

## Digital Economy and Economic Growth in Indonesia: A Panel Data Analysis

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### ABSTRACT

This study aims to analyze the impact of the digital economy on economic growth in Indonesia using a panel data approach across provinces. The rapid development of digital technologies, particularly financial technology (fintech) and e-commerce, has driven economic transformation through improved efficiency, expanded market access, and enhanced financial inclusion, although disparities in digital adoption across regions remain a challenge.

This research utilizes secondary data analyzed panel data regression methods, including the Common Effect Model, Fixed Effect Model, and Random Effect Model, using EViews. The variables employed include digital economy indicators (internet usage, fintech, and e-commerce) along with control variables such as investment and inflation.

The results indicate that the digital economy has a positive and significant effect on economic growth. Financial technology improves access to financial services and transaction efficiency, while e-commerce stimulates consumption and business expansion. However, variations across provinces highlight the importance of digital infrastructure readiness and human capital quality.

This study emphasizes the need to strengthen digital infrastructure, enhance digital literacy, and implement inclusive policies to support sustainable economic growth in the digital era.

Keywords: Digital Economy; Economic Growth; Financial Technology;  
E-Commerce

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### INTRODUCTION

The rapid advancement of digital technology over recent decades has triggered profound structural changes in the global economy. The digital economy characterized by the widespread use of information and communication technologies (ICT), digital platforms, and big data analytics has emerged as a critical driver of economic efficiency, productivity, and innovation. These developments have not only reshaped production and distribution processes but have also facilitated the emergence of more flexible, platform-oriented, and adaptive business models that respond effectively to evolving global market conditions (World Bank, 2021; UNCTAD, 2021). In this regard, the digital economy serves as a key catalyst for accelerating economic growth while simultaneously promoting broader economic inclusion through improved access to technology and markets. In Indonesia, the expansion of the digital economy has accelerated significantly in recent years. Rising internet penetration, increased smartphone adoption, and the proliferation of digital platforms have fundamentally altered patterns of consumption and production. Key sectors such as e-commerce, digital payments, and

financial technology (fintech) have experienced substantial growth and now play an increasingly important role in national economic activity. Furthermore, digital transformation has opened new opportunities for micro, small, and medium enterprises (MSMEs) to enhance market reach, improve operational efficiency, and strengthen competitiveness in both domestic and international markets (OECD, 2022; Google, Temasek, & Bain & Company, 2023). This underscores the dual role of the digital economy as both a growth engine and a tool for economic empowerment.

Despite its considerable potential, the extent to which the digital economy contributes to economic growth remains subject to further empirical validation. Existing studies offer mixed findings, largely due to differences in methodological approaches, variable selection, and country-specific structural conditions. In the Indonesian context, several challenges persist, including uneven digital infrastructure development across regions, limited digital literacy, and continuously evolving regulatory frameworks, all of which may influence the effectiveness of digital economic integration (World Bank, 2021; BPS, 2023). Consequently, there is a need for more comprehensive empirical research that captures the complex and multidimensional relationship between the digital economy and economic growth. To address this gap, the present study adopts a more integrated analytical framework by combining multiple indicators of the digital economy. Unlike prior research that often relies on single proxies, this study employs a multidimensional approach encompassing digital infrastructure, e-commerce activities, digital financial transactions, and the level of technological adoption among individuals and firms. Such an approach is better suited to reflect the complexity and interconnected nature of the digital economy ecosystem, particularly in developing economies like Indonesia (UNCTAD, 2021; OECD, 2022).

In addition, this study applies a more rigorous econometric strategy by integrating panel data regression with dynamic modeling techniques, specifically the Vector Error Correction Model (VECM) and the Autoregressive Distributed Lag (ARDL) model. This methodological combination enables a more comprehensive examination of both short-run and long-run relationships between digital economy indicators and economic growth, while also capturing the adjustment process toward long-term equilibrium. The use of dynamic models is particularly important, as the effects of digital transformation tend to be gradual and cumulative, making them less suitable for analysis using purely static frameworks (Shahbaz et al., 2021; Zhang & Danish, 2022). Moreover, this study accounts for regional heterogeneity within Indonesia by utilizing provincial-level panel data. This approach allows for the identification of disparities in digital economy development and their varying impacts on economic growth across regions. Considering the persistent digital divide both in terms of infrastructure availability and human capital capacity this regional perspective is essential for producing more nuanced and context-sensitive findings (BPS, 2023). As a result, the study provides insights that go beyond aggregate national trends and better reflect local dynamics.

