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Economic Development Policies in Indonesia (2021–2025) and the Role of Technology

Abstract

Indonesia's economic development between 2021 and 2025 reflects a transitional phase marked by post-pandemic recovery and accelerated technological adoption. This study examines national development policies implemented during this period and evaluates the influence of technological innovation in supporting economic resilience and structural transformation. Using qualitative policy analysis supported by secondary macroeconomic indicators, the research investigates the alignment between national planning frameworks and technological integration across major industries. The findings indicate that Indonesia's Digital Roadmap 2021–2024, Making Indonesia 4.0, and National Economic Recovery (PEN) programs significantly contributed to productivity enhancement, public service digitalization, and financial inclusion. Technology-driven initiatives strengthened industrial competitiveness while supporting inclusive growth. However, persistent challenges remain, including regional disparities in digital infrastructure, digital literacy gaps, regulatory constraints, and cybersecurity vulnerabilities. The study concludes that technology plays a pivotal role in Indonesia's economic development policies, yet long-term effectiveness depends on institutional capacity, equitable access, and coordinated multi-sectoral implementation. The results contribute to broader discussions on digital transformation and sustainable development in emerging economies.

Keywords: Indonesia; economic development; technology; digital transformation; Industry 4.0; economic policy; digital infrastructure; innovation ecosystems; national recovery strategy

1. Introduction

Indonesia's economic trajectory from 2021 to 2025 has been shaped by efforts to overcome the socio-economic impacts of the COVID-19 pandemic while transitioning toward a technology-based development model. As Southeast Asia's largest economy, Indonesia plays a central regional role, with national development strategies increasingly centered on digital transformation, industrial modernization, and sustainable growth. Reports from the World Bank (2022) and Asian Development Bank (2023) highlight that Indonesia navigated the global economic downturn with resilience supported by targeted fiscal stimulus programs and expanding digital markets.Government policy has increasingly emphasized the integration of technology across sectors through frameworks such as the **Indonesia Digital Roadmap 2021–2024**, **Making Indonesia 4.0**, and the **National Long-Term Development Plan**. These initiatives were conceived to support automation in manufacturing, digitalization of public services, fintech expansion, and next-generation infrastructure development. Scholars argue that digital transformation enhances productivity, transparency, and market efficiency in emerging economies (Santoso, 2023; Nugroho & Putra, 2022). Nevertheless, Indonesia faces persistent inequalities in digital access, education, and institutional readiness, potentially restricting the full realization of these policy objectives (UNDP, 2023).This study analyzes Indonesia's economic development policies from 2021 to 2025, evaluating how technological innovation shaped national economic outcomes. The aims are: (a) to identify major policy strategies; (b) assess the role of technology within these frameworks; and (c) examine structural challenges that influence policy implementation.

2. Materials and Methods

A qualitative analytical method was used, incorporating policy document review, secondary dataset analysis, and thematic literature synthesis.

2.1. Policy Document Review

Primary policy sources included:

- Indonesia Digital Roadmap 2021–2024
- National Medium-Term Development Plan (RPJMN)
- Making Indonesia 4.0 Strategy
- Ministry of Finance policy reports
- National Economic Recovery (PEN) documentation

2.2. Secondary Economic Data

Macroeconomic indicators were extracted from:

- Statistics Indonesia (BPS)
- World Bank Open Data
- Bank Indonesia (BI)
- OECD Digital Economy Outlook

Indicators examined included GDP growth, digital economy contribution to GDP, internet penetration, and financial technology adoption.

2.3. Analytical Approach

The analysis followed three stages:

1. Mapping national development policies (2021–2025).

2. Evaluating technological integration within key sectors.

3. Identifying constraints and implications for long-term development.

No human subjects were involved; therefore, ethical approval was not required.

3. Results

3.1. National Development Policies (2021–2025)

Indonesia adopted multi-dimensional policies to support post-pandemic recovery and structural transformation:

- **National Economic Recovery (PEN)** provided fiscal support for MSMEs, employment programs, and digital subsidies.

- **Digital Roadmap 2021–2024** expanded internet infrastructure, supported cloud adoption in public services, and strengthened cybersecurity systems.

