

ANALYSIS THE INFLUENCE OF REGIONAL INNOVATION AND REGIONAL COMPETITIVENESS ON PUBLIC WELFARE OF REGENCY/CITY IN CENTRAL JAVA PROVINCE 2019-2023

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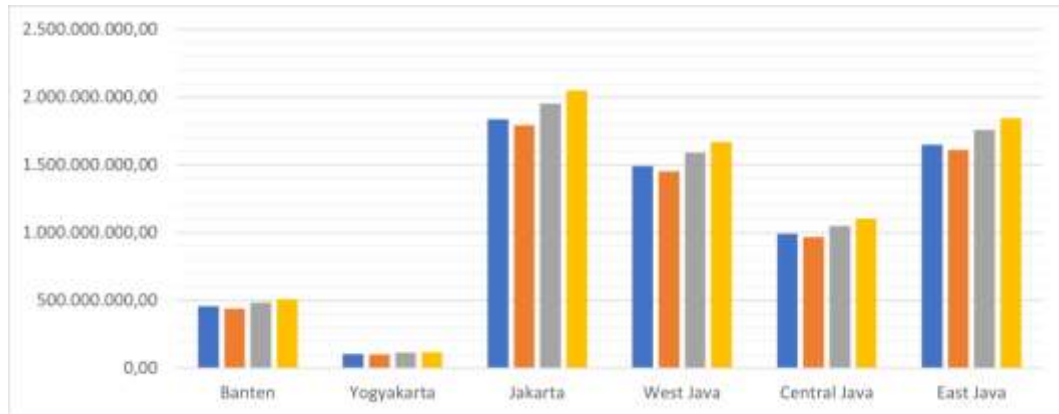
Abstract

This study aims to analyze the influence of the Regional Innovation Index (RII), Regional Competitiveness Index (RCI), Electronic-Based Government System Index (EGSI), and Investment on Public Welfare in Central Java Province from 2019 to 2023. A quantitative method with regression analysis was used to examine the relationship between these variables, utilizing secondary data from official sources. The research focuses on understanding how each variable affects public welfare, either directly or indirectly. The results indicate that RII and Investment do not have a significant influence on public welfare, suggesting the need for optimization of policies in these areas to ensure inclusivity and equity. Meanwhile, RCI has a significant but negative influence, highlighting potential inequalities in the implementation of regional competitiveness policies. On the other hand, EGSI has a significant positive influence, demonstrating that digital government initiatives successfully enhance public service efficiency and transparency, positively impacting public welfare. This study provides important implications for local governments to prioritize innovation-based policies, strengthen inclusive competitiveness strategies, and direct investments more effectively. Additionally, the implementation of EGSI should be further optimized, particularly in resource-limited areas. However, the research has several limitations, such as uneven data and the absence of consideration for external factors. Future studies are recommended to expand the scope of analysis to obtain more comprehensive findings.

Keywords: Regional Innovation Index, Regional Competitiveness Index, Electronic-Based Government System Index, Investment, Public Welfare.

INTRODUCTION

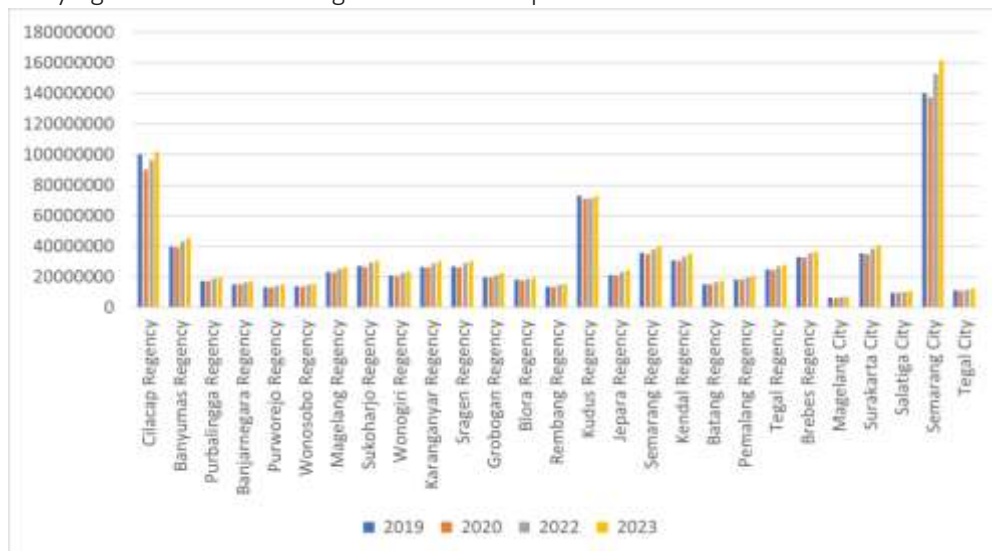
Public welfare is a key indicator of economic development success, often measured by Gross Regional Domestic Product (GRDP), which reflects a region's economic productivity and quality of life through income distribution, public services, education, health, and infrastructure (Mulia & Saputra, 2020; Sunuputri & Hasmarini, 2023). GRDP also indicates a region's ability to manage its resources for growth and welfare (Oktariyani et al., 2023). Java's GRDP data from 2019–2023 shows consistent economic growth, with a total GRDP of Rp 7,293 trillion in 2023, up from Rp 6,365 trillion in 2020. Central Java's GRDP increased from Rp 991.5 trillion in 2019 to Rp 1,102.5 trillion in 2023, highlighting economic progress. However, while economic growth is evident at the provincial level, disparities at the regional level remain, necessitating further analysis to understand the role of regional innovation and competitiveness in enhancing public welfare.



