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The Influence of Information and Communication Technology Development and Regional Minimum Wage on Gross Domestic Regional Product in North Maluku Province

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Abstract

This study aims to analyze the influence of information and communication technology development and minimum wage policies on economic growth in North Maluku Province. As an archipelagic region, North Maluku faces geographical challenges in the form of limited accessibility and inequality of development between regions. In recent years, local governments have encouraged the acceleration of development, especially in the information and communication technology sector and the establishment of a minimum wage policy. This study uses a quantitative approach with multiple linear regression methods, utilizing secondary data for the period 2012-2024 sourced from the Central Statistics Agency. The variables used include the Information and Communication Technology Development Index (ICT-DI) and the Regional Minimum Wage (RMW) as independent variables, as well as Gross Regional Domestic Product (GDP) as dependent variables. The results of the study show that ICT-DI has a positive and significant effect on GDP, while RMW has a positive but insignificant effect. Simultaneously, both variables have a significant effect on GDP with high explanatory ability. This indicates that increased access and utilization of technology has an important role in driving economic activity, while minimum wage policies have not had a real impact. Thus, strengthening digital development is a key factor in encouraging sustainable economic growth in the archipelago.

Keywords*: Information and Communication Technology Development Index (IP-TIK), Regional Minimum Wage (UMR), Gross Regional Domestic Product (PDRB), Multiple Linear Regression*

1. Introduction

Global economic growth in the last decade has undergone a fundamental transformation driven by the integration of digital technology and supported by the strengthening of human capital as the main pillar of competitiveness between nations. In general, Gross Domestic Product (GDP) no longer depends only on the accumulation of conventional physical capital such as machinery and land, but has begun to shift to a knowledge-based economy where ideas, innovation, and mastery of information technology are the main engines of value-added driving. This phenomenon shows that countries with mature technological infrastructure readiness and adaptive digital ecosystems are able to accelerate their national productivity more efficiently and sustainably [1]. This transformation enables the creation of high production efficiency through automation and digitization of services that cut the cost of economic transactions. However, a major challenge arises in the disparity of access between regions that creates a digital divide, which ultimately leads to uneven global economic growth and tends to be concentrated in regions that have infrastructure only [2]. This inequality demands a more inclusive policy so that technological advances are not only enjoyed by a handful of entities, but can also be an instrument for poverty alleviation and equitable distribution of welfare at all levels of society.

Indonesia as a developing country faces similar challenges in maintaining the stability of the Gross Regional Domestic Product (GDP) at the provincial level. As an archipelagic country, connectivity and the quality of human resources are the main determinants in narrowing the economic gap between regions. Economic development in Indonesia has historically been concentrated in the Western Region of Indonesia (KBI), while the Eastern Region of Indonesia (KTI) has often lagged behind in terms of contribution to national GDP [1]. Therefore, the government continues to be challenged to encourage the acceleration of development in the eastern region to create inclusive growth [3]. North Maluku Province is a real representation of the challenges of archipelagic state development

which is geographically fragmented into islands that are far apart from each other. The following is an overview of the fluctuations in the Gross Regional Domestic Product in North Maluku Province:

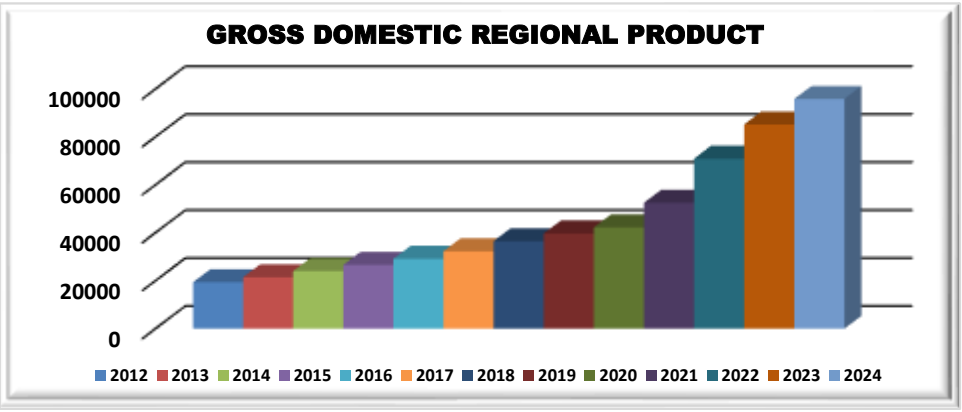

Figure 1.1 Gross Regional Domestic Product of North Maluku Province 2012-2024
Source: Central Statistics Agency of North Maluku

The Gross Regional Domestic Product of North Maluku Province in Figure 1.1 shows a consistent upward trend from 2012 to 2024. In 2012, the value of GDP was 19,341 billion rupiah, then continued to increase every year until it reached 95,788 billion rupiah in 2024. This increase reflects a significant growth in economic activity in the area. The most notable increase occurred after 2020, where GDP jumped from 42.229 billion (2020) to 70.903 billion (2022) and continued to rise until 2024. This indicates an acceleration of economic growth, which may be driven by the development of the industrial sector, investment, and infrastructure development.

