

Determinants of Regional Economic Growth in Indonesia: A Literature Review and Policy Implications

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Abstract

This study synthesizes empirical literature on the determinants of regional economic growth in Indonesia to identify consistent patterns and policy gaps. Regional growth disparities between Java and outer islands remain a persistent structural challenge despite stable national growth. Using a narrative literature review approach, this study examines peer-reviewed research published mainly between 2020 and 2026 on investment, government expenditure, fiscal decentralization, infrastructure, human capital, digital economy, and regional inequality through panel data, spatial econometric, and convergence-club approaches. The findings indicate that investment and regional government expenditure generally promote Gross Regional Domestic Product (GRDP) growth, although capital expenditure may have delayed or negative short-term effects. Human capital, particularly education and health, emerges as a key determinant, while fiscal decentralization requires adequate human development quality to generate sustainable growth. Convergence and spatial studies reveal persistent regional disparities and multiple growth equilibria across Indonesian districts. The digital economy and Micro, Small, and Medium-sized Enterprises (MSMEs) represent growing but uneven drivers of regional development. This study contributes by integrating fragmented empirical findings into a coherent thematic framework. Its main limitation is the narrative and non-systematic review design, which limits causal interpretation. The findings suggest that regional development policies should combine fiscal, infrastructure, human capital, and digital strategies rather than relying on a single policy instrument.

Keywords: Digital Economy, Fiscal Decentralization, Human Capital, Regional Economic Growth, Regional Inequality

1. INTRODUCTION

Regional economic growth is one of the most closely watched benchmarks of development success in Indonesia, as it reflects a region's capacity to generate value-added, employment, and welfare for its population. Although the national economy has grown steadily at around five percent per year in recent quarters, this aggregate performance masks a persistent structural disparity provinces on Java still contribute more than half of the national output, several resource-rich provinces outside Java post exceptionally high but narrowly based growth, and the Maluku-Papua region consistently grows below the national average ([Badan, 2025](#)). This unevenness is mirrored in human development outcomes, where the national human development index of 75.90 in 2025 conceals a wide range from 85.05 in DKI Jakarta to 54.91 in Papua Pegunungan, indicating that regional growth depends not only on physical capital but also on human capital, fiscal governance, infrastructure connectivity, and digital economy.

A substantial body of empirical research has attempted to identify the determinants of this uneven regional growth, ranging from investment and government expenditure to fiscal decentralization, infrastructure, and human capital. However, findings across studies are often inconsistent, the effect of road infrastructure operates only indirectly through regional finance in some settings [Lestari, Wardono, Handajani, Supari, Juniati, Sunarno, and Prayogi \(2025\)](#) but has a more direct and significant contribution in others [Nasikhah and Susilowati \(2024\)](#), and fiscal decentralization is reported to positively affect regional growth in some studies [Wimba \(2023\)](#) and [Zakaria, Mony, Sahupala, and Junaidi \(2025\)](#) while failing to translate into higher regional income once human capital and institutional quality are accounted for in others [Saing, Rahim, Syafri, Rajab, and Astuty \(2026\)](#) and [Sofilda, & Kusairi, 2023](#).

However, this inconsistency has not yet been systematically reconciled. Prior work tends to examine individual determinants or narrow samples in isolation, with no single study synthesizing

investment, fiscal decentralization, infrastructure, human capital, and the digital economy within a coherent thematic framework for Indonesia ([Fanani & Zahidi, 2026](#)). The novelty of this study lies in the synthesis, by comparing findings across periods, regional units, variables, and estimation methods, it identifies where the literature converges, where it diverges, and why. Building on this novelty, this study aims to identify the main determinants of regional economic growth in Indonesia based on published empirical literature, analyze the consistency and variation of findings across studies, including the methodological sources of divergence, and formulate policy implications for efforts to promote more balanced regional economic growth across Indonesia.

2. LITERATURE REVIEW

Research on the determinants of regional economic growth is grounded in several complementary strands of growth theories. The neoclassical growth model popularized by Solow places capital accumulation, labor, and technological progress at the center of the output growth. In a regional context, this framework underlies many studies that treat investment and the labor force as core explanatory variables ([Boediono, 1999](#)). The endogenous growth framework developed by [Romer \(1990\)](#) and [Barro \(1990\)](#) extends this view by treating knowledge accumulation and government expenditure as part of the aggregate production function, providing a theoretical basis for studies that test the effect of regional government spending and fiscal decentralization on growth. In its original formulation, the Solow model attributes long-run growth differences to the pace of technological catching-up rather than capital accumulation alone, since diminishing returns to capital eventually limit investment-driven growth. Endogenous growth theory addresses this limitation by allowing government policy and knowledge spillovers to sustain long-run growth rates, rather than merely shifting the level of output ([Setiawan, Wardhani, & Yanto, 2026](#)).