Source: BPS Indonesia, processed (2024)

Figure 1. Java Island GRDP On The Basis of Constant Prices by Province 2019–2023 (Million Rupiah)

In Central Java, GRDP highlights development gaps and resource utilization differences across regions. Regions with higher GRDP typically benefit from better access to investment, technology, and infrastructure, which in turn enhances well-being (Zainuddin et al., 2023). However, GRDP data from 2019–2023 reveals significant regional disparities, indicating that economic progress is not uniform. For instance, Semarang City recorded the highest GRDP, rising from IDR 140.19 trillion in 2019 to IDR 161.84 trillion in 2023, while Magelang City had a much lower GRDP, increasing modestly from IDR 6.47 trillion to IDR 7.26 trillion in the same period. These differences suggest that while some regions thrive, others struggle to achieve comparable growth, emphasizing the need to explore the underlying determinants of regional economic performance.



Source: BPS Indonesia, processed (2024)

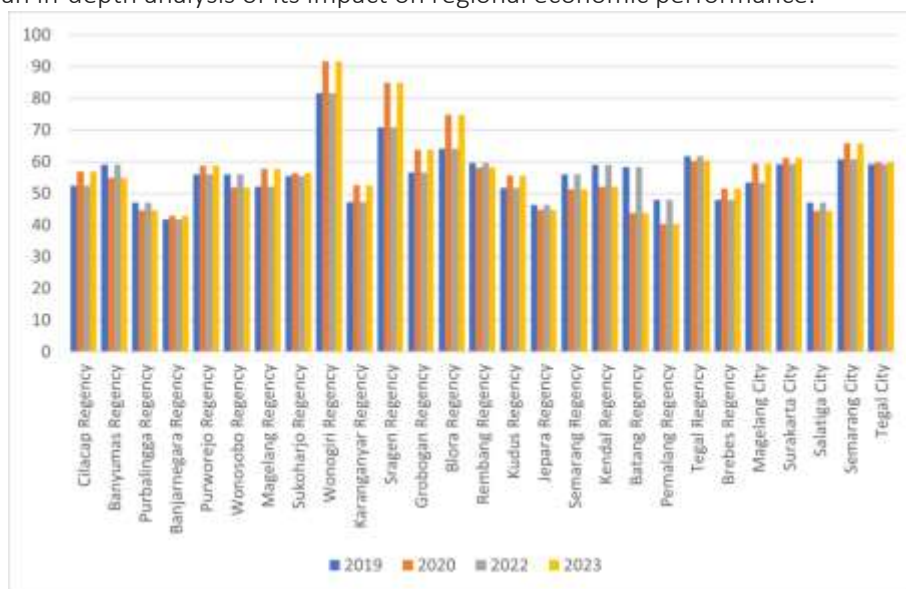
Figure 2. GRDP On The Basis of Constant Prices By Regency/City of Central Java Province (Million Rupiah) 2019-2023

Banyumas Regency's GRDP grew from IDR 39.77 trillion (2019) to IDR 45.39 trillion (2023), despite a dip in 2020. Meanwhile, Cilacap Regency, which has a strong industrial base, experienced a decline from IDR 100.32 trillion in 2019 to IDR 90.01 trillion in 2020 before recovering to IDR 101.83 trillion in 2023. These variations underscore the different economic dynamics at play, where certain regions may be more resilient to economic shocks, while others face structural challenges that hinder their growth. Understanding these differences is crucial for formulating policies that strengthen regional competitiveness and innovation to promote sustainable welfare improvements.

Previous studies reinforce the importance of GRDP as a key indicator of public welfare. Pasaribu et al. (2023) found that rising GRDP signifies sustainable economic growth, leading to better income distribution and improved access to public services. Similarly, Zainuddin et al. (2023)

emphasized that higher GRDP reflects not only production capacity but also investment attraction, fostering infrastructure development and job creation. Beyond economic output, technological innovation plays a crucial role in enhancing productivity and efficiency across sectors, driving economic growth and ultimately contributing to increased GRDP and public welfare (Sulistiyo et al., 2023). Given the disparities observed across Central Java, investigating the interplay between innovation, competitiveness, and economic welfare becomes increasingly relevant in shaping policies that ensure inclusive development across all regions.

The Regional Innovation Index (RII) is a key measure of regional innovation performance, influencing competitiveness and productivity. Research indicates that regions with higher RII scores tend to have better GRDP, as innovation drives economic activities and enhances regional development (Deru et al., 2023). Furthermore, Budiman et al. (2021) highlighted the importance of multi-stakeholder collaboration, showing that successful regional innovation in Central Java relies not only on government policies but also on active participation from the community and private sector. These studies suggest that innovation is a fundamental driver of economic growth, necessitating an in-depth analysis of its impact on regional economic performance.



Source: Indonesian Ministry of Home Affairs, processed (2024)

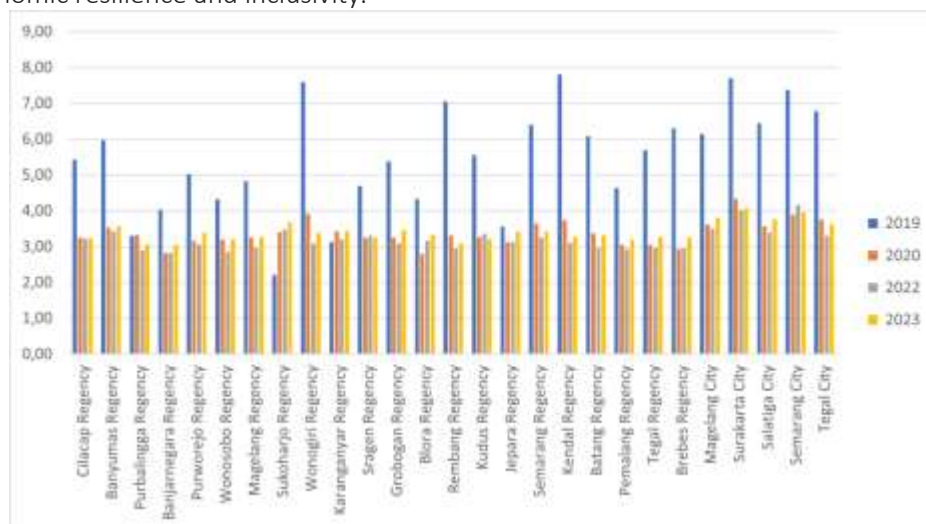
Figure 3. Regional Innovation Index 2019-2023

The relationship between innovation and economic growth becomes evident when examining the RII's impact on GRDP in Central Java's regencies and cities. RII data from 2019–2023 shows disparities that may impact public welfare. For instance, Sragen Regency experienced a sharp rise in its RII score from

70.82 in 2019 to 84.98 in 2020, earning a "very innovative" status, whereas Pemalang Regency declined from 48 to 40.36, remaining in the "innovative" category. Meanwhile, Semarang City also showed notable progress with an index of 65.8 in 2020. On the other hand, Blora Regency surged from 64.13 to 74.9, while Jepara Regency slightly declined from 46.44 to 44.88. These disparities affect regional competitiveness and economic outcomes.