The characteristics of these water-dominated areas create significant structural obstacles in the process of equitable distribution of regional development in North Maluku Province. During the period 2012-2024, North Maluku is often recorded as one of the provinces with the lowest Gross Regional Domestic Product (GDP) in Indonesia [4]. This is a logical consequence of high logistics costs and limited inter-island accessibility that cause economic supply chains to become inefficient. These extreme geographical conditions trigger high-cost economic costs which ultimately hinder the distribution of development results and access to public services evenly to remote areas [5]. However, behind these geographical challenges, North Maluku holds potential anomalies in the form of abundant natural resources, ranging from the mining, fisheries, to plantation sectors that are the backbone of the regional economy. This great potential is like a double-edged sword; It offers exponential growth opportunities but at the same time demands much more modern governance than mainland areas. The transformation of this natural wealth into sustainable economic prosperity absolutely requires the integration of cutting-edge information technology-based management and the support of superior and competitive Human Resources (HR) [6].

Entering 2025, there is an interesting phenomenon where North Maluku records the highest economic growth in Indonesia under the leadership of Governor Sherly Laos. According to the report [7], the economy of North Maluku Province in the second quarter of 2025 continues to show a very strong performance with growth of 32.09% (year-on-year), even making it the province with the highest economic growth in Indonesia, surpassing Central Sulawesi and the Riau Islands. In terms of expenditure, this growth was mainly driven by an increase in exports of goods and services in line with the increase in the production of nickel downstream commodities compared to the previous quarter. This surge in growth is a positive anomaly amid historically low GDP, reflecting the success in policy synchronization between the central and regional governments. The focus of the North Maluku RPJMD at this time emphasizes on industrial downstreaming and strengthening digital connectivity to overcome geographical obstacles in the archipelago. This phenomenon of economic "leap" is the main urgency why this research needs to be conducted to see if technological and human capital play a role in this positive trend. However, from the inconsistency of the results of previous research on the impact of technology and humans on the economy. Some studies show that technology has a positive effect on growth [8], but other studies have found that in regions with archipelago characteristics, such influences are often insignificant due to the limitations of basic infrastructure [9]. Likewise with human capital, where the quality of education sometimes does not directly correlate with an increase in GDP if the available jobs are not suitable [10].

According to Theory Endogenous Growth Theory by [11] explained that economic growth is influenced by internal factors such as improving the quality of human resources and technological advancements, which directly drive increased productivity and economic output. This theory explicitly states that technology is one of the important

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factors in driving economic growth in a country. In Indonesia, the measurement of a region's technological readiness can be interpreted in an index that has been calculated and recognized internationally and refers to the decree of The International Telecommunication Union (ITU) and adopted by the Central Statistics Agency. The Information and Communication Technology Development Index (IPTIK) is a composite measure that describes the level of technology development, access, and use of ICT in a region [9]. Endogenous growth theory emphasizes that technological progress is not a random external factor, but a major internal factor born from investment in knowledge and innovation, which is able to create production efficiency and long-term economic growth [8]. Within this framework, technology acts as a catalyst that allows for increased output without having to rely entirely on the massive addition of physical inputs. For North Maluku Province, which has unique geographical characteristics with a cluster of islands separated by the ocean, the role of technology has become much more crucial. The Information and Communication Technology Development Index (IPTIK) is present as a "digital bridge" that is expected to be able to break down geographical barriers and cut the cost of economic transactions that have been swollen due to logistical constraints [12]. With the optimization of IPTIK, distance barriers are no longer the main barrier in trade and public service activities, so that the efficiency created can encourage regional competitiveness and accelerate the distribution of prosperity to the deepest islands in North Maluku.

The Information and Communication Technology Development Index (IP-ICT) in North Maluku Province shows a general upward trend in unit points during the 2012-2024 period. The value of ICT-DIincreased from 3.12 points in 2012 to 5.68 points in 2024, reflecting the development of digital technology access, use, and capacity in the area. Although it had decreased in 2016 to 3.21 points, the overall trend remained positive with a significant increase, especially after 2018. This shows that the development of the ICT sector in North Maluku is growing and has the potential to support economic activities and connectivity between archipelago regions. This cannot be separated from the quality of human resources as actors in driving the economy, this is in line with the The human capital theory of [13] states that investments in individual education, skills, and health will increase labor productivity thereby driving economic growth. In this context, the increase in productivity and quality of the workforce can ultimately affect wage structures, including the setting of the minimum wage in an area.

The Regional Minimum Wage (UMR) is by definition the minimum standard used by employers or industry players to provide wages to workers in a region [14]. Theoretically, the minimum wage serves as a social safety net to ensure the welfare of workers and maintain people's purchasing power. In the context of macroeconomics, the right wage policy is expected to encourage household consumption, which is one of the main components of shaping the Gross Regional Domestic Product (GDP) [15]. The Regional Minimum Wage (UMR) in North Maluku Province shows a consistent trend of increasing in units of thousands of rupiah during the 2012-2024 period, from around 960.50 thousand rupiah in 2012 to 3,200.00 thousand rupiah in 2024, with a gradual increase every year that reflects the increase in worker wage standards, although it had stagnated in the 2020-2021 period before increasing again in the following years.