Regional development theory further emphasizes spatial factors, such as agglomeration economies and infrastructure connectivity, as determinants of growth differentials across regions, regions with better transportation and energy connectivity tend to enjoy wider market access and greater production efficiency. Human capital theory holds that investment in education and health raises labor productivity and, in turn, regional output ([Todaro and Smith, 2003](#)). This proposition is directly supported by evidence that life expectancy and years of schooling are among the strongest determinants of regional growth in Indonesia ([Windhani et al., 2023](#)). Agglomeration economies arise because firms and workers clustered in the same location benefit from shared infrastructure, deeper labor markets, and knowledge spillovers, which together lower production costs and raise productivity relative to dispersed locations ([Yudiska, Rosalina, & Yanto, 2026](#)). This mechanism helps explain why growth in Indonesia remains concentrated in a limited number of urban and industrial corridors, even when natural resource endowments are more widely distributed.

Regional inequality and convergence theory explain that in the early stages of development, growth tends to concentrate in structurally advantaged core regions, while peripheral regions lag behind ([Setiyadi & Noviarita, 2026](#)). Over time, the diffusion of capital and technology is expected to drive convergence, although this process is often slow and uneven ([Aginta et al., 2023](#); [Gunawan et al., 2021](#)). Studies using nonlinear dynamic factor models find that Indonesian districts form multiple persistent convergence clubs rather than converging toward a single steady state, implying that catch-up growth is conditional on each region's initial structural characteristics ([Santos-Marquez et al., 2022](#)). Under absolute convergence, poorer regions are expected to grow faster than richer ones, purely because of diminishing returns to capital ([Iwuno, Nwosu, Onuigbo, & Achinike, 2026](#)). The persistence of multiple convergence clubs in Indonesia instead points to conditional convergence, in which regions converge only toward their own structurally determined steady state rather than a single national one.

Beyond these theoretical anchors, a substantial number of empirical studies have simultaneously tested multiple determinants of regional economic growth. [Kismawadi, Oktavializa, and Hamid \(2021\)](#) examine a broad set of macroeconomic determinants of growth in Indonesia, while [Iman and Hakim \(2025\)](#) test investment, labor, and government spending as joint determinants at the national level. Using panel Vector Error Correction Model (VECM) analysis on 20 provinces for 2008-2018,

[Fitrianti et al. \(2024\)](#) find that education spending, agricultural output, general allocation funds, population, and foreign investment all exert a long-run positive effect on regional economic growth. These broad determinant studies motivate the thematic organization adopted in this review.

Table 1. Selected empirical studies on determinants of regional economic growth in Indonesia

Study	Method/Scope	Key Finding
Saing et al. (2026)	Panel data & path analysis, 34 provinces	Fiscal decentralization raises growth, HDI does not significantly mediate the effect
Fitrianti et al. (2024)	Panel VECM, 20 provinces, 2008–2018	Education spending, agriculture, general allocation funds, and FDI raise long-run growth
Suparman & Muzakir (2023)	Panel regression (Common Effect Model (CEM)/Fixed Effect Model (FEM)/Random Effect Model (REM)), 32 provinces, 2010–2020	Human capital and unemployment significantly affect growth, inequality persists
Sofilda et al. (2023)	Panel data, 484 districts	Fiscal decentralization and human development jointly shape regional growth
Windhani et al. (2023)	Spatial SARMA model, Indonesian districts	Human capital and spatial spillover are the most influential determinants
Fazaalloh (2024)	Fixed-effects, provincial & sectoral panel	FDI raises growth, strongest in mining, manufacturing, and real estate
Lestari et al. (2025)	Partial Least Squares Structural Equation Modeling (PLS-SEM), East Kalimantan, 2013–2022	Regional finance fully mediates the effect of road infrastructure on growth
Aginta et al. (2023)	Non-linear dynamic factor model, district-level, 2000–2017	Five persistent convergence clubs identified, disparities remain after decentralization
Badrawani et al. (2025)	Panel with structural break, 33 provinces, 2019–2023	Digital payments raise regional income and consumption, more so post-COVID-19
Lakat et al. (2025)	Panel data, 508 regencies/cities, 2018–2022	Personnel and goods/services spending raise growth, capital expenditure lags

Table 1 summarizes selected empirical studies that inform this review. Although the specific variables and estimation methods vary, most studies converge on the view that regional economic growth in Indonesia is shaped jointly by fiscal capacity, investment, infrastructure, human capital, and, more recently, digital economic activity, while regional inequality and spatial spillovers condition how effectively these factors translate into economic growth. Building on this body of work, this study develops a conceptual framework that positions investment, fiscal capacity, infrastructure, human capital, and digital economy adoption as parallel determinants that jointly shape regional economic growth, which in turn interacts with regional inequality and convergence dynamics.