The Regional Competitiveness Index (RCI) reflects a region's productivity, development, and ability to compete sustainably (BRIDA Surakarta, 2021). Widayanto et al. (2023) emphasize RCI as a key instrument for optimizing regional potential, particularly in fostering innovation. Meanwhile, Pribadi (2021) underscores the role of superior sectors in boosting competitiveness and GRDP, as seen in Central Lampung. However, Lailisholawati (2023) found no significant link between RCI and economic growth, despite acknowledging innovation's positive impact. These mixed findings indicate that while competitiveness is an essential factor, innovation and effective resource management are equally crucial for achieving sustainable economic growth and improving public welfare. Therefore,

understanding the interplay between RII, RCI, and GRDP is vital for designing policies that enhance regional economic resilience and inclusivity.



Source: BRIN, processed (2024)

Figure 4. Regional Competitiveness Index 2019-2023

Figure 4 illustrates the fluctuations in the Regional Competitiveness Index (RCI) across Central Java's districts and cities from 2019 to 2023, highlighting variations in regional economic performance. Magelang City experienced a decline from 6.15 in 2019 to 3.62 in 2020 before slightly recovering to 3.81 in 2023, while Salatiga City followed a similar pattern, dropping from 6.45 in 2019 to 3.57 in 2020 before rising to 3.77 in 2023. Banyumas and Grobogan Regencies also showed fluctuations, with gradual increases after initial declines. These variations underscore the dynamic nature of regional competitiveness, influenced by multiple factors such as investment climate, infrastructure, and governance efficiency. Sustaining competitive growth requires continuous technological innovation, infrastructure development, and adaptive policies to address emerging economic challenges.

One crucial factor supporting regional competitiveness is the implementation of the EGSI, it enhances regional competitiveness by improving public service efficiency and transparency (PANRB, 2020). Studies indicate a significant relationship between EGSI and Regional Original Revenue (ROR), which in turn impacts GRDP by improving public services and attracting investment (Hanum, 2020; Rachmawati et al., 2022). This suggests that regions with successful EGSI adoption tend to experience better economic performance and an improved business climate, reinforcing the role of digital governance in enhancing regional competitiveness.

Despite its benefits, challenges in EGSI implementation persist, particularly regarding the lack of skilled personnel and cybersecurity issues (Dinar et al., 2023; Suwarlan et al., 2023). In Kuningan Regency, for example, the absence of an integrated EGSI system hindered index targets, negatively affecting both ROR and GRDP (Putri et al., 2021; Qotrunnisa, 2021). To maximize its benefits, local governments must develop integrated systems and enhance human resource capacity (Alim et al., 2024; Dinar et al., 2023). By improving IT utilization and ensuring system efficiency, governments can enhance public service delivery, foster investment, and drive overall economic growth, ultimately contributing to increased public welfare (Aryanti et al., 2021; Hanum, 2020). Thus, strengthening EGSI not only supports regional competitiveness but also serves as a key driver for sustainable economic development in Central Java.

EGSI and investment both have a positive relationship with GRDP, where an increase in either leads to economic growth and improved public welfare (Sugiarto, 2019). However, there remains a gap in understanding the relationship between regional innovation, competitiveness, EGSI, investment, and public welfare at the regency/city level in Central Java.

LITERATURE REVIEW

1. Public Welfare

a. The Concept of Public Welfare

According to Amartya Sen (2017), well-being can not only be measured based on income or consumption, but also by the capacity of individuals to do things that are considered important in life (Gaspar, 2017). This is related to the concept of the "capability approach," where well-being is judged by a person's ability to achieve desired basic functions, such as education, health, and participation in social life (Wasito, 2023). This concept expands the perspective of well-being from mere economic indicators such as Gross Domestic Product (GDP) or per capita income to a more comprehensive measure, which includes non-material aspects such as rights, freedoms, and access to equal opportunities.

b. Theory of Economic Growth and Welfare

Public welfare is often associated with sustainable economic growth. The classical economic growth theory as proposed by Solow explains that economic growth will bring an increase in welfare if it is accompanied by an even distribution of income and access to public services such as education and health. (Cooray et al., 2009; Q. S. Wang et al., 2021)

2. Gross Regional Domestic Product (GRDP)

Regional Income is a measure of the economy that assesses the economic performance of a region. One of the main indicators used to get a measure of regional income is the Gross Regional Domestic Product (GRDP). According to Sukirno (2014), GRDP is the amount of gross added value arising from all economic sectors in a region or province. GRDP is the amount of added value produced by all business units or is the amount of final value of goods and services produced by all economic units in an area in a specific period of time.

3. Regional Innovation Index (RII)

The Regional Innovation Index (RII) is a measurement tool used to assess the level of innovation in various regions. RII covers various aspects that reflect a region's ability to produce and implement innovations that have a positive impact on economic and social development. According to Budiman et al., (2021), RII provides an information on the existing conditions of regional innovation and serves as evaluation material for policy makers to increase innovation in the region. In addition, RII also plays a role in encouraging competition between regions to improve the quality of public services and governance (Kartika, 2020).