The linkage between UMR and economic growth in Indonesia often shows positive and significant results, where measurable wage increases can increase labor productivity and overall regional output [16]. In the Efficiency Wage Theory put forward by Carl Shapiro and Joseph Stiglitz in [17] explains that companies tend to pay wages above market equilibrium levels to increase labor productivity. Higher wages can encourage work motivation, reduce absenteeism and turnover, and minimize lazy behavior (shirking), so that worker performance becomes more optimal. Thus, increasing wages not only impacts the welfare of workers, but also contributes to increased output and efficiency of the company, which can ultimately drive economic growth. An increase in the minimum wage is considered a stimulus for people to increase consumption, which in turn will encourage the passion for production in sectors of the local economy [18]. However, in archipelagic areas such as North Maluku, wage policies face unique challenges related to the often uneven variation in prices of basic necessities between islands. There is an interesting gap to be studied in North Maluku where on the one hand, improving digital infrastructure (ICT-DI) is expected to be able to reduce the cost of living and improve market efficiency, but on the other hand, the wage policy (UMR) must be able to keep pace with the cost of living in the archipelago so that economic growth remains inclusive [19]. Some studies show that the minimum wage has a significant influence on economic growth in the short and long term, but its effectiveness is highly dependent on the condition of the supporting infrastructure in the region.

The integration between technological advances and wage policies is very relevant in explaining why North Maluku is able to achieve the highest growth in 2025. The wider penetration of the internet in the archipelago not only facilitates communication, but also expands employment opportunities and increases the efficiency of the digital labor market [20]. With increased access to information, workers and business actors in North Maluku can operate more optimally, which ultimately contributes to increasing the region's gross added value. Based on the

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description above, this study is crucial to be conducted to analyze the extent of the influence of ICT-DI and UMR on the Gross Regional Domestic Product in North Maluku Province during the period 2012-2024. By understanding the interaction of these two variables, it is hoped that the right policy formulation can be found to maintain the positive growth trend that has been achieved. Therefore, the researcher took the title: "The Influence of Information and Communication Technology Development and Regional Minimum Wage on Gross Domestic Regional Product in North Maluku Province".

2. Research Methods

This study applies a quantitative approach that aims to analyze the correlation and interaction between variables through numerical data processing with the support of statistical analysis instruments [21]. According to [22], quantitative methods are research approaches that use objective measurements as well as numerical data analysis to test hypotheses and explain the relationships between variables in a systematic manner. The selection of this approach is based on the focus of research to assess the extent to which the Information and Communication Technology Development Index (IPTIK) and the Regional Minimum Wage (UMR) contribute to the Gross Regional Domestic Product (PDRB) of North Maluku Province. The data used in this study is secondary data in the form of a time series for the period 2012-2024 sourced from the Central Statistics Agency (BPS) and the Ministry of Communication and Digital for IPTIK data, as well as annual reports of Bank Indonesia and the North Maluku Provincial Government for UMR and GDP data.

The data processing process was carried out with the help of EViews 12 software using the multiple linear regression method in the natural logarithm model (Log-Linear) to determine and prove the influence between variables [23] Once the estimation model is formed, a series of tests are carried out that include classical assumption tests (normality, multicollinearity, heteroscedasticity, and autocorrelation) to ensure the validity of the model. Furthermore, a t-test was carried out to test the influence partially, an F test to test the influence simultaneously, and the calculation of the determination coefficient (R^2) to see how much the independent variable was able to explain the variation in the dependent variable. The regression model used in this study is as follows:

$$\mathbf{LOG(PDRB) = \alpha + \beta 1 IPTIK + \beta 2 LOG(UMR) + \varepsilon}$$

Description:

LOG(PDRB)	= Natural logarithm of Gross Regional Domestic Product (PDRB)
α	= Regression constant (intercept)
β_1, β_2	= The regression coefficient of each independent variable (IPTIK)
IPTIK	= Information and Communication Technology development index
LOG(UMR)	= Natural logarithm of the Regional Minimum Wage (UMR)
ε	= Error term (disruptive variable)

3. Results and Discussions

Results

Overview of the Geographical Conditions of North Maluku Province

Figure 1.2 Geographical Map of North Maluku Province

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North Maluku Province is one of the archipelago regions in Indonesia which is located in the eastern part, precisely in the eastern region of Indonesia. Geographically, this province is located between the islands of Sulawesi and the island of Papua, and is included in the Maluku Islands group. The area is dominated by the ocean with a much wider percentage of waters than the mainland, thus making North Maluku an archipelago that has the characteristics of a scattered and separate region. Administratively, North Maluku consists of several districts and cities spread across the main islands such as Halmahera, Ternate, Tidore, Morotai, and Taliabu. Halmahera Island is the largest island and is the center of land activities, while cities such as Ternate and Tidore Islands have an important role as government and economic centers. The geographical location in the form of islands causes connectivity between regions to be highly dependent on sea and air transportation.

