



RESEARCH ARTICLE

Asymmetric Impact of Public Service Digitalization on Local Economic Productivity Transformation in Rural Indonesia

Mutiara Shifa^{1*} | Sri Maryanti² | Dian Ariani³ | Ngurah Pandji Mertua Agung Durya⁴ | Sugeng Karyadi⁵

^{1*–3}Development Economics Study Program, Universitas Teuku Umar, West Aceh Regency, Aceh Province, Indonesia.

²Management Study Program, Faculty of Economics, Universitas Lancang Kuning, Pekanbaru City, Riau Province, Indonesia.

⁴Universitas Dian Nuswantoro, Semarang City, Central Java Province, Indonesia.

⁵Faculty of Economics and Business, Universitas Lambung Mangkurat, Banjarmasin City, South Kalimantan Province Jakarta, Indonesia.

Correspondence

^{1*}Development Economics Study Program, Universitas Teuku Umar, West Aceh Regency, Aceh Province, Indonesia.
Email: mutiarashifa@utu.ac.id.

Funding information

Universitas Teuku Umar.

Abstract

This study examines the asymmetric impact of public service digitalization on the transformation of local economic productivity in rural areas of Indonesia. Digitalization of public services is expected to improve efficiency, accessibility, and transparency; however, its benefits are not always evenly distributed across regions and communities. Using a quantitative approach, this research analyzes how variations in digital access, digital service utilization, institutional capacity, and human capital shape local economic productivity outcomes. Primary data were collected through a structured questionnaire from 100 respondents representing rural micro-entrepreneurs, community leaders, and local public service users. Data were analyzed using SPSS with multiple linear regression techniques. The results indicate that public service digitalization has a significant positive effect on local economic productivity, but the magnitude of its impact differs depending on digital literacy levels and infrastructure readiness. Digital access and service utilization significantly enhance productivity, while institutional capacity strengthens the effectiveness of digital transformation. Conversely, limited human capital creates an asymmetric effect, constraining productivity gains in less-prepared rural areas. Simultaneous testing confirms that all independent variables collectively influence local economic productivity. These findings highlight that digital transformation in rural public services must be accompanied by inclusive capacity-building policies to avoid widening productivity gaps. The study contributes to the literature on digital governance and rural economic development by providing empirical evidence from a developing country context.

Keywords

Public Service Digitalization; Rural Economy; Economic Productivity; Digital Divide.

1 | INTRODUCTION

The digital transformation of public services has become a key policy priority in many countries, including Indonesia, as governments strive to enhance efficiency, transparency, and inclusiveness. According to Margetts & Dunleavy (2017), the paradigm of Digital Era Governance (DEG) has fundamentally changed how states interact with citizens, shifting toward integrated and automated service delivery. Digital public services ranging from online licensing and social assistance platforms to digital population administration are expected to reduce transaction costs and improve service accessibility. In rural areas, where geographical limitations and institutional capacity constraints often hinder development, digitalization is frequently promoted as a driver of local economic productivity, often referred to as the "digital dividend" (World Bank, 2016). The success of this transformation depends not only on the adoption of technology but also on infrastructure readiness, human resource capacity, and public engagement in the digitalization process. Thus, a key challenge in implementing digital public services is ensuring that the benefits of technology are equitably accessible to all segments of society, including those in remote areas.

However, the outcomes of digital transformation are not always consistent, leading to asymmetric impacts across different regions and social groups. While the "Second Machine Age" promises widespread prosperity (Brynjolfsson & McAfee, 2016), the reality in many developing countries, including Indonesia, often reveals a significant "design-reality gap" (Heeks, 2018). Indonesia serves as a pertinent case for exploring this issue, given its unique challenges. As an archipelagic nation with considerable disparities between urban and rural regions, Indonesia faces multiple obstacles such as infrastructure gaps, uneven digital literacy, and varying levels of institutional readiness. In urban centers, e-government services have been quickly adopted, benefiting from better access to technology and human capital. In contrast, rural areas face slower adoption due to limited internet connectivity, lower digital literacy, and a shortage of skilled personnel (Kemp, 2021). These disparities raise concerns that digital public service initiatives, instead of reducing inequalities, may inadvertently deepen them. This phenomenon, often referred to as the "digital divide," highlights the risk that disadvantaged communities in rural areas may remain excluded from the benefits of digital governance (Vial, 2019). Addressing these challenges requires targeted policies to bridge these gaps, ensuring that the benefits of digital transformation reach all segments of society, particularly the most marginalized.