4. Regional Competitiveness Index (RCI)

The Regional Competitiveness Index (RCI) is a measurement tool used to assess the ability of a region to optimize its potential, both in domestic and international contexts. RCI reflects the level of productivity, progress, competition, and independence of a region, and serves as an indicator to formulate sustainable development policies and improve public welfare (Widayanto et al., 2023). In this context, RCI not only focuses on economic aspects, but also includes social and environmental dimensions that contribute to the competitiveness of a region (Novandaya et al., 2022). Overall, RCI is an important tool in formulating effective regional development strategies. By understanding and analyzing the indicators that affect competitiveness, local governments can design more targeted policies to improve public welfare and regional competitiveness as a whole (Nabilah et al., 2024 Rosano & Widodo, 2023 & Ginting et al., 2016).

5. Electronic-Based Government System Index (EGSI)

The Electronic-Based Government System Index (EGSI) is a measurement tool used to assess the extent of the implementation of information and communication technology (ICT) in the administration of government in Indonesia. EGSI aims to improve efficiency, transparency, and accountability in public services. Based on Presidential Regulation of the Republic of Indonesia Number 95 of 2018, every ministry and institution, as well as local governments, are required to implement EGSI as part of bureaucratic reform and better public services (Hanum,

2020). The study shows that there is a positive relationship between the value of the ESGI and the Regional Original Income (PAD), which shows that regions with good ESGI implementation tend to have better financial performance (Hanum, 2020).

6. Investment

According to Kamus Besar Bahasa Indonesia (2023), investment is the investment of money or capital in a company or project with the aim of making a profit. Meanwhile, according to Otoritas Jasa Keuangan (2023), Investment is a form of investment, usually in the long term for the procurement of complete assets or the purchase of stocks and other securities to obtain a profit. In addition, investment can also be related to the investment of a number of funds, either in real assets such as land, gold, houses and other real assets or financial assets such as deposits, stocks, bonds, and other securities. Investment in financial assets is an investment by buying securities in the capital market or in the form of direct and indirect investments (Hartono, 2016).

RESEARCH METHODS

This study employs a quantitative approach using panel data regression to analyze the impact of regional innovation and competitiveness on public welfare in 27 regencies/cities of Central Java from 2019 to 2023. The independent variables include the Regional Innovation Index (RII), Regional Competitiveness Index (RCI), Electronic-Based Government System Index (EGSI), and Investment, while public welfare serves as the dependent variable. Secondary data is sourced from official government agencies such as the Ministry of Home Affairs and BPS. The analysis involves panel data regression with model selection tests (Chow, Hausman, and Lagrange Multiplier) and classical assumption tests. Hypothesis testing is conducted using t-tests and F-tests to determine the significance of each variable.

The regression model used in this study is formulated as follows:

$$PW_{it} = \alpha + \beta_1 RII_{it} + \beta_2 RGI_{it} + \beta_3 EGSI_{it} + \beta_4 I_{it} + e_{it}$$

Information:

PW_{it}	= Public Welfare (Rupiah)
RII_{it}	= Regional Innovation Index (Index)
RGI_{it}	= Regional Competitiveness Index (Index)
$EGSI_{it}$	= Electronic-based Government System Index (Index)
I_{it}	= Investment (Rupiah)
e_{it}	= Error Term

RESULTS AND DISCUSSION

Data Analysis

Panel Data Estimation Method

The regression analysis model was carried out with the aim of understanding how independent variables affect the dependent variables used in this study, with the data set used being a combination of time series and cross section, called panel data. To choose the best model to be used, it is necessary to carry out tests, including:

a. Chow Test

The Chow test is used in panel data analysis to determine whether the Fixed Effect Model (FEM) is more suitable than the Common Effect Model (CEM) by comparing their performance in regression.

Table 1. Chow Test Result

Effects Test	Statistic	d.f.	Prob.
Cross-section F	311.861528	(26,77)	0.0000
Cross-section Chi-square	503.960606	26	0.0000

Source: Data processing results with eviews 13

The results of the chow test show that the p-value is less than 0.05, then the null hypothesis (H0) is rejected, which means that the best model for regression is the Fixed Effect Model so that the next test is carried out.

b. Hausman Test

The Hausman test is a statistical test used to select the best model between the Fixed Effect Model (FEM) and the Random Effect Model (REM) in panel data analysis. This test aims to compare the two and select the most suitable model to utilize in the panel data regression.

Table 2. Hausman Test Result

Test Summary	<i>Chi-Sq. Statistic</i>	<i>Chi-Sq. d.f.</i>	<i>P-value.</i>
<i>Cross-section random</i>	40.741485	4	0.0000

Source: Data processing results with eviews 13

The results of the hausman test show that the p-value is less than 0.05, so the null hypothesis (H0) is rejected, which means that the model that is most suitable for the regression carried out is the Fixed Effect Model.

Fixed Effect Model

The Fixed Effect Model (FEM) assumes uniform data behavior over time, ignoring individual influences. It uses Ordinary Least Squares (OLS) estimation with constant intercepts and regression coefficients across individuals and time periods, making it suitable when variations across entities are negligible.

Table 3. Estimated Results Fixed Effect Model

Variable	Coefficient	t-Statistic	p-value
C	16.90815	110.6130	0.0000
RII	-0.001501	-0.863377	0.3906
RCI	-0.012391	-2.310953	0.0235
EGSI	0.065672	3.773999	0.0003
LOG_INVESTMENT	0.003098	0.441893	0.6598

Source: Data processing results with eviews 13

R-Squared	0.995009
Adjusted R-squared	0.993065
F-statistic	551.7305
Durbin-Watson stat	2.139062
Prob(F-statistic)	0.000000

Classical Assumption Test

a. Multicollinearity Test

In this study, multicollinearity testing uses Pearson Correlation. The following are the results of the multicollinearity test: section contains detailed sections in the form of sub-topics that are directly related to the research focus and its category.