The heterogeneity of these findings is not purely substantive but also methodological in nature. Studies relying on provincial-level panels covering relatively short and recent windows, such as [Saing et al. \(2026\)](#) and [Suparman and Muzakir \(2023\)](#), are well placed to capture recent shifts in fiscal policy and labor markets but average out substantial within-province variation. District-level studies, such as [Sofilda et al. \(2023\)](#) and [Aginta et al. \(2023\)](#), capture finer spatial heterogeneity at the cost of a shorter or more fragmented time series in some regions. Studies that explicitly model spatial dependence, such as the Spatial Autoregressive Moving Average (SARMA) specification used by [Windhani et al. \(2023\)](#), can attribute part of a region's growth to spillovers from its neighbors, which may make human capital appear more influential than in non-spatial panel models such as [Suparman](#)

and Muzakir (2023), which implicitly assign all of a region's growth to its own characteristics. Similarly, the apparently conflicting findings on road infrastructure, direct and significant in Nasikhah and Susilowati (2024) but only indirect in Lestari et al. (2025), are plausibly explained by differences in the unit of analysis (national time series versus district-level panel) and the explicit mediating role assigned to regional finance in the latter study. These examples show that the period, regional unit, variable definition, and estimation method jointly shape whether a given determinant appears strong, weak, direct, or mediated across studies, a pattern that motivates the thematic, rather than purely chronological, organization adopted in Section 4.

Despite this rich body of literature, three gaps remain. First, most panel data studies on fiscal decentralization and infrastructure predate the rapid expansion of Indonesia's digital economy, thus, the interaction between digital adoption and traditional determinants remains underexplored. Second, convergence club studies rarely integrate digital and fiscal variables into the same estimation framework. Third, few studies systematically synthesize findings across these different thematic strands into a single coherent picture, which is the gap this review seeks to address.

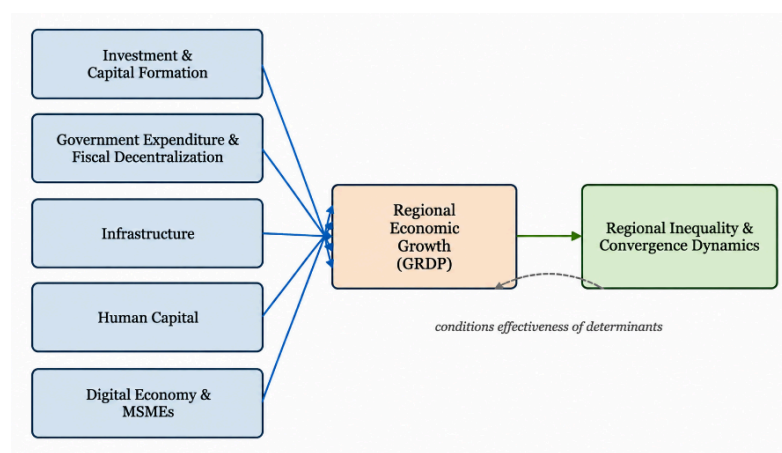


Figure 1. Conceptual framework of determinants of regional economic growth in Indonesia

Figure 1 shows the conceptual framework of regional economic growth determinants in Indonesia, highlighting the roles of investment and capital formation, government expenditure and fiscal decentralization, infrastructure, human capital, and digital economy and MSMEs as key factors influencing Regional Economic Growth (GRDP). Regional economic growth subsequently affects regional inequality and convergence dynamics, reflecting how growth outcomes shape disparities among regions. The framework further emphasizes that the effectiveness of these determinants depends on regional conditions, institutional capacity, and structural characteristics that influence the translation of economic resources into sustainable growth.