Economic productivity at the local level is closely tied to the efficiency of public services. Streamlined licensing, transparent information systems, and digital access to government programs are crucial for supporting micro, small, and medium enterprises (MSMEs), which play a significant role in rural economies (Nambisan, 2017). Simplifying administrative procedures through digital services can save time and resources, allowing businesses to focus on growth and productivity. However, as argued by Acemoglu & Restrepo (2020), technology can lead to job displacement if it is not accompanied by an increase in human capital. When digital systems are difficult to use or communities lack the necessary skills, the potential benefits of these services may not be fully realized. Instead of boosting productivity, the lack of digital literacy can widen the gap between areas with access to technology and those without. Rural regions, where internet access and digital skills may be scarce, are at risk of falling further behind in terms of productivity, as the digital divide grows. To ensure the success of digital public services and their potential to enhance local economies, it is essential to focus not only on technology implementation but also on improving digital literacy and providing training to communities.

The concept of asymmetry in digital transformation highlights that identical policy interventions can yield varying results depending on local factors. In rural Indonesia, differences in digital infrastructure, governance capacity, and community preparedness significantly influence how digital public services impact economic productivity. As pointed out by Fountain (2016), the "Virtual State" is not only about implementing technology, but also about how institutions evolve to integrate and utilize that technology effectively. These variations in implementation can lead to disparate outcomes across regions. Rural areas, often facing limited access to digital tools and infrastructure, may experience slower or less effective adoption of digital public services, which could hinder economic growth. On the other hand, urban centers with better infrastructure and resources may benefit more quickly from such innovations. Recognizing these asymmetric effects is essential when designing digital policies aimed at inclusive development. Ensuring that digital transformation benefits all regions equally requires tailored approaches that address local challenges and opportunities. If left unchecked, the rapid advancements of the "Work of the Future" could exacerbate existing inequalities, leaving rural communities further behind (Autor, 2019). Therefore, a more nuanced and region-specific policy design is necessary to foster equitable development in the digital era.

Despite the increasing attention on digital governance, there remains a significant gap in empirical studies that explore the rural economic effects of public service digitalization in developing countries. The majority of existing research primarily focuses on urban environments or assesses the efficiency of digital services rather than examining their broader economic impact (OECD, 2020). This limited scope often overlooks the unique challenges and opportunities faced by rural communities, where digital transformation could have a substantial influence on local economic development. Rural areas in developing countries, such as Indonesia, often face infrastructure deficits, low digital literacy, and limited institutional capacity, which can affect how digital public services are adopted and utilized. This study seeks

to fill this gap by providing an empirical analysis of the asymmetric effects of public service digitalization on local economic productivity in rural Indonesia. By investigating these impacts, the research aims to offer valuable insights into how digital policies can be designed to foster inclusive economic growth in the Global South. The findings are expected to contribute to the growing body of literature on digital governance and offer evidence that can inform the development of policies aimed at ensuring rural areas benefit equally from the digital transformation of public services.

2 | BACKGROUND THEORY

2.1 Public Service Digitalization and Economic Productivity

Public service digitalization involves incorporating digital technologies into government service delivery to improve efficiency, transparency, and accountability. By automating administrative tasks, governments can reduce corruption and bureaucratic delays, as argued in digital governance theory (OECD, 2020). These advancements enable governments to provide services more quickly and effectively, building greater public trust. In rural areas, digital platforms help overcome geographical isolation, connecting remote regions to vital services and creating a more agile governance model. This shift towards a "Virtual State" (Fountain, 2016) reduces the challenges posed by distance and limited infrastructure, offering rural communities improved access to government services. Local entrepreneurs, in particular, benefit from digitalization, as they gain easier access to licenses, social assistance, and market information. These advantages help create a more efficient and productive economic environment, where small businesses and micro-enterprises can thrive. By simplifying administrative processes and cutting transaction costs, digital platforms foster a more competitive business landscape. Access to markets and essential government programs digitally gives rural businesses the tools to grow and improve their operations. This transformation can lead to increased productivity, creating opportunities for long-term economic growth and development in rural communities.

H1: Public service digitalization has a positive and significant effect on local economic productivity.

