure 4. The number of provinces is based on the 2025 quadrant category.

Table 13. Summary Matrix of Provincial Positions in the 2025 Quadrant Mapping

Quadrant	Category	Interpretation	Provinces
I	Superior	High GRDP and high VUK-to-GRDP ratio	DKI Jakarta; East Java; West Java; Central Java; North Sumatra; Banten; South Sulawesi; Lampung; West Sumatra; West Kalimantan; Bali; South Kalimantan; Central Kalimantan
II	Potential	Low GRDP but high VUK-to-GRDP ratio	Aceh; Special Region of Yogyakarta; West Nusa Tenggara; East Nusa Tenggara; Bangka Belitung Islands; Gorontalo
III	Not optimal yet	High GRDP but low VUK-to-GRDP ratio	Riau; East Kalimantan; South Sumatra; Central Sulawesi; Riau Islands; Jambi
IV	Intervention priority	Low GRDP and low VUK-to-GRDP ratio	Southeast Sulawesi; Central Papua; North Sulawesi; North Kalimantan; North Maluku; Bengkulu; Papua; West Papua; Maluku; West Sulawesi; Southwest Papua; South Papua; Papua Highlands

The summary matrix makes the final quadrant position of each province more transparent and complements the narrative discussion that follows.

4.6.1. Superior Province

The superior provinces are those with high GDP and high VUK to GDP ratios. This group shows areas with large economic capacity as well as a strong relative contribution of VUK.

Table 14. Superior Category Province

No	Province	PDRB 2025	Ratio Achievement 2025	Gap 2025
1	DKI Jakarta	3.781.357	0,69	-0,06
2	East Java	3.293.302	1,34	0,06
3	West Java	2.900.260	1,00	-0,05
4	Central Java	1.855.362	2,37	0,37
5	North Sumatra	1.168.313	0,55	-0,24
6	Banten	888.297	0,59	-0,28
7	Sulawesi Selatan	755.300	0,85	0,10
8	Lampung	501.389	0,66	-0,18
9	West Sumatra	344.844	0,98	-0,26
10	West Kalimantan	314.153	5,39	1,53
11	Bali	306.271	6,57	-0,86
12	Kalimantan Selatan	300.877	0,48	-0,30
13	Central Kalimantan	252.137	1,21	-0,41

A superior group does not necessarily mean that the entire province has achieved the target. Several provinces such as DKI Jakarta, West Java, Bali, South Kalimantan, and Central Kalimantan still have negative gaps. However, these provinces are still in the superior category because they have GDP and ratio above the median. Thus, the superior category better describes the relative position of the region, while the target-achievement gap indicates success against the target.

4.6.2. Potential Provinces

Potential provinces are provinces with relatively low GDP but high VUK to GDP ratios. This group shows that although the economic capacity of the region is not as large as other provinces, the relative contribution of the VUK to GDP is quite strong.

Table 15. Potential Category Provinces

No	Province	PDRB 2025	Ratio Achievement 2025	Gap 2025
1	Aceh	250.23	0,45	-0,33
2	Special Region of Yogyakarta	198.839	2,56	-0,07
3	Nusa Tenggara Barat	197.600	0,77	-0,20
4	Nusa Tenggara Timur	143.642	5,03	1,55
5	Bangka Belitung Islands	115.478	0,61	-0,05
6	Gorontalo	56.868	0,50	-0,30

East Nusa Tenggara is the most prominent potential province because it has a positive gap of 1.55. This means that even though the GDP is below the median, the achievement ratio is very high and exceeds the target. This potential group needs a strategy to strengthen

economic scale so that VUK's relative contribution can have a greater impact on the regional economy.

4.6.3. Provinces Not Optimal

Provinces that are not optimal are provinces with high GDP but the achievement of low VUK to GDP ratio. This group shows a large economic capacity, but the relative contribution of VUK is still not proportional to the size of GDP.

Table 16. Province Category Not Optimal

No	Province	PDRB 2025	Ratio Achievement 2025	Gap 2025
1	Riau	1.149.086	0,32	-0,20
2	East Kalimantan	1.141.709	0,44	0,11
3	South Sumatra	721.122	0,41	-0,28
4	Sulawesi Tengah	486.814	0,08	-0,57
5	Riau Islands	374.410	0,14	-0,28
6	Jambi	335.219	0,36	-0,35

This group is politically important because these provinces have relatively large economic capacity. However, the achievement of the VUK to GDP ratio is still low. This means that a strategy is needed to increase the contribution of VUK to be more in line with regional economic capacity. Central Sulawesi is of particular concern because it has a GDP above the median, but the achievement ratio is only 0.08 and a gap of -0.57.