Table 4. Multicollinearity test results

	RII	RCI	EGSI	LOG_INVESTMENT
RII	1.000000	0.125169	0.193469	0.047990
RCI	0.125169	1.000000	-0.090643	0.048703
EGSI	0.193469	-0.090643	1.000000	-0.052859
LOG_INVESTMENT	0.047990	0.048703	-0.052859	1.000000

Source: Secondary data processing results with eviews 13

Table 4 indicates that all research variables have a low correlation, with all independent variable relationships below 0.90, confirming no multicollinearity issue in this study.

b. Heterokedasticity Test

Heteroskedasticity in regression models can be found statistically using the Glejser test. In the Glejser test, if the p-value is more than $\alpha = 5\%$ or > 0.05 , the regression model is considered free of heteroscedasticity. Below are the results of the Heterokedasticity Test:

Table 5. Heteroskedasticity Test Result

Variable	Coefficient	P-value
C	616151.0	0.8168
RII	8953.654	0.7672
RCI	-67489.05	0.4700
EGSI	-182988.0	0.5459
LOG_INVESTMENT	89021.33	0.4662

Source: Secondary data processing results with eviews 13

The results of the Glejser test show that all research variables have a p-value > 0.05 , which means that it can be concluded that the variable is free from the heterokedasticity problem and shows homokedasticity statistically.

c. Autocorrelation Test

The autocorrelation test detects correlations between residual errors across periods. The Durbin-Watson test is used to determine the presence of autocorrelation in the regression model.

Table 6. Autocorrelation Test Result

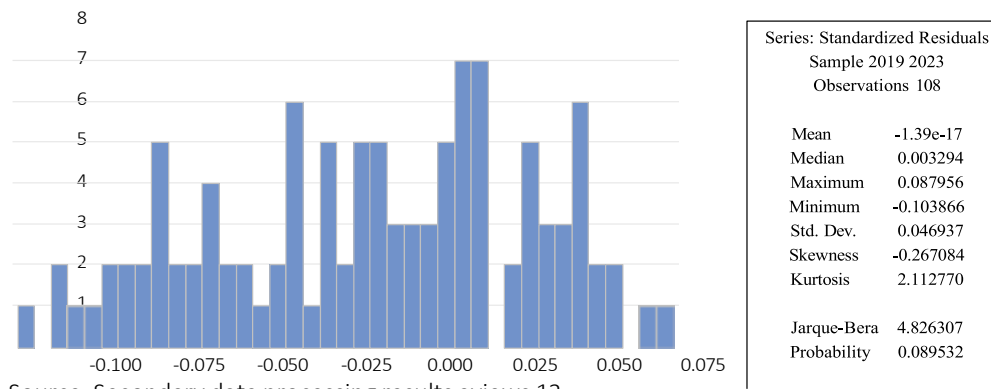
<i>Hannan-Quinn criter.</i>	-2.403092	<i>R-squared</i>	0.995009
<i>Mean dependent var</i>	17.01725	<i>Adjusted R-squared</i>	0.993065
<i>S.D. dependent var</i>	0.664413	<i>S.E. of regression</i>	0.055330
<i>Sum squared resid</i>	0.235730	<i>F-statistic</i>	511.7305
<i>Durbin-Watson stat</i>	2.139062	<i>P-value (F-statistic)</i>	0.0000

Source: Results of the evIEWS 13 secondary data test

Table 6 shows the result of the Durbin-Watson value of 2.139062, when compared to the significance table of 5%, with a total sample of 108, and an independent variable of 4, then the dU value = 1.737 and the dL value = 1.6104. The DW value of 2.139062 is in the area where there is no autocorrelation, namely, the DW value is between dL and 4-dU ($dL < DW < 4-dU$).

Normality Test

The normality test is useful for determining whether the data to be collected has a normal distribution or not, so that it can be used in parametric statistics such as regression analysis or t-test.



Source: Secondary data processing results evIEWS 13

Figure 5. Normality Test Results

From Figure 5, it was obtained that the probability value was 0.089532, where the value was greater than 0.05 which means that there was no normality problem or the data was statistically normally distributed.

Regression Estimation on Panel Data

Based on the estimates that have been made on the regression model using evIEWS 13 as an analysis tool, the results are obtained that the Fixed Effect Model approach is the best in this study.

Table 7. Panel Data Output

Variable	Coefficient	t-Statistic	p-value
C	16.90815	110.6130	0.0000
RII	-0.001501	-0.863377	0.3906
RCI	-0.012391	-2.310953	0.0235
EGSI	0.065672	3.773999	0.0003
LOG_INVESTMENT	0.003098	0.441893	0.6598

Based on the output in Table 7, the regression equation model is obtained as follows:

$$PW_{it} = \alpha + \beta_1 RII_{it} + \beta_2 RCI_{it} + \beta_3 EGSI_{it} + \beta_4 I_{it} + e_{it}$$

Or

$$PW_{it} = 16.90815 - 0.001501 RII_{it} - 0.012391 RCI_{it} + 0.065672 EGSI_{it} + 0.003098 I_{it} + e_{it}$$

Related to the regression model equation above, various things can be interpreted:

a. Regional Innovation Index (RII)

The results of the regression analysis indicate that the Regional Innovation Index (RII) variable has a coefficient value of -0.001501 with a p-value of 0.3906. Although the negative coefficient suggests a potential inverse relationship between RII and public welfare in regencies/cities in Central Java, the effect is not statistically significant at the 5% significance level. Therefore, there is insufficient statistical evidence to conclude that RII has a meaningful impact on public welfare in the studied region.

b. Regional Competitiveness Index (RCI)

The results of the regression analysis indicate that the Regional Competitiveness Index (RCI) variable has a coefficient value of -0.012391 with a p-value of 0.0235. This suggests that RCI has a statistically significant negative influence on the percentage of public welfare in regencies/cities in Central Java at the 5% significance level. Specifically, a 1% increase in RCI is associated with a decrease of 0.0012391% in public welfare, holding other factors constant.

c. Electronic-Based Government System Index (EGSI)

The results of the regression analysis indicate that the coefficient value of the Electronic-Based Government System Index (EGSI) variable is 0.065672, with a p-value of 0.0003. This suggests that EGSI has a statistically significant influence on the percentage of public welfare at the 5% significance level. The positive coefficient implies that an increase in EGSI is associated with an increase in public welfare, holding other factors constant.

d. Investment

The results of the regression analysis indicate that the coefficient value of the Investment variable is 0.003098, with a p-value of 0.6598. Statistically, this suggests that Investment does not have a significant influence on the percentage of public welfare at the 5% significance level.