2.2 Digital Access and Utilization

Digital access is essential for rural communities to engage with the modern economy. In the context of the digital divide, reliable physical infrastructure and internet connectivity form the foundation of the "Work of the Future," allowing individuals to overcome local barriers and access broader opportunities (Autor, 2019). While access to technology is crucial, it is not enough on its own. The true value of digital access lies in its meaningful utilization. Digital service utilization refers to how actively and effectively citizens engage with digital platforms, and it plays a key role in maximizing the benefits of digital technologies. Heeks (2018) highlights that higher utilization rates among micro-entrepreneurs lead to improved data-driven decision-making, more efficient operations, and enhanced business outcomes. For rural communities, where resources and infrastructure may be limited, the capacity to utilize digital tools is even more significant. Without active engagement, even the most advanced digital platforms may not contribute to economic growth. In this regard, both the availability of technology and the active use of digital services are crucial factors influencing economic output. The ability to not just access but effectively leverage digital services can determine the success of local businesses and drive overall productivity in rural economies. This combination of access and utilization is central to fostering inclusive economic development.

H2: Digital access positively and significantly affects local economic productivity.

H3: Digital service utilization positively and significantly affects local economic productivity.

3.3 Institutional Capacity and Human Capital

Institutional capacity refers to the ability of local government agencies to effectively implement and sustain digital initiatives. Strong administrative capabilities ensure that digital tools are not just superficial additions, but are actually tailored to meet the specific needs of rural communities (Fountain, 2016). This capacity is critical for ensuring that digital services are relevant, accessible, and can be integrated seamlessly into everyday governance. However, the effectiveness of digital transformation is also influenced by human capital, particularly digital literacy. Vial (2019) emphasizes that digital transformation is not a neutral process; it can result in "asymmetric outcomes," where those with higher levels of education and technical expertise disproportionately benefit from the advantages of digitalization. In rural areas like Indonesia, where educational opportunities and access to training are often limited, this creates a significant gap. Low digital literacy can hinder the ability of individuals to fully capitalize on the potential productivity gains offered by digital tools. This situation underscores the importance of both institutional readiness and human capital development. For digital transformation to truly drive economic growth, it is essential not only for local governments to have the infrastructure and administrative capabilities to support it but also for citizens to possess the skills necessary to utilize digital platforms effectively. Therefore, the relationship between technology and economic outcomes is strongly influenced by the preparedness of both the institutions delivering the service and the individuals using it.

H4: Institutional capacity positively and significantly affects local economic productivity.

H5: Human capital asymmetrically affects the relationship between public service digitalization and local economic productivity.

H6: Public service digitalization, digital access, digital service utilization, institutional capacity, and human capital simultaneously have a significant effect on local economic productivity.

3 | METHOD

This study uses a quantitative research design, employing a survey approach to collect data from rural areas in Indonesia. A total of 100 respondents were surveyed, including micro-entrepreneurs, community representatives, and users of digital public services. The sample size was determined to meet the minimum requirements for conducting multiple regression analysis using SPSS, ensuring the robustness of the results. Local economic productivity serves as the dependent variable in the study, measured through indicators like income growth, business efficiency, and overall output improvement. These indicators reflect the economic impact experienced by rural communities as a result of digital service adoption. Independent variables include public service digitalization, digital access, digital service utilization, institutional capacity, and human capital. A five-point Likert scale was used to assess the respondents' opinions on each variable. Data analysis was performed using SPSS, beginning with descriptive statistics to summarize the sample characteristics. Validity and reliability tests were then conducted to ensure the survey instruments were accurate and consistent. Normality testing was done to verify the distribution of the data, ensuring it met the assumptions for regression analysis. Multiple linear regression was used to examine the relationships between the independent variables and local economic productivity. Hypothesis testing was carried out with t-tests to assess the individual effects of each variable and an F-test to evaluate their collective impact. All tests were conducted at a 5% significance level, ensuring the reliability of the findings. These statistical analyses will offer valuable insights into the effects of digital public services on economic outcomes in rural Indonesia.

4 | RESULTS AND DISCUSSION

4.1 Results

The validity test was conducted to examine whether each questionnaire item was able to accurately measure the intended construct. The Pearson Product Moment correlation method was applied by comparing the calculated correlation coefficient (r-count) with the critical value of r-table (0.195, $n = 100$, $\alpha = 0.05$). The results show that all questionnaire items have r-count values greater than the r-table value. Therefore, all indicators used to measure public service digitalization, digital access, digital service utilization, institutional capacity, human capital, and local economic productivity are declared valid. This indicates that the instrument is appropriate for further statistical analysis.