In terms of territorial boundaries, North Maluku is bordered by the Pacific Ocean to the north, Maluku Province to the south, the Halmahera Sea to the east, and Sulawesi Island to the west. This geographical condition provides great potential for natural resources, especially in the marine and mining sectors, but also presents challenges in the equitable distribution of development between regions due to separate geographical conditions. Topographically, the North Maluku region is dominated by mountainous areas, hills, and coastal areas. Many of the islands in the region are the result of volcanic activity, such as Mount Gamalama in Ternate, which makes the soil relatively fertile but also prone to natural disasters. With these geographical characteristics, development in North Maluku requires an archipelagic region-based approach to optimize potential while overcoming accessibility limitations.

Classic Assumption Test

Normality Test

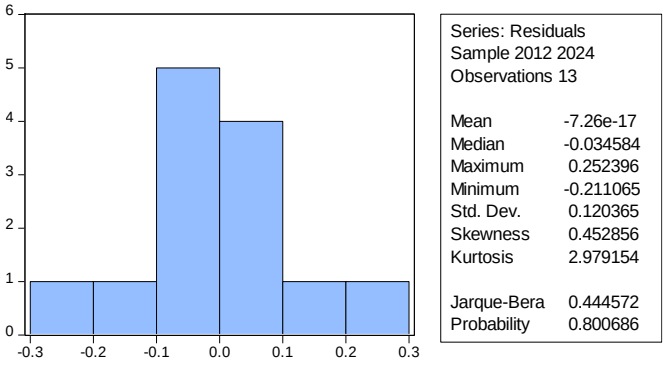

Figure 4. Normality Test
***Source*:** Data processed, 2026

The test result stated in Jarque-Bera was 0.4344572 with a probability of 0.800686, greater than 0.05, so the residue was considered normal. The skewness value of 0.452856 and the kurtosis of 2.979154 are also close to the normal distribution pattern. Therefore, the assumption of normality is still acceptable.

Multicollinearity Test

Table 1. Multicollinearity Test Results

Variable	Coefficient of Variance	Uncentered VIF	Centered VIF
IPTIK	8.778285	6564.000	5.336782
LOG(UMR)	0.052481	132.4909	5.336782

***Source*:** Data processed, 2026

The test results showed that the VIF value for the IPTIK variable was 5.336782 and for LOG(UMR) was 5.336782. All of these values are still below the limit of 10 so it can be said to be safe. Based on this, it can be concluded that there is no indication of multicollinearity in the model. This means that the independent variables do not have too strong relationships, so the model has fulfilled the assumptions of multicollinearity well.

Autocorrelation Test

Table 2. Autocorrelation Test Results

F-statistic	0.533472	Prob. F(2,8)	0.6061
Obs*R-squared	1.529763	Prob. Chi-Square(2)	0.4654

***Source*:** Data processed, 2026

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The results of the autocorrelation test showed that the F-statistic value was 0.533472 with a probability of 0.6061, and the Obs*R-squared value was 1.529763 with a probability of 0.4654. Since the two probability values are greater than the α limit = 0.05, the model can be declared to have no autocorrelation. This means that the residuals are not correlated between periods, so the model has fulfilled the classical assumption of autocorrelation-free.

Heteroscedasticity Test

Table 3. Heteroscedasticity Test Results

F-statistic	**1.236329**	**Prob. F(3,11)**	**0.2757**
Obs*R-squared	**2.577201**	**Prob. Chi-Square(3)**	**0.3848**

***Source*:** Data processed, 2026

The test results showed that the F-statistic value was 1.236329 with a probability of 0.2757, and the Obs*R-squared value was 2.577201 with a probability of 0.3848. Since both probability values are greater than the 0.05 limit, it can be concluded that the model does not suffer from heteroscedasticity problems. This means that the residual variance tends to be constant, so the model has met classical assumptions and the results of the estimates can be considered efficient and reliable.

Multiple Linear Regression Analysis

Table 4. Regression Results

Dependent Variable: LOG(PDRB)		
Variable	**Coefficient**	**Prob.**
C	**4.995008**	**0.1227**
IPTIK	**0.454797**	**0.0008**
LOG(UMR)	**0.249245**	**0.3021**

***Source*:** Data processed, 2026

Through multiple linear regression analysis, the following form of model equations is obtained:

$$\mathbf{LOG(PDRB) = 4.99500783676 + 0.454796545284*IPTIK + 0.249245161029*LOG(UMR)}$$

Description:
Y = Gross Regional Domestic Product (GDP)
X_1 = Information and Communication Technology Development Index (IPTIK)
X_2 = Regional Minimum Wage (UMR)

The results of the regression equation model can be explained as follows:

1. The constant value of 4.995008 indicates that if the variables of IPTIK (X_1) and LOG(UMR) (X_2) are considered fixed or unchanged, then the value of LOG(PDRB) (Y) is at 4.995008 units.
2. The IPTIK variable coefficient (X_1) of 0.454797 indicates a positive influence. This means that if the IPTIK increases by one unit, then the LOG (GDP) will increase by 0.454797 units, assuming other variables remain the same.
3. The variable coefficient of LOG(UMR) (X_2) of 0.249245 also indicates the direction of positive influence. This means that if the LOG(UMR) increases by one unit, then the LOG(GDP) will increase by 0.249245 units, with the condition of the other variables unchanged.