By integrating a multidimensional framework with robust analytical methods, this research aims to offer more comprehensive and up-to-date empirical evidence on the role of the digital economy as a key driver of economic growth in Indonesia. The findings are also expected to contribute to the formulation of evidence-based policies, particularly those aimed at fostering inclusive and sustainable digital transformation. In this regard, accelerating the development of digital infrastructure, improving digital literacy, and strengthening as well as harmonizing regulatory frameworks are critical priorities to maximize the benefits of the digital economy for national development (Asian Development Bank, 2022; OECD, 2022). Finally, this study seeks to empirically examine the role of the digital economy as a primary determinant of economic growth in Indonesia. By employing a combination of panel data regression and time-series techniques (VECM and ARDL), it aims to uncover both causal linkages and the dynamic interactions between digital economy indicators and macroeconomic performance in the short and long term. The key contribution of this research lies in providing updated empirical

insights through an integrated methodological approach, thereby offering a more holistic understanding of how the digital economy shapes national economic growth.

From a policy perspective, the findings highlight the importance of a coordinated strategy in advancing the digital economy. This includes ensuring equitable access to digital infrastructure, strengthening innovation ecosystems, enhancing human capital capabilities, and developing adaptive regulatory frameworks in line with technological progress. Such measures are essential to ensure that the digital economy not only drives economic growth but also supports inclusive, sustainable, and globally competitive development in Indonesia.

## **LITERATUR REVIEW**

### **1. Digital Economy**

The digital economy refers to a broad range of economic activities that rely on digital technologies as a central component in production, distribution, and consumption processes. According to the World Bank (2021), it encompasses the use of information and communication technologies (ICT), digital platforms, and large-scale data analytics (big data) to enhance efficiency and economic productivity. Similarly, UNCTAD (2021) emphasizes that the digital economy extends beyond the technology sector itself, incorporating the digital transformation of traditional industries driven by technological integration.

The expansion of the digital economy has reshaped the global economic structure by fostering the emergence of innovative, platform-based business models that are more flexible and scalable. OECD (2022) highlights that digitalization contributes to lowering transaction costs, improving market efficiency, and expanding access to economic services. In developing countries, the digital economy offers significant potential to promote economic inclusion, although it continues to face challenges such as unequal access to technology and limitations in digital infrastructure.

### **2. Economic Growth**

Economic growth is a key indicator used to assess a country's economic performance, commonly measured by the increase in Gross Domestic Product (GDP). In modern growth theories, particularly endogenous growth theory, technological progress and innovation are regarded as fundamental drivers of long-term economic growth. In the digital era, technology plays a pivotal role in enhancing productivity by improving the efficiency of resource utilization and accelerating the diffusion of innovation.

Empirical evidence supports this relationship. Shahbaz et al. (2021) find that digitalization positively influences economic growth through improvements in energy efficiency and industrial productivity. Likewise, Zhang and Danish (2022) demonstrate that digital transformation significantly contributes to economic growth in developing countries, although its effectiveness depends on the readiness of infrastructure and institutional quality. Therefore, integrating the digital economy into national economic systems is essential for achieving sustainable and inclusive growth.

### **3. Financial Technology (Fintech)**

Financial technology (fintech) represents innovation within the financial sector that leverages digital technologies to improve efficiency, accessibility, and the quality of financial services. It includes a wide range of services such as digital payments, peer-to-peer lending, crowdfunding, and digital banking. According to Bank Indonesia (2023), fintech development in Indonesia has grown rapidly, particularly in the digital payment segment, driven by increasing internet penetration and smartphone usage. The Financial Services Authority (OJK, 2023) also highlights fintech's important role in enhancing financial inclusion, especially for underserved populations lacking access to formal banking services.

Despite its advantages in facilitating transactions and expanding access to financing, fintech also presents several challenges, including data security risks, consumer protection issues, and the need for adaptive regulatory frameworks. Hence, strengthening regulatory governance is crucial to ensure the sustainable development of the fintech sector.

### **4. E-Commerce**



E-commerce constitutes a core component of the digital economy, encompassing the buying and selling of goods and services through electronic platforms. Its growth has significantly transformed consumer behavior by offering greater convenience, time efficiency, and a wider variety of products compared to traditional commerce. In Indonesia, the e-commerce sector has experienced remarkable expansion.