Table 1. Validity Test Results

Variable	Item	r-value	r-table (n=100; $\alpha=0.05$)	Remark
Public Service Digitalization	X1.1	0.654	0.195	Valid
	X1.2	0.712	0.195	Valid
Digital Access	X2.1	0.681	0.195	Valid
Digital Service Utilization	X3.1	0.703	0.195	Valid
Institutional Capacity	X4.1	0.735	0.195	Valid
Human Capital	X5.1	0.669	0.195	Valid
Local Economic Productivity	Y1	0.748	0.195	Valid

Reliability testing was carried out using Cronbach's Alpha to assess the internal consistency of the measurement instrument. A construct is considered reliable if the Cronbach's Alpha value exceeds 0.70. The findings reveal that all variables have Cronbach's Alpha values ranging from 0.78 to 0.85. These results confirm that the research instrument demonstrates good reliability, meaning that the responses are consistent and dependable for measuring the studied variables.

Table 2. Reliability Test Results

Variable	Cronbach's Alpha	Interpretation
Public Service Digitalization	0.82	Reliable
Digital Access	0.79	Reliable

Digital Service Utilization	0.81	Reliable
Institutional Capacity	0.84	Reliable
Human Capital	0.78	Reliable
Local Economic Productivity	0.85	Reliable

The normality test was performed using the Kolmogorov-Smirnov method on the regression residuals to assess the distribution of the data. The results revealed an Asymp. Sig. (2-tailed) value of 0.200, which exceeds the significance level of 0.05. This indicates that the residuals are normally distributed. This outcome is crucial, as normal distribution is a key assumption for conducting multiple linear regression analysis. With this assumption met, the results of the regression analysis can be considered reliable, allowing for accurate interpretation of the relationships between the variables in the study.

Table 3. Normality Test (Kolmogorov-Smirnov)

Variable	Asymp. Sig. (2-tailed)	Conclusion
Regression Residual	0.200	Normally Distributed

The heteroskedasticity test was conducted using the Glejser test, which involved regressing the absolute values of the residuals against the independent variables. The results showed that the significance values for all independent variables were greater than 0.05. This indicates that heteroskedasticity is not present in the regression model, meaning the variance of the residuals remains consistent across different observations. The absence of heteroskedasticity ensures that the assumption of constant variance, a key requirement for multiple linear regression, holds true. As a result, the regression model's estimates can be considered valid and reliable for further analysis.

Table 4. Heteroskedasticity Test Results (Glejser Test)

Independent Variable	Significance	Conclusion
Public Service Digitalization	0.321	No Heteroskedasticity
Digital Access	0.287	No Heteroskedasticity
Digital Service Utilization	0.415	No Heteroskedasticity
Institutional Capacity	0.362	No Heteroskedasticity
Human Capital	0.298	No Heteroskedasticity

Multicollinearity was tested by examining the Tolerance and Variance Inflation Factor (VIF) values. The results show that all variables have Tolerance values above 0.10 and VIF values below 10. Therefore, it can be concluded that there is no multicollinearity problem among the independent variables, indicating that each variable independently contributes to the regression model.

Table 5. Multicollinearity Test Results

Variable	Tolerance	VIF	Conclusion
Public Service Digitalization	0.612	1.63	No Multicollinearity
Digital Access	0.587	1.70	No Multicollinearity
Digital Service Utilization	0.556	1.80	No Multicollinearity
Institutional Capacity	0.601	1.66	No Multicollinearity
Human Capital	0.629	1.59	No Multicollinearity

Multiple linear regression analysis was performed to assess the impact of public service digitalization, digital access, digital service utilization, institutional capacity, and human capital on local economic productivity. The regression equation derived from the analysis is: $Y = 4.215 + 0.287X_1 + 0.243X_2 + 0.265X_3 + 0.221X_4 - 0.174X_5$. The coefficients of the regression model indicate that public service digitalization, digital access, digital service utilization, and institutional capacity all have positive effects on local economic productivity. However, the human capital variable shows a negative coefficient, which suggests an asymmetric effect. This implies that insufficient digital skills and education may hinder productivity gains in rural areas, as communities with lower levels of digital literacy are less likely to fully benefit from digitalization, thus limiting its economic impact.

Table 6. Multiple Linear Regression Results

Variable	Regression Coefficient (B)
Constant	4.215
Public Service Digitalization	0.287

Digital Access	0.243
Digital Service Utilization	0.265
Institutional Capacity	0.221
Human Capital	-0.174

The coefficient of determination (R^2) value obtained is 0.679. This means that 67.9% of the variation in local economic productivity can be explained by the independent variables included in the model. The remaining 32.1% is influenced by other factors not examined in this study. This result demonstrates that the proposed regression model has strong explanatory power.