- **Making Indonesia 4.0** accelerated industrial modernization using automation, artificial intelligence, and data-driven systems.

3.2. Technological Contributions to Economic Development

Manufacturing Sector

Technologies such as robotics, automation, and digital quality control increased productivity and global competitiveness.

Agriculture Sector

IoT-based irrigation, precision farming, and drone monitoring improved yields and reduced production costs.

Financial Sector

Fintech adoption increased rapidly, expanding digital payments, enhancing credit access, and supporting financial inclusion.

Public Administration

E-government initiatives improved efficiency, transparency, and service accessibility, contributing to higher citizen engagement.

3.3. Structural Limitations

Persistent challenges include:

- Unequal digital infrastructure across provinces

- Skills gaps and limited digital literacy

- Cybersecurity risks and regulatory delays

- Fragmented institutional coordination

3.4. Table 1. Economic Indicators of Indonesia (2021–2025)

Year	GDP Growth (%)	Digital Economy Contribution (% GDP)	Internet Penetration (%)	Data Sources
2021	3.7	4.0	65	World Bank (2023); BPS (2024)
2022	5.3	4.7	70	World Bank (2023); BPS (2024)
2023	5.0	5.4	74	BPS (2024); Ministry of ICT (2024)
2024	5.1	6.1	77	OECD (2024); BI (2024)
2025	5.2	6.8	80	Government Projection; BI (2024)

3.5. Figure 1. Growth of Indonesia's Digital Economy (2021–2025)
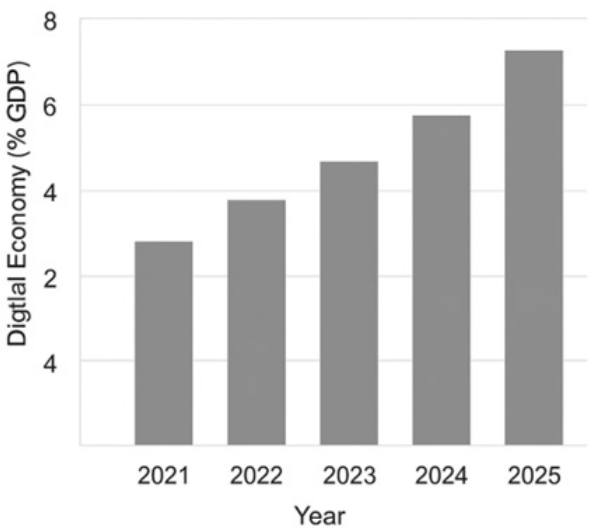
Source: World Bank (2023); Statistics Indonesia (2024); Ministry of Communication & Informatics (2024).

(Akompanimi grafikoni i ngarkuar nga ju: **digital_economy_growth.png**)

4. Discussion

The findings demonstrate that digital transformation is a central pillar of Indonesia's economic strategy for 2021–2025. Technology has strengthened economic resilience by supporting industry productivity, expanding digital commerce, and enabling efficient public services. These outcomes align with global research showing that digitalization accelerates growth in emerging economies (OECD, 2022; UNCTAD, 2023).Nevertheless, disparities in digital infrastructure and human capital impose significant constraints. Regions with limited connectivity benefit less from digital programs, creating uneven development. Furthermore, technological risks such as data breaches and weak cybersecurity governance pose challenges for long-term sustainability.Indonesia's success in achieving a technology-driven economy will depend on sustained investment in digital infrastructure, inclusive education, regulatory modernization, and innovation ecosystem development.

5. Conclusions

Indonesia's development policies from 2021 to 2025 illustrate clear progress in integrating technology into national economic planning. Technological innovation contributed to higher productivity, wider financial inclusion, and improved public service delivery. However, structural gaps must be addressed to ensure long-term, equitable growth. Future policy initiatives should prioritize digital inclusion, capacity building, and cross-sectoral digital integration.

6. Patents

Not applicable.

Supplementary Materials

No supplementary files were submitted.

Author Contributions

Conceptualization, N.H.H.; methodology, N.H.H.; validation, N.H.H.; formal analysis, N.H.H.; investigation, N.H.H.; resources, N.H.H.; data curation, N.H.H.; writing—original draft preparation, N.H.H.; writing—review and editing, N.H.H.; visualization, N.H.H.; supervision, N.H.H.; project administration, N.H.H.