3. RESEARCH METHODOLOGY

This study adopts a narrative literature review approach that is descriptive and qualitative in nature (Defossé & Mullier, 2019). This approach was chosen because the primary objective was to synthesize patterns of findings from various empirical studies on the determinants of regional economic growth in Indonesia, rather than to generate new statistical estimates. The literature used in this review consists of peer-reviewed journal articles addressing regional economic growth or Gross Regional Domestic Product (GRDP) at the provincial or district/city level in Indonesia, published mainly between 2020 and 2026, supplemented by a small number of earlier foundational theoretical references. The search was conducted in September 2026 across Google Scholar, Scopus abstract pages, Directory of Open Access Journals (DOAJ), and Sinta-indexed journal portals, using combinations of search strings such as ("regional economic growth" AND Indonesia AND determinant*), ("fiscal decentralization" AND "economic growth" AND Indonesia), ("regional inequality" AND Indonesia AND convergence), ("infrastructure" AND "economic growth" AND Indonesia), and ("digital economy" AND "regional growth" AND Indonesia).

Articles were included based on the following criteria, such as use of secondary panel, spatial, or time-series data at the sub-national level in Indonesia, application of a quantitative method such as panel regression, spatial econometrics, convergence club analysis, or structural equation modeling, a dependent variable capturing regional economic growth, GRDP growth, or regional income convergence, and publication in a peer-reviewed, indexed outlet (Scopus, Web of Science, DOAJ, or Sinta) that reports its data sources, estimation method, and sample period in sufficient detail to assess methodological quality. Studies were excluded if they addressed national-level rather than sub-national growth without a regional breakdown, relied solely on qualitative or descriptive analysis without an identifiable quantitative model, or were not accessible in full text form.

Combined searches across the keyword strings and databases above yielded a broad initial pool of candidate records, which was substantially reduced once titles and abstracts were screened against the inclusion criteria and duplicate records returned by overlapping search strings or indexed in more than one database were removed. The full texts of the remaining records were then assessed against the four inclusion criteria, such as records that addressed regional growth only tangentially, lacked a sub-national quantitative model, or duplicated the sample and findings of an already-included study by the same author group were excluded, with the most recent or most comprehensive version being retained in the latter case. This process yielded a final set of 26 empirical studies on Indonesian regional economic growth that form the core evidence base synthesized in Section 4 (a representative subset is summarized in Tables 1 and 2), supplemented by four foundational theoretical works and four institutional or official statistical sources used for contextual data analysis. As a narrative rather than a PRISMA-protocol systematic review, this study did not maintain a stage-by-stage numerical log of excluded records.

The data extracted from each included study comprised the independent variables tested, estimation method, geographic and temporal scope, direction and significance of the estimated effects, and any evident methodological limitations. Each study was then coded into one or more of six thematic categories, such as investment and capital formation, government expenditure and fiscal decentralization, infrastructure, human capital, the digital economy and Micro, Small, And Medium Enterprises (MSMEs), and regional inequality and convergence, with cross-cutting studies coded into every theme they addressed. Within each theme, the findings were then compared qualitatively for consistency in direction, magnitude, and significance, and apparent conflicts were traced to differences in the sample period, regional unit of analysis, variable definition, or estimation method, following the comparative logic illustrated in Section 2. This study acknowledges the methodological limitation of not following a formal systematic review protocol, such as PRISMA. Consequently, the synthesis presented here is indicative rather than exhaustive and should be complemented by further systematic or primary empirical studies.

4. RESULTS AND DISCUSSION

Table 2. Comprehensive summary of sample, variables, method, findings, and limitations across the six themes

Study	Sample & Period	Key Variables	Method	Findings	Noted Limitations
Fazaalloh (2024)	Indonesian provinces, sectoral panel	FDI, sector, growth	Fixed-effects panel	FDI raises growth, strongest in mining, manufacturing, and real estate	Sector-level aggregation may mask firm heterogeneity, no spatial spillover control
Lakat et al. (2025)	508 regencies/cities, 2018-2022	Personnel, goods/services, and capital expenditure, per-capita income, GRDP	Panel data (fixed-effects)	Personnel and goods/services spending raise growth, capital expenditure shows a negative short-run effect	Short window may understate the long-run payoff of capital expenditure