4.6.4. Priority Provinces for Intervention

The priority provinces for intervention are those with low GDP and low VUK to GDP ratios. This group needs greater policy attention because it has two challenges at once, namely relatively limited economic capacity and low VUK contribution.

Table 17. Priority Intervention Categories

No	Province	PDRB 2025	Ratio Achievement 2025	Gap 2025
1	Southeast Sulawesi	192.323	0,29	-0,30
2	Central Papua	189.517	0,03	-1,14
3	North Sulawesi	188.047	0,19	-0,66
4	North Kalimantan	167.862	0,43	0,02
5	North Maluku	123.248	0,11	-0,49
6	Bengkulu	108.517	0,35	-0,44
7	Papua	104.421	0,22	-0,95
8	West Papua	72.887	0,04	-0,49
9	Maluku	64.734	0,34	-0,41
10	Sulawesi Barat	61.774	0,16	-0,43
11	Southwest Papua	45.865	0,07	-0,46
12	Papua Selatan	38.790	0,17	-1,00
13	Papua Pegunungan	30.631	0,00	-1,17

The intervention priority group is dominated by provinces in the eastern region of Indonesia, especially the provinces of Papua. This shows that the inequality in the achievement of the ratio of VUK to GDP is not only economic, but also has a spatial dimension. Provinces in this group need affirmative policies, institutional strengthening, local economic capacity building, and more targeted program support.

4.7. General Discussion

In general, the results of the study show that the inequality in the achievement of the ratio of VUK to GDP between provinces in Indonesia is still quite real. This inequality can be seen from three main aspects. First, there is a difference in the trend of the ratio of VUK to GDP during the 2020–2024 period. Some provinces showed significant increases, while many others experienced decreases.

Second, there is a difference in the province's ability to achieve the ratio target in 2025 and 2026. Several provinces such as East Nusa Tenggara, West Kalimantan, Central Java, and South Sulawesi were able to record positive gaps. However, many other provinces still experience a negative gap, even very deep. This shows that the set targets have not been fully achieved evenly across the province.

Third, the results of quadrant mapping show that provinces cannot be treated with a uniform policy approach. Superior provinces need a strategy to consolidate and strengthen sustainability. Potential provinces need support to increase economic scale. Provinces are not optimally needed for a strategy to increase VUK's contribution to the regional economy. Meanwhile, priority provinces for intervention require more intensive affirmative policies.

These findings are in line with arguments in the regional inequality literature that differences in economic capacity, investment, resources, and regional characteristics can result in variations in development achievements between provinces. However, this study provides an additional perspective that inequality can be observed not only from GDP or per capita income, but also from the ability of regions to achieve the ratio of VUK to GDP and meet the targets that have been set.

4.8. Policy Implications

The results of the study have several policy implications. First, the government needs to develop a strategy based on regional categories, not a national uniform approach. Superior provinces such as East Java, Central Java, West Kalimantan, and South Sulawesi can be used as a reference for good practices because they have high ratio achievements and some have succeeded in exceeding the target.

Second, potential provinces such as East Nusa Tenggara, the Special Region of Yogyakarta, West Nusa Tenggara, and the Bangka Belitung Islands need support to strengthen economic scale. The high ratio shows that VUK has a relatively important role, but the capacity of regional GDP still needs to be enlarged so that its impact on the regional economy becomes stronger.

Third, provinces that are not yet optimal such as Riau, East Kalimantan, South Sumatra, Central Sulawesi, Riau Islands, and Jambi need attention in the form of optimizing VUK's contribution. These areas have large economic capacity, but the achievement ratio is still low. Thus, policies need to be directed at strengthening the integration of VUK with the main economic activities of the region.

Fourth, priority intervention provinces, especially Papua provinces, require affirmative policies. Intervention is not enough in the form of increasing targets, but needs to be accompanied by strengthening local economic capacity, mentoring, supporting infrastructure, institutions, and strategies to increase VUK contribution in accordance with regional characteristics.

5. Conclusions

5.1. Conclusion

This study aims to analyze the inequality in the achievement of the ratio of VUK to GDP between provinces in Indonesia through trend analysis, target-achievement gaps, and regional quadrant mapping. Based on the results of the analysis, it can be concluded that the achievement of the ratio of VUK to GDP between provinces shows considerable variation. Nationally, the ratio of VUK to GDP has decreased from 1.10 in 2020 to 0.97 in 2024. This condition shows a weakening of the relative contribution of VUK to GDP in national aggregate during the historical period.