According to a report by Google, Temasek, and Bain & Company (2023), Indonesia has become one of the largest and fastest-growing e-commerce markets in Southeast Asia. E-commerce not only stimulates domestic consumption but also provides opportunities for micro, small, and medium enterprises (MSMEs) to expand their market reach and enhance competitiveness. Nevertheless, the sector faces several constraints, including uneven logistics infrastructure, consumer trust issues, and intensifying competition within digital markets.

### **5. Digital Economy and Economic Growth in Indonesia**

The relationship between the digital economy and economic growth has been widely examined in empirical studies. Theoretically, the digital economy contributes to growth by improving productivity, efficiency, and innovation capacity. Moreover, digitalization facilitates broader market integration and increases economic participation.

In Indonesia, the digital economy has shown an increasingly important contribution to national economic performance. Data from BPS (2023) indicate that rising internet penetration and digital adoption have supported economic activity across various sectors. OECD (2022) further notes that digitalization plays a key role in enhancing Indonesia's global competitiveness. However, the relationship between the digital economy and economic growth is not always linear. Empirical findings suggest that its impact depends on several factors, including infrastructure readiness, digital literacy levels, and regulatory quality.

Based on the existing literature, it can be concluded that the digital economy—particularly fintech and e-commerce plays a strategic role in promoting economic growth through improvements in efficiency, innovation, and financial inclusion. However, the extent of these benefits is highly contingent upon the availability of digital infrastructure, the quality of human capital, and supportive policy frameworks. Therefore, comprehensive empirical research is necessary to better understand the relationship between the digital economy and economic growth, particularly within the Indonesian context.

### **Conceptual Framework**

The conceptual framework of this study posits that the digital economy serves as a primary driver of economic growth, operating through two key components: Financial Technology (FinTech) and E-Commerce. These variables function as direct stimulants of economic activity by enhancing transaction efficiency, expanding market access, and encouraging higher levels of consumption. Furthermore, the impact of the digital economy on economic growth is also shaped by supporting factors, namely digital infrastructure and human capital quality. Adequate digital infrastructure facilitates broader access to technology, while a workforce equipped with strong digital literacy is better able to utilize technological advancements effectively.

Accordingly, the combined effect of FinTech, E-Commerce, digital infrastructure, and human capital is expected to collectively contribute to accelerating economic growth in Indonesia.

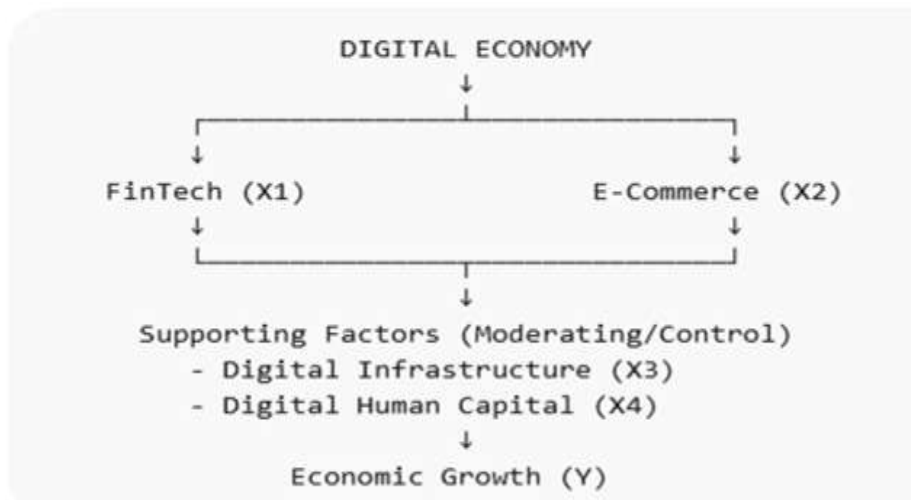


Figure 1. Conceptual Framework of the Digital Economy, Economic Growth, Financial Technology, and E-Commerce

## METHOD

This study employs a quantitative research design using panel data regression to examine the relationship between the digital economy and economic growth in Indonesia. Panel data combine cross-sectional and time-series dimensions, allowing for a more comprehensive analysis of both spatial and temporal variations. The cross-sectional component consists of five provinces, while the time-series dimension covers a six-year period from 2020 to 2025. Consequently, the dataset forms a balanced panel with a total of 30 observations. This structure enables the study to capture the dynamic evolution of the digital economy across regions and over time.