Study	Sample & Period	Key Variables	Method	Findings	Noted Limitations
Saing et al. (2026)	34 provinces	Fiscal decentralization, inequality, HDI, growth	Panel data and path analysis	Decentralization raises growth, inequality lowers it, HDI does not significantly mediate	Provincial-level aggregation, mediation result sensitive to HDI operationalization
Lestari et al. (2025)	10 regencies/cities, East Kalimantan, 2013-2022	Road infrastructure, regional finance, growth	PLS-SEM (moderated mediation)	Road infrastructure affects growth only indirectly, fully mediated by regional finance	Small regional sample limits generalizability beyond East Kalimantan
Nasikhah & Susilowati (2024)	Indonesia, national time series, 1991-2021	Population, investment, infrastructure, growth	Time-series regression	Infrastructure, population, and investment jointly explain national growth	National-level aggregation cannot capture sub-national heterogeneity
Windhani et al. (2023)	Indonesian districts	Alternative HDI, spatial spillover, growth	Spatial SARMA model	Human capital and spatial spillover are the most influential determinants	Alternative HDI construction may limit comparability with other studies
Suparman & Muzakir (2023)	32 provinces, 2010-2020	Human capital, unemployment, inequality, growth	Panel regression (CEM/FEM/REM)	Human capital and unemployment significantly affect growth, inequality persists	Non-spatial specification cannot separate own-region from spillover effects
Badrawani et al. (2025)	33 provinces, 2019-2023	Digital payments, regional income, consumption	Panel data with structural-break test	Digital payments raise income and consumption, more so after the COVID-19 break	Break-date sensitivity, comparatively short post-break window
Muhammad & Pudjihardjo (2025)	Yogyakarta Special Region	Internet usage, per-capita income, inequality	Regional regression	Internet usage raises per-capita income and also shapes inequality	Single-province scope limits generalization to other regions
Aginta et al. (2023)	Indonesian districts, 2000-2017	District income, convergence clubs	Non-linear dynamic factor model	Five persistent convergence clubs identified, disparities remain after decentralization	Club classification is sensitive to algorithm and threshold choices

Table 2 shows a comparative synthesis of empirical studies examining the determinants of regional economic growth in Indonesia across six thematic areas, including investment, fiscal decentralization, infrastructure, human capital, digital economy, and regional inequality. The table provides a comprehensive summary of the sample characteristics, study periods, key variables, analytical methods, major findings, and reported limitations of a representative set of studies. It highlights variations in research design, geographical coverage, and methodological approaches, demonstrating that the relationship between growth determinants and regional development outcomes is influenced by different empirical contexts. Furthermore, the identified limitations provide insights into methodological gaps and potential directions for future research, particularly regarding spatial analysis, broader regional coverage, and the integration of emerging digital economy indicators.

4.1 Investment and Capital Formation

Investment remains one of the most consistently significant determinants of regional economic growth in Indonesia. Using a fixed-effects estimator on provincial and sectoral data, [Fazaaloh \(2024\)](#) finds that Foreign Direct Investment (FDI) has a significant positive effect on economic growth across Indonesian provinces, with the strongest effects concentrated in the mining, manufacturing and real estate sectors. This finding is consistent with the broader determinant literature described above, which

identifies foreign investment as a significant long-run driver of provincial growth ([Fitrianti et al., 2024](#)).

Investment does not operate in isolation from infrastructure or energy availability. [Hidayat et al. \(2022\)](#) show that investment and energy infrastructure jointly influence income convergence across regencies on Sumatra Island, suggesting that the growth-enhancing effect of investment is amplified when complementary infrastructure is in place. Recent national data reinforce this pattern spatially in the second quarter of 2025, investment realization outside Java (50.3%) surpassed that in Java (49.7%) for the first time, although the single largest recipient province remained West Java ([Kementerian Koordinator Bidang Perekonomian 2025](#)). This shift suggests a gradual broadening of the investment base beyond Java, although its sustainability depends on whether such investment generates broad linkages with the local economy or remains a capital-intensive, extraction-oriented enclave in the economy. The magnitude of these effects varies with context. [Fazaalloh \(2024\)](#) reports a robust positive FDI effect concentrated in a narrow set of capital-intensive sectors, whereas the broader evidence in [Hidayat et al. \(2022\)](#) suggests that the growth effect of investment is conditional on the presence of complementary energy infrastructure, indicating that investment alone is a necessary but not always sufficient condition for regional growth.

4.2 Government Expenditure and Fiscal Decentralization

Government expenditure and regional fiscal capacity are widely tested determinants of regional growth. Using panel data from 508 regencies/cities between 2018 and 2022, [Lakat et al. \(2025\)](#) find that personnel and goods-and-services expenditures significantly raise both per-capita income and GRDP, whereas capital expenditure shows a negative short-run effect, reflecting the delayed payoff of infrastructure investment. At the provincial level, [Wimba \(2023\)](#) reports that fiscal decentralization is significantly associated with regional economic development, while [Zakaria et al. \(2025\)](#), using district-level panel data for 2013-2023, similarly find that fiscal decentralization has a positive and significant effect on local government Gross Domestic Product (GDP).