Table 7. Coefficient of Determination

Model	R	R Square	Adjusted R Square
1	0.824	0.679	0.662

The F-test result shows an F-value of 32.150 with a significance level of 0.000, which is below the 0.05 threshold. This finding indicates that public service digitalization, digital access, digital service utilization, institutional capacity, and human capital simultaneously have a significant effect on local economic productivity. Therefore, the model is statistically feasible.

Table 8. F-Test Results (Simultaneous Test)

Model	F-value	Sig.	Decision
Regression	32.150	0.000	Significant

The t-test results indicate that public service digitalization has a significant positive effect on local economic productivity, suggesting that the integration of digital technologies in public services drives economic growth. Similarly, digital access is found to significantly enhance local economic productivity, highlighting the importance of reliable internet infrastructure in fostering economic development. Digital service utilization also positively influences productivity, indicating that active engagement with digital platforms can lead to improved economic outcomes. Institutional capacity is another crucial factor, as it significantly supports productivity improvements by ensuring that digital services are effectively implemented and maintained. However, human capital exhibits a significant asymmetric effect, with limited digital skills reducing the effectiveness of digital public services. This suggests that without adequate digital literacy, the benefits of digital services may not be fully realized, particularly in rural areas. Overall, these findings empirically support most of the hypotheses proposed in the study, confirming that digitalization, access, service utilization, institutional readiness, and human capital all play vital roles in enhancing local economic productivity.

Table 9. t-Test Results (Partial Test)

Variable	t-value	Sig.	Conclusion
Public Service Digitalization	3.450	0.001	Significant
Digital Access	2.980	0.004	Significant
Digital Service Utilization	3.210	0.002	Significant
Institutional Capacity	2.760	0.007	Significant
Human Capital	-2.540	0.013	Significant (Asymmetric Effect)

The findings demonstrate that digital transformation of public services plays a crucial role in improving local economic productivity in rural Indonesia. However, the asymmetric effect of human capital highlights that digitalization alone is insufficient. Without adequate digital literacy and capacity-building programs, rural communities may not fully benefit from digital public services.

4.2 Discussion

The findings of the study indicate that Public Service Digitalization (X_1) has the strongest positive coefficient (0.287) with a significant t-value of 3.450. This suggests that a one-unit increase in the digitalization of public services leads to a substantial improvement in local economic productivity. The empirical evidence obtained from the analysis supports the "Digital Era Governance" framework proposed by Margetts & Dunleavy (2017), which argues that the integration of digital technologies can effectively eliminate "bureaucratic friction." In rural Indonesia, this effect is evident as digital services help reduce the time and effort spent traveling to government offices and speed up the processing of business permits. For micro, small, and medium enterprises (MSMEs), this translates into more time and resources available for core business activities rather than being consumed by administrative tasks. By streamlining government processes, digital public

services empower local entrepreneurs, enabling them to focus on growth, innovation, and productivity. Consequently, this shift fosters a more favorable business environment, contributing to the overall economic development of rural areas in Indonesia.

Moreover, the positive effects of Digital Access (X2) and Digital Service Utilization (X3), with coefficients of 0.243 and 0.265, respectively, highlight that productivity is not solely dependent on the availability of infrastructure but also on how actively and effectively it is used. This finding aligns with the World Bank's (2016) concept of "digital dividends," which emphasizes that infrastructure alone is not enough; active and meaningful engagement is necessary to unlock its full economic potential. Without the ability to effectively navigate and utilize digital platforms, the internet remains an "empty vessel" for economic growth, offering limited benefits. In this study, the high t-values for both Digital Access and Utilization indicate that rural communities in Indonesia are increasingly able to leverage digital connectivity to access crucial market information and government social assistance. This suggests that, although challenges remain, digital platforms are beginning to have a tangible impact on local economies by facilitating access to essential resources and opportunities, thereby contributing to economic empowerment and productivity improvements in rural areas.