Coefficient of Determination Test (R^2)

Table 5. Determination Coefficient Test Results (R^2)

R-squared	**0.946053**
Adjusted R-squared	**0.935264**

***Source*:** Data processed, 2026

The determination coefficient (R^2) test showed an R-squared value of 0.946053 and an Adjusted R-squared of 0.935264. This value indicates that the IPTIK (X_1) and LOG(UMR) (X_2) variables are able to explain the variation in the LOG(PDRB) (Y) variable of 93.53%, while the remaining 6.47% is influenced by other factors outside the model. Thus, it can be concluded that the regression model used has a very strong ability to explain the influence of independent variables on dependent variables.

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Simultaneous Test (F Test)

Table 6. Simultaneous Test Results (F Test)

N	$F_{statistic}$	F_{table}	Prob (F-statistic)
13	87.68430	4.10	0.000000

***Source*:** Data processed, 2026

The results of the simultaneous test showed that the $F_{Statistic}$ value was 87.68430 with a significance level of 0.000000, while the F_{table} value at the level of 0.05 was 4.10. Since the $F_{Statistic}$ is much larger than the Ft_{able} (87.68430 > 4.10) and the significance value is also below 0.05, it can be concluded that the variables IPTIK (X_1) and LOG(UMR) (X_2) together have a significant effect on LOG(GDP) (Y).

Partial Test (t-test)

Table 7. Partial Test Results (t-test)

Dependent Variable: LOG(PDRB)			
Independent Variable	$t_{statistic}$	t_{table}	Prob.
IPTIK	4.732237	1.812	0.0008
LOG(UMR)	1.087996	1.812	0.3021

***Source*:** Data processed, 2026

Based on the results of checking one by one through the t-test in the table above, the following results were obtained:

1. The IPTIK variable (X_1) has a tcal value of 4.732237 > a t_{table} of 1.812 with a significance level of 0.0008 < 0.05. This shows that IPTIK has a positive and significant effect on LOG(PDRB) (Y). This means that when IPTIK increases, the LOG (GDP) also tends to increase.
2. The variable LOG(UMR) (X_2) has a $t_{statistic}$ value of 1.087996 < a t_{table} of 1.812 with a significance level of 0.3021 > 0.05. This means that LOG(UMR) has a positive but insignificant effect on LOG(PDRB) (Y). Thus, changes in LOG(UMR) have not been able to have a real influence on changes in LOG(GDP).

Discussion

The Effect of the Information and Communication Technology Development Index on Gross Regional Domestic Product in North Maluku Province

Based on the results of multiple linear regression carried out, the variable of the Information and Communication Technology Development Index (IPTIK) has a regression coefficient value of 0.454797 with a calculated t value of 4.732237 and a significance value of 0.0008. The t-value of the table at a significance level of 5% ($\alpha = 0.05$) is 1.812. Because the calculated t-value is greater than the table t (4.732237 > 1.812) and the significance value is smaller than 0.05 (0.0008 < 0.05), it can be concluded that IPTIK has a positive and significant effect on the Gross Regional Domestic Product (GDP). Thus, H_a is accepted and H_0 is rejected. These findings show that any increase in IPTIK by 1 unit will increase GDP by 0.454797 units, assuming that other variables in the model are considered constant (Ceteris Paribus).

These results show that the development of digital infrastructure in North Maluku has a strategic role in accelerating regional economic growth. Although North Maluku is a geographically fragmented archipelago, the achievement of ICT-DIthat continues to improve has become a driving force for economic efficiency. This significant positive relationship shows that the better the access, use, and expertise of the community in information technology, the higher the added value of goods and services produced by all economic units in North Maluku. The increase in ICT-DIprovides space for the optimization of regional leading sectors through digitalization, which ultimately strengthens the region's GDP structure.

Theoretically, the Information and Communication Technology Development Index (IP-ICT) is a composite measure that refers to The International Telecommunication Union (ITU) standard to describe the level of technological development of a region [9]. Based on the Endogenous Growth Theory developed by Romer, technological progress is not just an external factor, but a major internal engine that is able to create production efficiency and long-term economic growth [8]. In the context of archipelagic areas such as North Maluku, ICT-DIacts as a "digital bridge" that breaks down geographical barriers and cuts the high cost of economic transactions due to logistics constraints between islands [12]. ICT development has proven to be able to provide a stimulus for

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the economy, especially in the digital economy era where access to information is the main key to competitiveness [3].