Coefficient of Determination

Based on the regression estimation results, the best model for this study is the Fixed Effect Model. Using this approach, the R^2 value obtained is 0.995009, indicating that the independent variables RII, RCI, EGSI, and Investment collectively explain 99.50% of the variation in public welfare. The remaining 0.50% is influenced by other factors outside the model.

Hypothesis Test

a. F Test

The F-test confirms that RII, RCI, EGSI, and Investment collectively influence Public Welfare. With a p-value of 0.0000 ($p < 0.05$) and an F-calculated value of 551.7305 exceeding the F-table value of 2.46, the results indicate a significant overall effect of the independent variables.

b. t-test

The t-test was carried out with the aim of understanding the partial influence of each independent variable on the dependent variable. In the t-test, if the calculated t-value is greater than the t-table and the p-value is less than 0.05, then it can be said that the independent variable has a significant influence on the dependent variable. The following are the results of the t-test in this study:

1) Technology Innovation Index (RII)

Table 7 shows that RII ($t = -0.8633$, $p = 0.3906$) has no significant effect on Public Welfare at the 5% level, so H_0 is not rejected.

2) Regional Competitiveness Index (RCI)

Table 7 shows that RCI ($t = -2.31095$, $p = 0.0235$) significantly affects Public Welfare at the 5% level, so H_0 is rejected.

3) Electronic-Based Government System Index (EGSI)

Table 7 shows that EGSI ($t = 3.773$, $p = 0.0003$) significantly affects Public Welfare at the 5% level, so H_0 is rejected.

4) Investment

Table 7 shows that Investment ($t = 0.4418$, $p = 0.6598$) has no significant effect on Public Welfare at the 5% level, so H_0 is accepted.

Discussion

1. The Influence of RII on Public Welfare

The Regional Innovation Index (RII) is a measurement tool used to assess the level of innovation within a region. It reflects the capacity of regional governments to implement and manage innovation in public services, governance, and economic activities (Budiman et al., 2021). The RII serves as an evaluation instrument for policymakers to enhance innovation and competitiveness at the regional level (Kartika, 2020).

The findings of this study indicate that the Regional Innovation Index (RII) has a negative effect on Public Welfare. This suggests that as the level of regional innovation increases, public welfare in the respective region tends to decrease. A possible explanation for this phenomenon is that innovation policies may require long-term adaptation and structural adjustments before yielding significant benefits for society. Additionally, the innovation process itself often demands substantial financial and human capital investments, which may temporarily divert resources from direct welfare-enhancing initiatives such as social programs, subsidies, or public service expansion.

This finding aligns with the study conducted by Na & Kim (2023), which states that the relationship between innovation and economic outcomes is often non-linear and context-dependent. Innovation may not immediately translate into improved public welfare, as it often requires an 'incubation' period before its economic and social benefits become evident. In some cases, innovation-driven structural transformations may initially lead to economic disparities, job displacement, or inefficiencies in the transition phase.

Research by Deru et al (2023) highlights that the effectiveness of regional innovation depends on policy implementation, governance quality, and local adaptability. If innovation efforts are not accompanied by inclusive policies and equitable distribution mechanisms, they may exacerbate inequality rather than improving overall welfare. While regional innovation is essential for long-term economic growth and competitiveness, its short-term impact on public welfare must be carefully managed through supportive policies, social safety nets, and inclusive development strategies to ensure that innovation benefits are evenly distributed across all societal groups.

2. The Effect of the Regional Competitiveness Index on Public Welfare

The findings of this study indicate that RCI has a negative and significant effect on public welfare. This is supported by a calculated t-value greater than t-table and a p-value below 0.05, confirming a statistically significant relationship. The negative influence means that as the Regional Competitiveness Index (RCI) increases, the level of public welfare tends to decline, or vice versa.

These findings align with previous studies, such as Na & Kim (2023), which highlight that economic growth driven by competitiveness policies does not always lead to improved public welfare. Instead, it requires complementary social policies to ensure that economic benefits reach all segments of society. Thus, while enhancing regional competitiveness remains a key strategy for economic progress, policymakers must also consider inclusive growth approaches that balance economic and social well-being.

3. The Influence of Electronic-Based Government System Index on Public Welfare

This study finds that EGSI has a positive but statistically insignificant effect on public welfare. The regression results show that while EGSI contributes to improved governance, its direct impact on public welfare is not strong enough to be considered significant. This suggests that while digital governance transformation holds potential, its effectiveness depends on other enabling factors, such as infrastructure readiness, human resource capabilities, and digital literacy among the public.

These findings are partially aligned with Hanum (2020), which emphasizes that while EGSI can support regional development, its effectiveness is influenced by community preparedness and available funding for implementation. In regions where internet access, digital adoption, or bureaucratic adaptation are still limited, the benefits of EGSI may not be fully realized. While EGSI remains a key driver of governance modernization, a holistic approach is needed to strengthen its impact on public welfare, ensuring that technological advancements are accompanied by equitable access and capacity-building initiatives.

4. The Influence of Investment on Public Welfare

This study finds that investment does not have a significant effect on public welfare. Despite the continuous increase in investment, its impact on the well-being of society remains statistically insignificant. These findings suggest that the allocation and effectiveness of investment in directly improving welfare may still be suboptimal. Several factors could contribute to this, such as the concentration of investment in specific sectors that have minimal direct impact on society or the unequal distribution of investment benefits across different socio-economic groups.

These findings align with the perspective that investment alone is not a guarantee for improving public welfare, as its impact depends heavily on how investment is directed, managed, and distributed. An ineffective investment strategy—one that prioritizes profit-driven sectors over socially inclusive development—may lead to growth without equity, where economic expansion occurs without substantial improvements in people's living standards.

To enhance the impact of investment on public welfare, policymakers need to ensure that investment strategies prioritize social inclusivity, equitable distribution, and sectoral diversification. Encouraging investments in labor-intensive industries, MSMEs, infrastructure that supports local economies, and human capital development can help maximize the benefits of investment for broader society.