However, more recent path analysis evidence complicates this picture. [Saing et al. \(2026\)](#) find that fiscal decentralization positively affects economic growth across Indonesian regions while regional inequality exerts a negative effect, but the Human Development Index (HDI) fails to significantly mediate the relationship between decentralization and growth. Using data from 484 districts, [Sofilda et al. \(2023\)](#) similarly show that fiscal decentralization and human development jointly shape regional economic growth, rather than independently. Taken together, these findings imply a persistent gap between the expansion of regional fiscal capacity and the improvement of human development quality: greater fiscal autonomy does not automatically translate into higher-quality human capital that would, in turn, sustain growth. This underscores that the effectiveness, rather than merely the magnitude, of fiscal decentralization ultimately matters for regional growth outcomes. The direction of the fiscal decentralization-growth relationship is broadly consistent across these studies, but its robustness differs. [Wimba \(2023\)](#) and [Zakaria et al. \(2025\)](#) report a direct positive effect using provincial- and district-level panels, respectively, whereas [Saing et al. \(2026\)](#) and [Sofilda et al. \(2023\)](#) show that this positive effect coexists with a negative or non-significant interaction with regional inequality and human development, indicating that the growth benefit of decentralization is conditional rather than unconditional.

4.3 Infrastructure

The effect of infrastructure on regional economic growth is more heterogeneous than that of investment and fiscal expenditure. Using a moderated-mediation model estimated with partial least squares on ten regencies/cities in East Kalimantan (2013-2022), [Lestari et al. \(2025\)](#) find that road infrastructure influences regional economic growth only indirectly, with regional finance acting as a full mediator between road infrastructure and growth outcomes. This result is notable given that East Kalimantan hosts Indonesia's new capital city, Nusantara, making the interaction between infrastructure and regional finance, especially policy-relevant.

Broader national evidence from [Nasikhah and Susilowati \(2024\)](#), who examine population, investment, and infrastructure over the 1991-2021 period, confirms the general importance of infrastructure while showing that its relative contribution varies depending on which infrastructure indicator is used. Similarly, the Sumatra-focused evidence from [Hidayat et al. \(2022\)](#) shows that energy infrastructure, when combined with investment, plays a measurable role in narrowing income disparities across regions. Collectively, this literature suggests that the type of infrastructure and the presence of complementary fiscal or financial capacity matter more for growth outcomes than the scale of infrastructure spending. The apparent inconsistency between [Lestari et al. \(2025\)](#), who find only an indirect effect of road infrastructure mediated by regional finance, and [Nasikhah and Susilowati \(2024\)](#), who report a more direct national-level effect, further illustrates how the unit of analysis and model specification shape conclusions about infrastructure investment. District-level mediation models can reveal financing bottlenecks that aggregate national time-series model averages.

4.4 Human Capital

Human capital has been repeatedly identified as one of the most influential, and at times the single most influential, determinant of regional economic growth in Indonesia. Using a Spatial Autoregressive Moving Average (SARMA) model, [Windhani et al. \(2023\)](#) find that human capital, measured through an Alternative human development index, together with spatial spillover effects, is the most influential determinant of regional economic growth across Indonesian districts, while also revealing a persistent imbalance in human capital between western and eastern Indonesia. Using panel regression across 32 provinces for 2010-2020, [Suparman and Muzakir \(2023\)](#) similarly show that human capital and the open unemployment rate significantly affect regional economic growth alongside regional inequality, although reducing inequality requires sustained, rather than short-term, policy effort. At a more macro level, [Basuki et al. \(2020\)](#) find that human capital, alongside other structural variables, is a significant determinant of economic growth in Indonesia, within a dynamic panel framework.

These findings collectively reinforce the endogenous growth theory's emphasis on human capital, while also indicating that persistent regional imbalances in education and health outcomes constrain the extent to which human capital can drive convergence, echoing the human development index gap noted by [Saing et al. \(2026\)](#). These results suggest that human capital operates as both a direct determinant of regional output and as a conditioning factor that determines how effectively other instruments, such as fiscal transfers or infrastructure spending, are converted into growth. A region with comparatively low health and education outcomes is likely to extract fewer growth benefits from a given level of investment or government expenditure than a region with stronger human capital foundations. This conditioning role is more explicit in the spatial specification of [Windhani et al. \(2023\)](#) than in the non-spatial panel of [Suparman and Muzakir \(2023\)](#), again pointing to model specification rather than a genuine substantive disagreement as a source of the apparent difference in effect size.