The findings of this study are in line with a study conducted by [1] which states that technological progress measured through IPTIK has a positive and significant effect on the GDP in the Eastern Region of Indonesia (KTI). Technology integration allows for high efficiency and expanded market reach for economic actors in remote areas. In addition, [6] emphasized that improving the quality of technology and internet access directly contributes to economic growth through increasing national productivity. Although in some cases in other regions, the influence of technology is sometimes not immediately noticeable due to basic infrastructure constraints [9], the results of this research in North Maluku actually prove that investment in the digital sector is able to provide real economic leverage. This condition shows that the people of North Maluku are starting to be well integrated by technology, where increased access to information makes it easier for business actors to operate more optimally [3]. Thus, the strengthening of ICT-DIunder adaptive development policies is the dominant factor in encouraging North Maluku's economic leap to reach the highest national growth.

The Effect of Regional Minimum Wage on Gross Regional Domestic Product in North Maluku Province

Based on the results of multiple linear regression that has been carried out, the Regional Minimum Wage (UMR) variable has a regression coefficient value of 0.249245 with a calculated t-value of 1.087996 and a significance value of 0.3021. The t-value of the table at a significance level of 5% ($\alpha = 0.05$) is 1.812. Since the calculated t-value is smaller than the table t ($1.087996 < 1.812$) and the significance value is greater than 0.05 ($0.3021 > 0.05$), it can be concluded that the Regional Minimum Wage has no significant effect on the Gross Regional Domestic Product (GDP). Thus, H_a is rejected and H_0 is accepted. These results show that changes in the UMR have not been able to exert a real influence on changes in GDP, assuming that other variables in the model are considered constant.

These findings indicate that although the direction of the relationship between UMR and GDP is positive, its role is not strong enough to significantly boost regional economic growth. One of the reasons is the economic structure of North Maluku which is still dominated by the informal sector, such as fisheries and agriculture, where most of the people work as fishermen and farmers whose income is not directly dependent on the minimum wage policy [24]. This condition causes the change in the UMR not to fully impact the increase in people's purchasing power at large.

Theoretically, the Regional Minimum Wage (UMR) is the minimum standard used by employers or industry players to provide wages to workers in a region (Patricia, 2025). An increase in the minimum wage is considered a stimulus for society to increase consumption, which is one of the main components of shaping [15]. From a macroeconomic perspective, adaptive wage policies are expected to boost production enthusiasm in local economic sectors due to an increase in effective demand from the public [18]. However, the results of this study are not entirely in line with the findings in [16] which states that the minimum wage has a positive and significant influence on the Gross Regional Domestic Product in Indonesia, because in the context of North Maluku the influence is not significant.

Furthermore, the characteristics of North Maluku as an archipelago require a wage policy that is able to compensate for the high cost of living due to logistical constraints. Proper UMR adjustments are still needed to maintain the welfare of formal workers. As explained in [19], the minimum wage has an influence on economic growth both in the short and long term. An increase in the minimum wage also often correlates with increased labour absorption and productivity, especially if supported by adequate infrastructure [20]. However, in the context of this study, the relationship has not been seen to be significant due to the limitations of UMR coverage which is more applicable to the formal sector. Therefore, wage policy remains important, but it needs to be balanced with the strengthening of key sectors such as fisheries and agriculture so that their impact on economic growth can be more evenly distributed.

The Effect of the Information and Communication Technology Development Index and Regional Minimum Wage on the Gross Regional Domestic Product in North Maluku Province

Based on the results of simultaneous testing (F Test), an F-statistic value of 87.68430 was obtained with a probability value (F-statistic) of 0.000000. Using a significance level of 5% ($\alpha = 0.05$), the probability value is much smaller than 0.05 ($0.000000 < 0.05$). This shows that together, the variables of the Information and Communication Technology Development Index (IPTIK) and the Regional Minimum Wage (UMR) have a significant effect on the Gross Regional Domestic Product (GDP), so that H_a is accepted and H_0 is rejected. This finding is also supported by an Adjusted R-squared value of 0.935264, which means that 93.53% of the variation

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in GDP can be explained by these two variables, while the remaining 6.47% is influenced by other factors outside the study model.

The results of this study show that the role of technology development through IPTIK is the main factor in encouraging the regional economy, while UMR contributes although it is not partially significant. In archipelagic areas such as North Maluku, efficiency generated by technology has a more dominant impact in increasing economic activity than wage policy. This is because the regional economic structure is still dominated by the informal sector such as fisheries and agriculture, so not all people are reached by the UMR policy. Thus, although simultaneously the two variables have a significant influence, the main contribution in the model is more supported by technological developments.

Theoretically, this simultaneous influence is in line with the concept of modern economic development that combines various growth factors. The ICT Development Index (IPTIK) plays a role in creating efficiency, access to information, and market expansion [9], while the Regional Minimum Wage (UMR) functions in maintaining the stability of household consumption as one of the main components that form GDP [15]. In the perspective of Endogenous Growth Theory, technological advancement is a major factor in increasing long-term productivity, while income factors play a supporting role [8]. In the context of North Maluku, IPTIK functions as a link between archipelago regions, while UMR has a more limited role because it only has an impact on the formal sector.