The quantitative approach is adopted to empirically test the relationships specified in the conceptual framework. The key independent variables include Financial Technology (FinTech) and E-Commerce, while digital infrastructure and human capital are incorporated as supporting variables. Economic growth serves as the dependent variable. This framework reflects both traditional and contemporary perspectives by integrating digital transformation into the analysis of macroeconomic performance.

Panel data regression is selected due to its methodological advantages over purely cross-sectional or time-series approaches. Specifically, it enhances estimation efficiency, increases degrees of freedom, and reduces potential bias arising from omitted variables (Gujarati & Porter, 2009). Moreover, this method allows for the control of unobserved heterogeneity across provinces. Each region in Indonesia exhibits distinct characteristics—such as variations in technological readiness, infrastructure quality, and human capital capacity—which may influence economic growth. By accounting for these differences, panel data models provide more accurate and reliable parameter estimates.

The empirical model in this study is specified as follows:

$$Y_{it} = \alpha + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X4_{it} + \mu_i + \varepsilon_{it}$$

## Description

- $Y_{it}$ : Economic growth
- $X1_{it}$ : Financial Technology (FinTech)
- $X2_{it}$ : E-Commerce
- $X3_{it}$ : Digital infrastructure
- $X4_{it}$ : Digital human resources
- $i$ : Cross-sectional unit (province)
- $t$ : Time period (year)
- $\mu_i$ : Individual (fixed) effect
- $\varepsilon_{it}$ : Error term

In panel data analysis, three alternative model specifications are commonly applied, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The selection of the most appropriate model is determined through several statistical tests. The Chow test is used to choose between CEM and FEM, the Hausman test is applied to decide between FEM and REM, and the Lagrange Multiplier (LM) test is employed to compare CEM and REM.

Subsequently, hypothesis testing is conducted using the *t-test* to evaluate the partial effect of each independent variable on economic growth, and the *F-test* to assess the joint significance of all explanatory variables. In addition, the coefficient of determination ( $R^2$ ) is utilized to measure the model's ability to explain variations in economic growth.

The application of panel data regression in this study offers several advantages, including an increased number of observations, greater degrees of freedom, and improved estimation efficiency. Furthermore, this method helps reduce potential bias arising from omitted variables, as it simultaneously accounts for variations across regions and over time. Therefore, panel data regression is considered the most appropriate approach for testing the conceptual framework of this study, particularly in analyzing the impact of the digital economy represented by FinTech and E-Commerce, supported by digital infrastructure and human capital on economic growth in Indonesia in a comprehensive and empirical manner.

## RESULTS AND DISCUSSION

### Classical Assumption Test

Validity testing is an essential initial step in quantitative research to ensure that the instrument used is capable of accurately measuring the intended concept or construct. In this study, validity testing is conducted using the Pearson Correlation method, also known as item-total correlation, by correlating the score of each variable with the total score of the research construct. This approach is commonly applied in statistical analysis, particularly when processing data using software such as Eviews.

**Table 1. Validity Test Results**

Variable	r-calculated	r-table	Remark
GDP	0.423	0.361	Valid
E-Commerce	0.415	0.361	Valid
FinTech	0.430	0.361	Valid
Investment	0.534	0.361	Valid

Source: Processed data (2026)

### General criteria:

If  $r\text{-calculated} > r\text{-table}$ , the variable is considered valid

$n = 30, \alpha = 5\% \rightarrow r\text{-table} \approx 0.361$

The decision-making criterion in this validity test is based on comparing the *r-calculated* value with the *r-table* value. With a sample size (n) of 30 and a significance level ( $\alpha$ ) of 5%, the *r-table* value is 0.361. A variable is considered valid if the *r-calculated* value exceeds the *r-table* value, indicating a sufficiently strong correlation between the item and the total construct being measured. Based on the results presented in Table 1, all variables in this study GDP, E-Commerce, FinTech, and Investment have *r-calculated* values of 0.423, 0.415, 0.430, and 0.534, respectively. All of these values exceed the threshold of *r-table* (0.361), indicating that all variables meet the statistical criteria for validity. In other words, each variable is capable of adequately representing the construct under study and consistently capturing the phenomenon being measured.