4.5 Digital Economy and MSMEs

The digital economy is a relatively recent but rapidly growing determinant of regional economic growth. [Modhe et al. \(2024\)](#) show that Micro, Small, And Medium Enterprises (MSMEs) that adopt digital platforms contribute meaningfully to Indonesia's economic growth in the digital era, primarily through market expansion and improved business revenues. At the macro-regional level, [Badrawani et al. \(2025\)](#), using panel data with structural-break testing across 33 provinces for 2019-2023, find that digital payments significantly and positively affect regional income and consumption, with the effect becoming stronger after the structural break associated with the COVID-19 pandemic.

At a more localized scale, [Muhammad and Pudjihardjo \(2025\)](#) find that Internet usage positively affects per-capita income while also shaping income inequality within the Yogyakarta Special Region. Taken together, these findings indicate that digital adoption can serve as a comparatively low-capital channel for expanding regional growth, however, its benefits remain unevenly distributed digital economic activity continues to be concentrated in large urban centers, while rural and eastern regions face persistent gaps in digital infrastructure and literacy. Without

deliberate efforts to expand digital access beyond Java and major cities, the digital economy risks reinforcing rather than narrowing existing regional disparities. Closing this digital divide is likely to require more than expanding physical connectivity alone, digital literacy programs, affordable device access, and locally relevant digital content and services are equally necessary if MSMEs and households outside major urban centers are to translate Internet access into measurable income gains rather than passive consumption of digital services. The magnitude of the digital economy's contribution also appears to be channel-dependent. [Badrawani et al. \(2025\)](#) find that the effect of digital payments on regional income strengthens markedly after the COVID-19-era structural break, while [Muhammad and Pudjihardjo \(2025\)](#) report a comparatively modest and spatially uneven effect of general Internet usage at the sub-provincial level, suggesting that the growth payoff of digital adoption depends on the specific channel examined and the timing of the sample relative to the pandemic-driven acceleration in digital uptake.

4.6 Regional Inequality and Convergence

Regional inequality and convergence dynamics condition how effectively other determinants translate into balanced regional growth. Using a nonlinear dynamic factor model on district-level income data for 2000-2017, [Aginta, Gunawan, and Mendez \(2023\)](#) identify five statistically distinct convergence clubs among Indonesian districts, implying that income disparities persist even after two decades of fiscal decentralization. Complementary evidence from [Gunawan, Mendez, and Otsubo \(2021\)](#) and [Santos-Marquez, Gunawan, and Mendez \(2022\)](#) confirms that provincial income convergence in Indonesia is spatially conditioned, with districts belonging to the same province or sharing similar structural characteristics, such as being resource-rich or hosting a major city, clustering within the same convergence club.

More recent evidence supports this. Using the Klassen Typology, Williamson Index, and Pearson correlation on national data for 2012-2023, [Sari and Santoso \(2025\)](#) find that nearly half of Indonesian provinces exhibit a combination of relatively high growth and relatively low inequality, an inclusive growth pattern, yet overall inter-provincial income inequality has continued to rise, particularly since 2017. Using panel data for 2019-2024, [Bina et al. \(2025\)](#) similarly find that the unemployment rate has a significant positive effect on income inequality across Indonesia's 34 provinces, while [Sutomo et al. \(2024\)](#) report a gradual, though still incomplete, decline in inter-regional disparity when measured with the Williamson Index. At a more localized scale, [Gunanto, Hendarto, and Fathoni \(2023\)](#) apply spatial econometric methods to show that income convergence across regencies within Central Java is spatially dependent, underscoring that convergence dynamics operate differently even within a single, relatively developed province.

[Aginta \(2021\)](#) further shows that even nominal price levels across Indonesian regions form distinct convergence clubs conditioned on structural and geographic factors, suggesting that spatial fragmentation in Indonesia extends beyond income, prices, and living costs. National account data corroborate this persistent east-west divide in the third quarter of 2025, Java and Sulawesi grew above the national average (5.17% and 5.84%, respectively), while Maluku and Papua grew by only 2.68% ([Badan, 2025](#)). Notably, North Maluku recorded the highest provincial growth rate in the preceding quarter, driven by large-scale nickel downstreaming investment, illustrating that exceptionally high regional growth does not necessarily indicate broader, inclusive development when it is en-clave in nature. Taken together, the persistence of multiple convergence clubs and the enclave character of some high-growth provinces suggest that aggregate national growth figures can mask substantial and durable interregional disparities. Therefore, monitoring frameworks that rely solely on national or even provincial average growth rates risk overstating the degree of actual regional convergence, underscoring the value of district-level and distributional measures, such as the Williamson Index or convergence club classifications, as a complement to standard GRDP growth statistics in national development planning.