These findings are also supported by research in [1] which states that the IPTIK variable together with other variables has a significant effect on regional economic growth, especially in the Eastern Region of Indonesia. In addition, in [19] He explained that the minimum wage policy can affect economic growth if it is supported by a strong and equitable economic structure. Research in [20] It also emphasized that strengthening digital infrastructure accompanied by adaptive economic policies can improve regional economic performance. Viewed as a whole, these results confirm that the North Maluku Provincial Government needs to focus more on strengthening infrastructure and the use of digital technology as the main engine of economic growth. Meanwhile, the UMR policy remains important in maintaining the welfare of formal workers, but it needs to be balanced with the development of key sectors such as fisheries and agriculture so that its impact on the economy becomes wider and more even. Thus, the increase in GDP in North Maluku is the result of a combination of the dominant role of technology and complementary economic policies.

4. Conclusion

This study shows that the Information and Communication Technology Development Index (IPTIK) and the Regional Minimum Wage (UMR) together play a role in influencing the Gross Regional Domestic Product (GDP) of North Maluku Province during the 2012-2024 period. Based on the results of statistical testing, the IPTIK variable was proven to have a positive and partially significant influence with a coefficient of 0.454797, which shows that increasing technological readiness and digital access is able to encourage regional economic growth. Meanwhile, the UMR variable has a positive coefficient of 0.249245, but it has no significant effect, so the change in the UMR has not been able to have a real impact on GDP. Simultaneously, these two variables have a significant effect on GDP with an explainability of 93.53%, which means that most of the variation in GDP can be explained by the model, while the rest is influenced by other factors outside the study. This indicates that technological developments have a stronger role in driving economic growth than minimum wage policies in the region.The implications of these findings provide an application basis for the North Maluku Provincial Government to continue to accelerate the equitable distribution of digital infrastructure to the smallest islands in order to cut logistics costs that have been hampering growth. The policy of increasing UMR in the future should be maintained so that it remains adaptive to the rate of inflation in the archipelago, considering its very vital role as a driver of domestic consumption. There is speculation that the highest national economic growth jump achieved by North Maluku in 2025 is the result of the saturation point of digital infrastructure investment that is now beginning to harvest efficiency in aggregate. For further research, it is recommended that model development be carried out by adding specific variables of the archipelagic region such as maritime logistics costs or inter-island connectivity to deepen the analysis of structural barriers that have not been accommodated in the ICT development index in general, so that regional economic policy formulation can be more precise.

Reference

[1] F. N. Widyasari and A. S. Fauzi, "Analisis Dampak Kemajuan Teknologi Terhadap Pembangunan Ekonomi di Kawasan Timur Indonesia Tahun 2014-2023," *Parad. J. Ilmu Ekon.*, vol. 8, no. 3, pp. 1537–1549, 2025, doi: 10.57178/paradoks.v8i3.1570.

[2] M. W. Ap, P. S. Umma, I. R. Sehati, and S. Safitri, "Dampak Perkembangan IPTEK terhadap Perubahan Sosial dan Dinamika Kehidupan," *WISSEN J. Ilmu Sos. dan Hum.*, vol. 3, pp. 258–264, 2025, [Online]. Available: https://doi.org/10.62383/wissen.v3i2.782