From a more substantive perspective, these findings indicate that GDP, as an indicator of macroeconomic performance, along with E-Commerce and FinTech as representations of the development of the digital economy, exhibit significant interrelationships in forming a comprehensive research construct. The Investment variable demonstrates the highest validity value among all variables, suggesting that its role in explaining economic dynamics within the research model is relatively stronger.

The implication of these validity test results is that all variables are suitable for further analysis, including reliability testing, regression analysis, and panel data modeling. Good validity also reflects that the research instrument possesses adequate measurement quality, ensuring that the results obtained from subsequent analyses are credible and supported by strong empirical evidence.

Furthermore, in the context of digital economy and economic growth research, the validity of these variables indicates that the relationships among the examined concepts are not only theoretically relevant but also empirically supported. This strengthens the analytical foundation for examining how digital transformation through E-Commerce and FinTech along with Investment, contributes to economic growth as reflected in GDP.

## RESULTS

The estimation results of the panel data analysis using the Fixed Effect Model (FEM) indicate that E-Commerce, Financial Technology (FinTech), and investment have a statistically significant effect on economic growth (GDP) across five provinces in Indonesia during the 2020 - 2025 period. The selection of the Fixed Effect Model is based on the outcomes of model selection tests, which confirm that this approach is the most appropriate for capturing variations and unobserved characteristics across provinces.

The model is estimated using the Panel Least Squares method, with GDP specified as the dependent variable. The dataset spans from 2020 to 2025, covering six time periods and five cross-sectional units, resulting in a balanced panel of 30 observations. The specification incorporates cross-section fixed effects through the inclusion of dummy variables, enabling the model to control for unobserved heterogeneity across provinces. This approach ensures more reliable and unbiased parameter estimates by accounting for province-specific characteristics that may influence economic growth.

**Table 2. Panel Data Regression Estimation Results**

Variabel	Koefisien	Std. Error	t-Statistik	Probabilitas
C	2.4815	0.6123	4.052	0.0005
Ecommerce	0.2984	0.0857	3.481	0.0020
Fintech	0.2176	0.0798	2.726	0.0112
Investasi	0.2639	0.0715	3.690	0.0011

Source: Processed data (2026)

The constant value of 2.4815 indicates that, when the variables E-Commerce, FinTech, and Investment are held constant, the average economic growth (GDP) is approximately 2.48%. This suggests that other factors not included in the model such as government policies, global economic conditions, and structural aspects—continue to influence economic growth.

#### 2. The Effect of E-Commerce on Economic Growth

The E-Commerce variable has a positive coefficient of 0.2984 and is statistically significant ( $0.0020 < 0.05$ ). This finding implies that E-Commerce exerts a positive impact on economic growth in Indonesia. Specifically, a one-unit increase in E-Commerce activity is associated with an increase in economic growth of 0.2984%, assuming other variables remain constant. From an economic perspective, this result highlights the role of digital trade in improving market efficiency, expanding consumer access, and stimulating economic activities across regions. Therefore, E-Commerce can be considered one of the key drivers of the digital economy in Indonesia.

#### 3. The Effect of FinTech on Economic Growth

The FinTech variable shows a positive coefficient of 0.2176 with a probability value of 0.0112, indicating statistical significance at the 5% level. This suggests that FinTech positively influences economic growth. A one-unit increase in FinTech development or usage leads to a 0.2176% increase in economic growth. Economically, FinTech contributes by enhancing financial inclusion, improving access to financing, and accelerating digital transaction systems within society. Thus, FinTech plays a crucial supporting role in the digital economy ecosystem, particularly in the financial sector.

#### 4. The Effect of Investment on Economic Growth

The Investment variable has a positive coefficient of 0.2639 and is statistically significant ( $0.0011 < 0.05$ ), indicating that investment has a meaningful impact on economic growth. This means that a one-unit increase in investment results in a 0.2639% rise in economic growth.