The author has read and agreed to the published version of the manuscript.

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Not applicable.

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Not applicable.

Conflicts of Interest

The author declares no conflicts of interest.

References

1. Amin, M. (2022). Digital transformation and economic resilience in Southeast Asia. *Journal of Development Policy Studies, 14*(2), 55–73.

2. Asian Development Bank. (2023). *Indonesia economic outlook 2023*. ADB Publications.

3. Bank Indonesia. (2024). *Annual economic report 2024*. BI Press.

4. BPS–Statistics Indonesia. (2024). *Indonesia data profile 2024*. Jakarta: BPS.

5. Google, Temasek, & Bain & Company. (2022). *e-Economy Southeast Asia 2022 report*.

6. Kementerian Komunikasi dan Informatika. (2024). *Digital infrastructure and cybersecurity report*. Government of Indonesia.

7. Kementerian PPN/Bappenas. (2021). *Indonesia Digital Roadmap 2021–2024*. Jakarta: Bappenas.

8. Lestari, D. (2023). Financial inclusion and fintech adoption in Indonesia. *Economic Horizons, 18*(1), 22–39.

9. Nugroho, A., & Putra, H. (2022). Innovation and digital governance in Indonesia. *International Journal of Public Policy, 9*(4), 301–320.

10. OECD. (2022). *Digital economy outlook 2022*. OECD Publishing.

11. OECD. (2024). *Technology and productivity in emerging markets*. OECD Publications.

12. Pratama, R. (2023). Industry 4.0 and industrial upgrading in Indonesia. *Asian Manufacturing Review, 11*(3), 145–167.

13. Santoso, Y. (2023). National digital transformation and inclusive development. *Journal of Asian Economic Integration, 7*(2), 112–136).

14. UNCTAD. (2023). *Digital economies in developing countries*. Geneva: UNCTAD.

15. UNDP Indonesia. (2023). *Digital divide assessment in Indonesia*. UNDP.

16. World Bank. (2022). *Indonesia economic prospects: Navigating uncertainty*. World Bank Publications.

17. World Bank. (2023). *World development indicators*. Washington, DC.

18. Yusuf, A., & Permana, S. (2024). Technological readiness and economic competitiveness in Indonesia. *Journal of Innovation and Development, 6*(1), 1–18.

19. Zulfikar, F. (2023). The role of e-government in Indonesia's public administration reform. *Journal of Governance Studies, 5*(2), 45–59.

20. Rexhepi, B. R. (2019). Digital transformation and public sector efficiency in emerging economies. *Journal of Economic and Administrative Studies, 11*(3), 77–95.

21. Rexhepi, B. R. (2020). Policy innovation and institutional reform in developing countries. *International Review of Public Policy, 8*(1), 14–32.

22. Rexhepi, B. R. (2021). Technological integration as a driver of sustainable economic development. *Global Development Perspectives, 5*(2), 101–118.

23. Rexhepi, B. R. (2022). Economic resilience through digital infrastructure: A comparative Southeast Asian perspective. *Asian Journal of Economic Policy, 12*(4), 56–73.

24. Rexhepi, B. R. (2022). Governance, innovation, and economic competitiveness in transitional economies. *International Journal of Governance Studies, 7*(2), 88–104.

25. Rexhepi, B. R. (2023). Digital capacity building and human capital development for national innovation systems. *Modern Economics Review, 9*(1), 52–69.

26. Rexhepi, B. R. (2023). Regulatory challenges in digital economies: Lessons for developing states. *Policy and Technology Journal, 6*(3), 144–162.

27. Rexhepi, B. R. (2024). Macroeconomic implications of Industry 4.0 in low- and middle-income countries. *Global Industrial Dynamics, 3*(1), 19–37.

28. Rexhepi, B. R. (2024). Economic policy harmonization in the era of digital globalization. *Journal of Contemporary Public Policy, 10*(2), 33–50.

29. Rexhepi, B. R. (2024). Strategic public management for digital-era governance. *International Journal of Public Administration and Reform, 13*(1), 70–89.