CONCLUSION

Based on the data analysis and literature review that has been presented, this study concludes that the Regional Innovation Index (RII) does not have a significant influence on public welfare. This finding suggests that despite variations in RII across regions, there is insufficient statistical evidence to confirm its substantial impact on public welfare. Meanwhile, the Regional Competitiveness Index

(RCI) exhibits a significant negative influence on public welfare, indicating that increased regional competitiveness is statistically associated with a decline in public welfare. One possible explanation is that heightened competitiveness does not always translate into inclusive growth but may instead create disparities that hinder overall welfare improvements. On the other hand, the Electronic-Based Government System Index (EGSI) has a significant positive influence on public welfare, where a higher level of EGSI implementation is associated with improvements in public welfare, particularly through digital-based programs that enhance accessibility and transparency in public services. Lastly, investment does not have a significant influence on public welfare, which may be attributed to unequal investment distribution. The concentration of investment in certain regions while others receive less funding can lead to regional disparities, hindering balanced development and, consequently, improvements in public welfare.

BIBLIOGRAPHY

- Alim, F. F., Dewi, F., & Gumilang, S. F. S. (2024). Arsitektur Enterprise Sistem Pemerintahan Berbasis Elektronik (Spbe) Sebagai Strategi Pengembangan Smart Village Pada Dimensi Village Service (Entrepreneurship). *JIPi (Jurnal Ilmiah Penelitian Dan Pembelajaran Informatika)*, 9(2), 889–904. <https://doi.org/10.29100/jipi.v9i2.4730>
- Aryanti, K. A. F., Sukarsa, I. M., & Susila, A. A. N. H. (2021). The Study of E-Government Implementation in Indonesia. *Jurnal Ilmiah Merpati (Menara Penelitian Akademika Teknologi Informasi)*, 10(1), 1. <https://doi.org/10.24843/jim.2022.v10.i01.p01>
- Budiman, S., Kurniadi, D., Matridi, R. A., Jenawi, B., & Junriana, J. (2021). Analisa Pemetaan Hasil Inovasi Daerah Kabupaten Bintan Pada Penilaian Indeks Inovasi Daerah Tahun 2020. *Indonesian Governance Journal : Kajian Politik-Pemerintahan*, 4(2), 112–126. <https://doi.org/10.24905/igi.v4i2.1839>
- Cooray, A., Avenue, N., Conference, A., & Ratovondrahona, P. (2009). *THE ROLE OF EDUCATION IN ECONOMIC GROWTH Arusha Cooray* University of Wollongong*. 1–28.
- Deru, H. H., Sobri, K. M., Alfitri, A., Leonardo, A., & Prasetyo, E. (2023). Pentingnya Perilaku Pelaksana Regulasi untuk Pencapaian Indeks Inovasi Daerah yang Tinggi. *Publikasi Penelitian Terapan Dan Kebijakan*, 6(1), 01–15. <https://doi.org/10.46774/pptk.v6i1.533>
- Dinar, K. R., Fajrillah, A. A. N., & Hanafi, R. (2023). Penyusunan Arsitektur Enterprise Pada Bidang Perindustrian Dalam Meningkatkan Stabilitas Perekonomian Jawa Barat Menggunakan Metode Togaf Adm 9.2. *JIPi (Jurnal Ilmiah Penelitian Dan Pembelajaran Informatika)*, 8(1), 218–229. <https://doi.org/10.29100/jipi.v8i1.3267>
- Gasper, D. (2017). What is the capability approach? Its core, rationale, partners and dangers. In *Development ethics* (pp. 217–241). Routledge.
- Ginting, A., Supriyono, B., & Noor, I. (2016). Perencanaan Pembangunan Daerah Dalam Rangka Meningkatkan Daya Saing (Studi Pada Provinsi Bengkulu). *Wacana, Jurnal Sosial Dan Humaniora*, 19(01), 56–65. <https://doi.org/10.21776/ub.wacana.2016.019.01.7>
- Hanum, Y. (2020). Keterkaitan Nilai Indeks Sistem Pemerintahan Berbasis Elektronik Dengan Pendapatan Asli Daerah. *Jurnal Ilmiah Ekonomi Bisnis*, 25(2), 136–142. <https://doi.org/10.35760/eb.2020.v25i2.2596>
- Hartono. (2016). *Pertimbangan Return dan Risiko dalam Keputusan Investasi*. Journal of Chemical Information and Modeling.
- Kamus Besar Bahasa Indonesia. (2023). *Investasi - KBBI VI Daring*. Badan Pengembangan Dan Pembinaan Bahasa.
- Kartika, R. S. (2020). Kompetensi Aparatur Sipil Negara Badan Penelitian dan Pengembangan Daerah dalam pengisian indeks inovasi daerah kabupaten Banggai provinsi Sulawesi Tengah. *Inovasi*, 17(2), 245–255. <https://doi.org/10.33626/inovasi.v17i2.132>