From a theoretical standpoint, investment contributes to expanding production capacity, generating employment opportunities, and stimulating real sector growth. However, in the context of this study, the impact of investment is slightly lower than that of E-Commerce, suggesting a structural shift toward a more digitally driven economy. Model Statistics

**Table 3. Model Goodness-of-Fit Statistics**

Statistic	Value
R-squared	0.814
Adjusted R-squared	0.769
F-statistic	19.32
Prob (F-statistic)	0.0000
Durbin-Watson stat	1.93

Source: Processed data (2026)

The estimation results of the panel data regression model using the Fixed Effect Model (FEM) present several statistical indicators to evaluate the model's adequacy in explaining the relationship between the independent variables E-Commerce, FinTech, and Investment and economic growth (GDP). The R-squared value of 0.814 indicates that approximately 81.4% of the variation in economic growth (GDP) can be explained by the independent variables included in the model, namely E-Commerce, Financial Technology (FinTech), and Investment. The remaining 18.6% is attributed to other factors not captured in the model, such as fiscal policy, macroeconomic stability, global economic conditions, and other omitted variables. This relatively high R-squared value suggests that the model has strong explanatory power in capturing variations in economic growth in Indonesia.

Furthermore, the Adjusted R-squared value of 0.769 implies that, after accounting for the number of explanatory variables, about 76.9% of the variation in GDP is still explained by the model. This adjusted measure provides a more accurate assessment of model performance, as it considers the potential impact of additional variables. The relatively high value indicates that the model demonstrates a good overall fit and does not suffer from significant overfitting.

In addition, the model yields an F-statistic of 19.32 with a probability value of 0.0000. Since the probability is below the 5% significance level (0.05), it can be concluded that the independent variables E Commerce, FinTech, and Investment jointly have a statistically significant effect on economic growth (GDP). This result confirms that the regression model is valid and appropriate for further analysis. Based on the empirical analysis conducted using EViews with the Fixed Effect Model, several key conclusions can be drawn:

1. All independent variables E Commerce, FinTech, and Investment exhibit a positive and statistically significant effect on economic growth.
2. Among these variables, E-Commerce demonstrates the most dominant influence.
3. FinTech plays a crucial role in promoting financial inclusion and supporting the digitalization of the economy.
4. Investment continues to contribute to economic growth; however, its role is increasingly complemented by the expansion of the digital economy sector.

Overall, the findings indicate that the development of the digital economy has become a key driver of economic growth in Indonesia. Digital transformation, particularly through E-Commerce and FinTech, has significantly enhanced economic activity, while investment remains an important supporting factor in national economic development.

## **DISCUSSION**

The findings of this study provide strong empirical evidence that the digital economy plays a significant role in shaping economic growth in Indonesia. Specifically, the positive and statistically significant effects of E-Commerce, Financial Technology (FinTech), and investment confirm that both digital and traditional economic drivers jointly contribute to macroeconomic performance. These results are consistent with the broader literature on digital transformation, which emphasizes the capacity of digital technologies to enhance productivity, efficiency, and market integration (Bukht & Heeks, 2017; OECD, 2020).

The significant positive effect of E-Commerce on economic growth highlights its role as a key engine of digital economic expansion. The coefficient indicates that increased digital trade activities are associated with higher levels of GDP growth. This finding aligns with the theory of market efficiency, where digital platforms reduce transaction costs, improve price transparency, and expand access to goods and services (Varian, 2019). In the Indonesian context, the rapid growth of online marketplaces has enabled small and medium-sized enterprises (SMEs) to reach broader markets beyond geographical limitations. This supports previous empirical studies suggesting that E-Commerce enhances economic inclusivity and regional economic integration (UNCTAD, 2021). Moreover, the dominance of E-Commerce compared to other variables suggests a structural transformation toward a more consumption-driven and digitally mediated economy.

Similarly, the positive and significant impact of FinTech reinforces its importance in supporting economic growth through financial system innovation. FinTech contributes to improved financial inclusion by providing accessible and efficient financial services, particularly for unbanked and underbanked populations. According to the financial intermediation theory, improved access to financial services facilitates capital allocation and investment, which in turn stimulates economic activity (Levine, 2005). In Indonesia, FinTech has accelerated digital payment systems, peer-to-peer lending, and mobile banking adoption, thereby increasing the velocity of money circulation in the economy. This finding is consistent with studies indicating that digital finance enhances economic resilience and promotes inclusive growth (Sahay et al., 2020).

The role of investment, although slightly less dominant compared to E-Commerce, remains significant in driving economic growth. Investment contributes to capital formation, technological advancement, and job creation, all of which are fundamental components of long-term economic development (Solow, 1956). However, the relatively smaller coefficient suggests that the nature of

investment may be evolving in the digital era. Traditional forms of physical investment are increasingly complemented—or even substituted—by digital investments such as information technology infrastructure, platform development, and innovation ecosystems. This shift reflects the growing importance of intangible assets in modern economies (Haskel & Westlake, 2018).