The results of the gap analysis show that national achievements have not fully met the target. In 2025, the target national ratio is 1.10, while the achievement is only 1.02, so there is a gap of -0.08 or an achievement rate of 92.73%. By 2026, the national gap will widen to -0.13, with an achievement rate of 88.50%. These findings indicate that the achievement of the ratio of VUK to GDP nationally still faces challenges, especially in maintaining consistency in achieving the targets that have been set.

At the provincial level, the inequality of achievement can be seen from differences in ratios, trends, and target-achievement gaps. Several provinces such as East Nusa Tenggara, West Kalimantan, Central Java, East Kalimantan, and South Sulawesi are able to record a positive gap in 2025. On the other hand, several provinces such as Mountainous Papua, Central Papua, South Papua, Papua, and Bali recorded a considerable negative gap. This shows that the province's ability to achieve the target ratio of VUK to GDP is uneven.

The results of the 2025 quadrant mapping show that there are 13 provinces in the superior category, 6 provinces in the potential category, 6 provinces in the suboptimal category, and 13 provinces in the intervention priority category. Superior provinces have relatively high GDP and achievement ratios, while potential provinces have high ratios even though their economic capacity is still limited. Provinces that have not been optimally have a high GDP but a low ratio, while priority provinces for intervention have equally low GDP and ratios.

Thus, this study shows that the inequality in the achievement of the ratio of VUK to GDP is not only seen from the difference in the value of the ratio between provinces, but also from the difference in the ability of regions to achieve targets and regional positions in quadrant mapping. Therefore, the policy of increasing the ratio of VUK to GDP needs to be prepared differently based on the characteristics of each province.

5.2. Policy Implications

The results of this study provide several policy implications. First, the government needs to implement a policy approach based on regional categories, rather than a uniform approach for all provinces. Provinces in the superior category can be used as a reference for good practices in increasing VUK's contribution to GDP. The strategy for this group needs to be

directed at maintaining consistency of achievements, strengthening sustainability of performance, and encouraging the replication of good practices to other regions.

Second, provinces in the potential category need support to increase regional economic capacity. This group has a high ratio achievement, but GDP is relatively low. Therefore, policies need to be focused on increasing economic scale, strengthening supporting infrastructure, access to financing, institutional development, and expanding economic activities that can increase the impact of VUK on the regional economy.

Third, provinces in the non-optimal category need a strategy to increase VUK's contribution to the regional economic structure. This group has a high GDP, but the achievement of the VUK to GDP ratio is still low. This shows that the regional economic capacity has not been fully followed by the relative contribution of VUK. Policies in this group need to be directed at the integration of VUK with key economic sectors of the region, increasing productivity, and strengthening the local economic ecosystem.

Fourth, provinces in the priority category of intervention need more intensive affirmative policies. This group faces a double challenge, namely relatively low economic capacity and low achievement ratios. Therefore, policy interventions need to include technical assistance, institutional capacity building, strengthening basic infrastructure, financing support, and acceleration programs that are in accordance with regional characteristics. Special attention needs to be paid to the provinces in the eastern region of Indonesia, especially the Papua region, which are many of the priority categories of interventions.

5.3. Research Limitations

This research has several limitations. First, the study only uses aggregate data at the provincial level, so it has not been able to explain the variation in achievement at the district/city level. In fact, the difference in performance within one province can be quite large and potentially affect the aggregate results of the province.

Second, this study is descriptive-evaluative, so it is not intended to test the causal relationship between variables. The analysis focused on trends, target-achievement gaps, rankings, and quadrant mapping, not on testing the factors that cause achievement inequality.

Third, the study has not included other explanatory variables such as investment, labor, infrastructure, education, poverty, digitalization, or regional policies. These variables have the potential to affect the achievement of the VUK to GDP ratio and can enrich the analysis in future studies.

Fourth, the target data for 2027–2029 is target/projection, so it cannot be used as a basis for evaluating realization. Therefore, the main interpretation of this study is focused on historical data 2020–2024 and target-achievement data 2025–2026.

5.4. Further Research Suggestions

Future research can develop an analysis using data at the district/city level so that achievement inequality can be mapped in more detail. A more micro analysis will help identify specific areas that are the source of strengths or weaknesses of the province's achievements.

In addition, further research can include explanatory variables such as investment, labor, infrastructure, education level, poverty, digitalization, and local government spending. By including these variables, the study can test the factors that affect the ratio of VUK to GDP more comprehensively.



Subsequent research may also use econometric approaches, such as panel data regression or spatial analysis, to examine the relationships between variables and patterns of regional interconnectedness. The spatial approach is important because the inequality of achievement between provinces is often not only independent, but also related to the characteristics of the surrounding area.

Finally, further research can update the analysis when the realization data for 2027–2029 is available. Thus, the evaluation of medium-term targets can be carried out more completely and accurately.

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