- Lailisholawati, L. (2023). Analisis Daya Saing dan Inovasi Terhadap Pertumbuhan Ekonomi Indonesia Tahun 2016-2020. *Jurnal Ilmu Ekonomi JIE*, 7(04), 614–628. <https://doi.org/10.22219/jie.v7i04.30151>
- Mulia, R. A., & Saputra, N. (2020). Analisis Faktor-Faktor Yang Mempengaruhi Kesejahteraan Masyarakat Kota Padang. *Jurnal EL-RIYASAH*, 11(1), 67. <https://doi.org/10.24014/jel.v11i1.10069>
- Na, J.-M., & Kim, J.-Y. (2023). The Effect of Regional Competitiveness Factors on Regional Economic Growth: Focused on Gwangju and Jeonnam Magaregion. *The Korean-Japanese Economic and Management Association*, 98, 63–76. <https://doi.org/10.46396/Kjem..98.5>
- Nabilah, A. F., Valeriani, D., & Agustina, D. (2024). Analisis Daya Saing Pariwisata Untuk Meningkatkan Perekonomian Daerah Di Kabupaten Bangka. *Jurnal Industri Pariwisata*, 6(2), 128–142. <https://doi.org/10.36441/pariwisata.v6i2.1396>
- Novandaya, Z., Wijaya, H. B., Wijaya, M. I. H., Azmi, H. N., & Kurniawati, H. (2022). Pemanfaatan Penilaian Indeks Daya Saing Daerah untuk Optimalisasi Sektor Unggulan dan Berkembang pada Aglomerasi Wilayah Kedungsepur. *Jurnal Penataan Ruang*, 17(2), 70–76.
- Oktariyani, T., Revolina, E., & Arsyah, T. D. (2023). Analisis Sektor Ekonomi Unggulan dan Sektor Potensial Terhadap Pertumbuhan Ekonomi Kota Bengkulu Tahun 2016-2020. *J-MAS (Jurnal Manajemen Dan Sains)*, 8(2), 1303. <https://doi.org/10.33087/jmas.v8i2.1235>
- Otoritas Jasa Keuangan. (2023). *Pasar Modal*. Ojk.
- Pasaribu, A. A., Perangin Angin, S., & Ruslan, D. (2023). The Effect of Local Government Spending For Education and Health on Grdp and Human Development Index in North Labuhanbatu District. *Riwayat: Educational Journal of History and Humanities*, 6(1), 124–132. <https://doi.org/10.24815/jr.v6i1.2449>
- Pribadi, Y. (2021). Pengukuran Daya Saing Kabupaten Lampung Tengah: Metode Location Quotient Dan Shift-Share Analysis. *Inovasi Pembangunan : Jurnal Kelitbangan*, 9(03), 299. <https://doi.org/10.35450/jip.v9i03.264>
- Putri, V. D., Gumilang, S. F. S., & Nugraha, R. A. (2021). Arsitektur Sistem Pemerintahan Berbasis Elektronik (SPBE) Pada Domain Aplikasi di Lingkungan Daerah Kabupaten Kuningan. *JUPI (Jurnal Ilmiah Penelitian Dan Pembelajaran Informatika)*, 6(2), 379–386. <https://doi.org/10.29100/jipi.v6i2.2118>
- Rachmawati, R., Anjani, D. F., Rohmah, A. A., Nurwidiani, T., & Almasari, H. (2022). Electronically-based governance system for public services: implementation in the Special Region of Yogyakarta, Indonesia. *Human Geographies*, 16(1), 71–86. <https://doi.org/10.5719/hgeo.2022.161.5>
- Rosano, F., & Widodo, W. (2023). Pengaruh Daya Saing Daerah, Tingkat Upah, Teknologi, Dan Pertumbuhan Ekonomi Terhadap Investasi Pada 27 Provinsi Di Indonesia Tahun 2021. *BISECER (Business Economic Entrepreneurship)*, 6(2), 150. <https://doi.org/10.61689/bisecer.v6i2.429>
- Sugiarto, E. C. (2019). *Investasi dan Indonesia Maju | Sekretariat Negara*. KEMENTERIAN SEKRETARIAT NEGARA REPUBLIK INDONESIA.
- Sukirno, S. (2014). *Makroekonomi Teori Pengnantar* (ketiga). Raja Grafindo Persada. Jakarta.
- Sulistiyanto, B., Sutejo, I., Mulyo Widodo, A., Firmansyah, G., & Tjahyono, B. (2023). Risk Management Domain Application Plan Electronic Based Governance System (SPBE) Case Study: Tangerang Government Communications and Informatics Service. *Jurnal Indonesia Sosial Sains*, 4(09). <http://jiss.publikasiindonesia.id/>
- Sunuputri, G. A., & Hasmarini, M. I. (2023). Analisis Pengaruh Pembangunan Infrastruktur dan Investasi Terhadap PDRB di Provinsi Sumatera Selatan. *Ekonomis: Journal of Economics and Business*, 7(1), 577. <https://doi.org/10.33087/ekonomis.v7i1.694>
- Suwarlan, E., Suparman, A. N., & Taufik, O. H. (2023). Pembangunan Kapasitas Dinas Komunikasi Dan Informatika Dalam Penyelenggaraan Sistem Pemerintahan Berbasis Elektronik. *Jurnal Agregasi*

- : *Aksi Reformasi Government Dalam Demokrasi*, 11(1), 98–116.
<https://doi.org/10.34010/agregasi.v11i1.7255>
- Syahrini Qotrunnisa, A. (2021). Model Arsitektur Layanan Administrasi Pemerintahan Sistem Pemerintahan Berbasis Elektronik (Spbe) Pemerintah Daerah Kuningan. *JIKO (Jurnal Informatika Dan Komputer)*, 4(3), 187–192. <https://doi.org/10.33387/jiko.v4i3.3424>
- Wang, Q. S., Hua, Y. F., Tao, R., & Moldovan, N. C. (2021). Can Health Human Capital Help the Sub-Saharan Africa Out of the Poverty Trap? An ARDL Model Approach. *Frontiers in Public Health*, 9(June), 1–11. <https://doi.org/10.3389/fpubh.2021.697826>
- Wasito, A. (2023). Exploring Amartya Sen's Capability Approach: Insights from Climate Change Adaptation in Indonesia. *Peradaban Journal of Economic and Business*, 2(2), 115–136. <http://jurnal.peradabanpublishing.com/index.php/PJEB/article/view/109>
- Widayanto, Y., Napitupulu, D., Prihawantoro, S., Berliana, N., Handayani, T., Vitasari, A., Kusharsanto, Z., Hardiyati, R., Maninggar, N., Suryaningtyas, A., Budiwati, S., Shafira, Y., Asmara, I., Kusumawardhani, D., Firmansyah, R., Matheos, R., Akbar, M., Jayanthi, R., Purwaningsih, I., & Pertiwi, R. (2023). *Kajian Penyusunan Indeks Daya Saing Daerah 2022*. <https://doi.org/10.55981/brin.747>
- Zainuddin, D., Ria, A., & Widjajanto, T. (2023). *The Influence of Interest Rates and Infrastructure on Domestic Investment in Banten Province*. 3(1), 27–35.