Furthermore, the high R-squared and Adjusted R-squared values indicate that the model has strong explanatory power, suggesting that the selected variables adequately capture the determinants of economic growth in this study. The significant F-statistic confirms that the independent variables jointly influence GDP, reinforcing the robustness of the empirical model. Additionally, the Durbin-Watson statistic, which is close to 2, suggests that there is no serious autocorrelation problem in the model, thereby supporting the reliability of the estimation results.

Despite these robust findings, the study also reveals variations across provinces, indicating the presence of structural disparities in digital readiness. Differences in infrastructure quality, internet penetration, human capital, and institutional capacity may influence how effectively regions benefit from digital transformation. This observation supports the concept of the “digital divide,” where unequal access to technology can lead to uneven economic outcomes (Van Dijk, 2020). Therefore, while the digital economy has strong growth potential, its benefits are not automatically distributed equally across regions.

From a policy perspective, these findings imply that strengthening digital infrastructure and improving digital literacy are essential to maximizing the impact of the digital economy. Government policies should focus on expanding broadband access, supporting digital innovation ecosystems, and fostering human capital development to ensure inclusive growth. Additionally, regulatory frameworks should be adaptive to technological advancements to support the sustainable development of FinTech and E-Commerce sectors. In conclusion, this study demonstrates that the digital economy has become a central driver of economic growth in Indonesia. The integration of digital technologies into economic activities not only enhances efficiency and productivity but also reshapes the structure of the economy. However, to fully realize these benefits, it is crucial to address regional disparities and ensure that digital transformation is inclusive and sustainable.

## CONCLUSION

Based on panel data analysis using the Fixed Effect Model (FEM) with the support of EViews, this study aims to examine the impact of E-Commerce, Financial Technology (FinTech), and Investment on economic growth (GDP) across five provinces in Indonesia during the 2020 - 2025 period. The findings indicate that all independent variables have a positive and statistically significant effect on economic growth. This is evidenced by the regression results, where each variable shows a probability value below 0.05, confirming statistical significance.

More specifically, the results can be summarized as follows:

1. E-Commerce has a positive and significant effect on economic growth and exhibits the largest coefficient among all variables. This suggests that the expansion of digital trade plays a leading role in driving economic activity in Indonesia.
2. Financial Technology (FinTech) also shows a positive and significant influence on economic growth. It contributes by enhancing financial inclusion, expanding access to financing, and accelerating digital transaction systems, thereby improving overall economic efficiency.
3. Investment is found to have a positive and significant impact on economic growth, indicating that the real sector remains a key component of national economic development, although its role is increasingly complemented by the digital economy.
4. The R-squared value of 0.814 indicates that 81.4% of the variation in economic growth can be explained by the variables included in the model, demonstrating strong explanatory power.
5. The F-test results confirm that all independent variables jointly have a significant effect on economic growth.

Overall, this study highlights the increasingly dominant role of the digital economy in driving economic growth in Indonesia, particularly through E-Commerce and FinTech, while investment continues to serve as an essential supporting factor within the national economic structure.

## **RECOMMENDATIONS**

Based on the findings regarding the impact of E Commerce, FinTech, and Investment on economic growth in Indonesia, several recommendations can be proposed. First, from a policy perspective, the government should strengthen initiatives that support the development of the digital economy. This includes expanding digital infrastructure, simplifying regulatory frameworks for startups, and enhancing the security of digital transaction systems. In addition, efforts should be made to ensure a more balanced distribution of digital economic development across regions, preventing excessive concentration in certain areas.

Second, for business actors particularly micro, small, and medium enterprises (MSMEs) there is a need to actively adapt to technological advancements. This can be achieved by leveraging E Commerce platforms to broaden market reach, utilizing FinTech services to facilitate transactions and access financing, and improving digital literacy to remain competitive in the digital economy. Third, for investors, it is advisable to place greater attention on digital economy sectors such as E-Commerce and FinTech, which offer strong growth potential. Nevertheless, investment in the real sector should continue to be maintained to ensure overall economic balance.

Finally, for future researchers, it is recommended to incorporate additional variables such as digital infrastructure and digital literacy, expand the geographical scope of the study, and apply more diverse analytical methods to produce more comprehensive and robust findings.

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