4.7 Synthesis and Policy Implications

Synthesizing the six themes above, regional economic growth in Indonesia is shaped multidimensionally, and no single determinant is sufficient to explain the variation in growth across

regions. Investment and government expenditure provide the physical and fiscal capital for growth, but their effectiveness depends heavily on the quality of human capital and local institutional governance. Infrastructure, particularly that related to energy and regional finance, reinforces productivity, while the digital economy opens a new growth channel that can reduce dependence on conventional physical infrastructure, provided that the digital divide is addressed. Regional inequality and convergence dynamics, in turn, represent the aggregate outcome of how these factors interact: regions with stronger human capital and institutions tend to convert investment and fiscal expenditure into more inclusive growth, whereas lagging regions risk being trapped in unsustainable enclave-style growth patterns.

This synthesis points to the need for further research that integrates digital economy indicators into regional panel growth models and applies spatial econometric approaches to capture growth spillovers between neighboring regions, a dimension that remains comparatively underexplored in the literature reviewed here. From a practical standpoint, this synthesis suggests that national development planning documents, such as Indonesia's medium- and long-term development plans, would benefit from explicitly sequencing these determinants rather than treating them as independent policy levers for the following reasons. Strengthening human capital and local institutional capacity first is likely to increase the growth returns to subsequent fiscal, infrastructure, and digital investments. In contrast, pursuing these instruments in isolation risks replicating the uneven outcomes documented throughout this review.

Based on these findings, four concrete policy implications can be drawn. First, investment promotion strategies outside Java should be paired with explicit local content, procurement, or supply chain requirements so that capital inflows translate into durable employment and business linkages rather than remaining confined to the investing firm's operations. Second, fiscal transfer design should move toward performance-based or earmarked instruments tied to explicit human capital or infrastructure targets, since general-purpose transfers do not, by themselves, guarantee stronger growth outcomes unless local governments possess adequate planning and oversight capacity. Third, infrastructure investment should be prioritized according to region-specific constraint diagnostics, whether the binding constraint is energy availability, market access, or fiscal capacity, rather than being allocated uniformly on a per-capita basis. Fourth, national and regional digital infrastructure programs should be paired with digital-literacy and MSME digitalization assistance, particularly in Eastern Indonesia, so that expanding connectivity translates into measurable income gains rather than passive access.

5. CONCLUSIONS

5.1 Conclusion

This review set out to identify the determinants of regional economic growth in Indonesia, compare the consistency of the findings across studies, and draw policy implications. The evidence confirms that growth is shaped jointly by investment, fiscal decentralization, infrastructure, human capital, and, increasingly, the digital economy, with human capital and institutional quality consistently conditioning how effectively the other determinants translate into growth. The review's principal contribution is theoretical and synthetic rather than empirical: by tracing divergent findings to differences in period, regional unit, variable definition, and estimation method, it offers an integrative framework that prior single-determinant or single-region studies could not provide on their own. This contribution is naturally bounded by the narrative and non-systematic nature of the review, which is discussed further below. Within this scope, the central takeaway is that regional development policy is unlikely to succeed if these determinants are addressed in isolation.

5.2 Research Limitations

This study had several limitations. First, as a narrative rather than a formally systematic review, it does not follow a structured protocol such as PRISMA, and the studies included, although selected purposefully, may not represent the full universe of the relevant literature. Second, the review relies on the estimation results and interpretations reported in the original studies without independently re-estimating or verifying the underlying data. Third, because most reviewed studies analyze provinces

or districts separately, the review's synthesis of spatial spillover effects, while informed by convergence club literature, remains interpretive rather than based on an original spatial model. Finally, the recency criterion applied here means that some older but foundational empirical work on Indonesian regional growth may be under-represented in this study.

5.3 Suggestions and Directions for Future Research

Future research could strengthen the synthesis of this review in three main directions. First, researchers could integrate digital economy indicators, such as Internet penetration, digital payment volume, and e-commerce activity, directly into panel or spatial models of regional economic growth, rather than treating them as a separate line of inquiry. Second, future studies could apply spatial econometric or convergence club methods that simultaneously account for fiscal, infrastructure, human capital, and digital variables, allowing a more integrated test of which combinations of factors most effectively promote convergence. Third, a formal systematic review following an explicit protocol, combined with meta-analytic techniques where comparable effect sizes are available, would allow firmer conclusions than the narrative synthesis presented here.

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AUTHOR CONTRIBUTIONS

GISD was responsible for conceptualization, literature search, thematic synthesis, and manuscript preparation. GADMY contributed to the review of the theoretical framework, validation of the synthesis and manuscript revision. Both authors have read and approved the final manuscript.

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