DOI: https://doi.org/ 10.31004/riggs.v5i1.7715

[3] A. Alifia and F. Andrianus, "Pengaruh Teknologi Informasi dan Komunikasi terhadap Pertumbuhan Ekonomi Indonesia," *J. Ilm. Ekon. Bisnis*, vol. 29, pp. 322–330, Aug. 2024, doi: 10.35760/eb.2024.v29i2.10169.
[4] Badan Pusat Statistik, "Maluku Utara Dalam Angka 2025," Badan Pusat Statistik. [Online]. Available: https://malut.bps.go.id/id/publication/2025/02/28/2270cba7229eb64b05af5ee5/provinsi-maluku-utara-dalam-angka-2025.html
[5] I. Purnamasari and I. Amaliah, "Pengaruh Indeks Pembangunan Manusia , Inflasi Dan Akses Internet Terhadap Pertumbuhan Ekonomi Indonesia Tahun 2013-2022," *Bandung Conf. Ser. Econ. Stud.*, pp. 251–258, 2022, [Online]. Available: https://doi.org/10.29313/bcses.v3i1.7094
[6] F. N. Hidayah and S. R. Faridatussalam, "Pengaruh Ketimpangan Pendapatan dan Teknologi Terhadap Pertumbuhan Ekonomi di Indonesia Tahun 2018-2022," vol. 3, pp. 9253–9263, 2023.
[7] Bank Indonesia, "Laporan Perekonomian Provinsi Maluku Utara Agustus 2025," Bank Indonesia. Accessed: Mar. 03, 2025. [Online]. Available: https://www.bi.go.id/id/publikasi/laporan/lpp/Pages/Laporan-Perekonomian-Provinsi-Maluku-Utara--Agustus-2025.aspx
[8] S. A. Rochmaniyah, "Analisis Pengaruh Teknologi Informasi dan Komunikasi Terhadap Pertumbuhan Ekonomi di Indonesia Tahun 1999-2022," Universitas Tidar, 2024.
[9] M. D. E. Wilianti, I. W. Suparta, and R. M. Putri, "Pengaruh Teknologi Informasi Komunikasi Terhadap PDRB di Pulai Jawa dan Sumatera 2018-2021," vol. 5, no. 2, pp. 131–146, 2023.
[10] A. S. Lazuardi, A. A. Muttaqin, F. Ekonomi, and U. Brawijaya, "Pengaruh Jumlah Tenaga Kerja, IPM, dan IPTIK Terhadap Pertumbuhan Ekonomi," vol. 2, no. 3, pp. 475–488, 2023.
[11] P. M. Romer, "Endogenous technological change," *J. Polit. Econ.*, vol. 98, no. 5, pp. S71–S102, 1990, doi: 10.3386/w3210.
[12] O. Theophilia, P. E. Pembangunan, F. Ekonomi, and U. P. Nasional, "Analisis Pengaruh Sektor Telekomunikasi , E-Commerce , Indeks Pembangunan Teknologi Informasi Komunikasi (IP-TIK) dan Indeks Pembangunan Manusia (IPM) Terhadap Pertumbuhan Ekonomi di Indonesia," vol. 9, no. 4, pp. 1528–1535, 2023.
[13] G. S. Becker, *Human Capital*, 3rd Editio. Chicago: University of Chicago Press, 2024. [Online]. Available: https://books.google.co.id/books/about/Human_Capital.html?id=nowHzq2QoYsC&redir_esc=y
[14] Y. D. Patricia, "Pengaruh Indeks Pembangunan Manusia , Upah Minimum Regional , Penanaman Modal Asing dan Pertumbuhan Penduduk Terhadap Pertumbuhan Ekonomi di Provinsi Nusa Tenggara Barat," *J. Ekon. Bisnis, Manaj. dan Akunt.*, pp. 413–423, 2025, [Online]. Available: doi: doi.org/jebma.v5n2.6015%0APengaruh
[15] J. J. Pingkan, "Analisis Pengaruh Upah Minimum, Inflasi, dan Tenaga Kerja Formal terhadap Produk Domestik Regional Bruto: Studi Panel Data Provinsi di Indonesia (2018-2024)," *JIEP J. Ilmu Ekon. dan Pembang.*, vol. 8, no. 2, pp. 316–325, 2025.
[16] A. Abdullah and Hasbiullah, "Pengaruh Inflasi, Upah Minimum Provinsi, Belanja Modal, Dan Pengangguran Terhadap Produk Domestik Regional Bruto Di Indonesia," *ICOR J. Reg. Econ.*, vol. 4, no. 1, pp. 12–22, 2023.
[17] M. Ismayilzada, "Efficiency Wage Theory," Mar. 2022.
[18] A. Arifin, "Analisis Pengaruh Investasi, Inflasi dan Upah Minimum Provinsi terhadap Produk Domestik Regional Bruto di Pulau Sulawesi periode 2010-2019," Universitas Brawijaya, 2020.
[19] I. Aprilya and W. Juliprijanto, "Pengaruh Jumlah Penduduk, Umr, Dan Tpt Terhadap Pertumbuhan Ekonomi Di Indonesia," *Transekonomika Akuntansi, Bisnis dan Keuang.*, vol. 2, no. 5, pp. 469–482, 2022, doi: 10.55047/transekonomika.v2i5.238.
[20] N. A. Herina, M. Kara, A. K. Mahmud, U. Islam, and N. Alauddin, "Pengaruh Pertumbuhan Ekoni, Upah Minimum Regional, dan Penetrasi Internet terhadap Penyerapan Tenaga Kerja di Provinsi SUlawesi Selatan," *J. Reg. Econ.*, vol. 06, no. 01, pp. 14–22, 2025.
[21] P. D. Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan RnD*, 2nd Editio., vol. 17. Penerbit Alfabeta Bandung, 2023.
[22] J. W. Creswell and J. D. Creswell, *Research Design Qualitative, Quantitative, and, Mixed Methods Approaches*, Fifth Ed. London: SAGE Publications, Inc, 2018. [Online]. Available: repositaori.telkomuniversity.ac.id
[23] I. Ghozali, *Aplikasi Analisis Multivariate dengan Program IBM SPSS 25*, Nineth Ed. Semarang: Badan Penerbit Universitas Diponegoro, 2018. [Online]. Available: https://www.scribd.com/document/644946086/Ghozali-Edisi-9-pdf
[24] A. Nur, A. Massiseng, S. Syamsuddin, H. S. Sasole, A. Surachmat, and Y. Suleman, "Kajian sosial ekonomi masyarakat di kawasan Pelabuhan Perikanan Nusantara (PPN) Ternate Provinsi Maluku Utara Socio-economic study of the community in the Ternate Nusantara Fisheries Port (NFP) Area , North Maluku Province," *Akuatikisle J. Akuakultur, Pesisir dan Pulau-Pulau Kecil*, vol. 8, no. 2, pp. 75–80, 2024, [Online]. Available: https://doi.org/10.29239/j.akuatikisle.8.2.75-80

DOI: https://doi.org/ 10.31004/riggs.v5i1.7715