The most critical and unique finding of this study is the negative coefficient for Human Capital (X5) at -0.174 ($t=-2.540$). While traditional economic theories suggest that human capital should always be a positive driver, in the context of rapid digital transformation, it can create an asymmetric effect. As argued by Heeks (2018) and Acemoglu & Restrepo (2020), technology is not a neutral tool; it requires a specific threshold of digital literacy. The negative coefficient indicates that in many rural areas, the digital systems provided are currently too complex for the existing skill levels of the population. This creates a "productivity lag" where micro-entrepreneurs spend more time struggling with the technology than benefiting from it. This confirms Vial's (2019) concern regarding digital exclusion, where digital transformation might inadvertently widen the gap between those with technical skills and those without, specifically in the less-prepared rural sectors of Indonesia. Institutional Readiness and Holistic Policy The significant impact of Institutional Capacity (X4) ($t=2.760$) further reinforces Fountain's (2016) "Virtual State" theory. It proves that the "front-end" digital experience for citizens is only as good as the "back-end" readiness of local government institutions. If the institutional capacity to manage digital data and respond to online requests is weak, the digital transformation remains a facade. With an R^2 of 0.679, the model demonstrates that 67.9% of the variation in local economic productivity is explained by these digital ecosystem factors. This high explanatory power highlights the necessity for a "holistic policy approach" as advocated by the OECD (2020). Policy interventions must move beyond just "building towers" (infrastructure) and focus heavily on "building people" (literacy) and "building systems" (institutions) to ensure that the digital transformation in rural Indonesia leads to inclusive economic growth rather than increased disparity.

5 | CONCLUSIONS AND FUTURE WORK

This study concludes that public service digitalization plays a significant role in transforming local economic productivity in rural Indonesia. The findings show that digital access, service utilization, and institutional capacity are crucial in enhancing productivity. These factors, when combined, create a more efficient and accessible environment for local businesses, particularly micro, small, and medium enterprises (MSMEs). However, the study also reveals that human capital, specifically digital literacy, significantly influences the extent of these benefits. The observed asymmetric impact underscores the importance of inclusive digital policies that prioritize not only infrastructure development but also digital skills training. Without adequate human capital, the full potential of digital tools cannot be realized, especially in rural areas where access to education and training resources may be limited. Therefore, policymakers must ensure that rural digital transformation initiatives are paired with comprehensive capacity-building programs to address these gaps, reduce inequality, and maximize the economic benefits of digitalization. By focusing on both infrastructure and human capital development, the government can create a more equitable digital landscape. Future research could build on these findings by examining longitudinal data or conducting comparative regional analyses to provide a more nuanced understanding of how digital transformation affects local economies over time and in different contexts.

REFERENCES

- Acemoglu, D., & Restrepo, P. (2020). Automation and new tasks: How technology displaces and reinstates labor. *Journal of Economic Perspectives*, 34(1), 3–30.
- Autor, D. H. (2019). Work of the future. *AEA Papers and Proceedings*, 109, 1–32.
- Brynjolfsson, E., & McAfee, A. (2016). *The second machine age: Work, progress, and prosperity in a time of brilliant*

- technologies. W. W. Norton & Company.
Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
- Dahlman, C. (2020). Technology, development, and the future of work. *World Bank Research Observer*, 35(2), 217–242.
- Fountain, J. E. (2016). *Building the virtual state: Information technology and institutional change*. Brookings Institution Press.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Heeks, R. (2018). *Information and communication technology for development (ICT4D)*. Routledge.
- Kemp, S. (2021). Digital adoption and internet use in Southeast Asia. *DataReportal*.
- Kitchin, R. (2019). The ethics of smart cities and urban science. *Geography Compass*, 13(3), e12417.
- Margetts, H., & Dunleavy, P. (2017). *Digital era governance: IT corporations, the state, and e-government*. Oxford University Press.
- Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. *Entrepreneurship Theory and Practice*, 41(6), 1029–1055.
- OECD. (2020). *Digital government review: Enhancing the digital transformation of the public sector*. OECD Publishing.
- Reddick, C. G. (2016). Public administration and information technology. *Public Administration Review*, 76(1), 145–156.
- Schwab, K. (2017). *The fourth industrial revolution*. World Economic Forum.
- Sekaran, U., & Bougie, R. (2020). *Research methods for business: A skill-building approach* (8th ed.). Wiley.
- UNDP. (2019). *Digital transformation in public services*. United Nations Development Programme.
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *MIS Quarterly*, 43(1), 223–251.
- West, D. M. (2018). *Digital government: Technology and public sector performance*. Brookings Institution Press.
- World Bank. (2016). *World development report 2016: Digital dividends*. World Bank Publications.

How to cite this article: Shifa, M., Maryanti, S., Ariani, D., Durya, N. P. M. A., & Karyadi, S. (2026). Asymmetric Impact of Public Service Digitalization on Local Economic Productivity Transformation in Rural Indonesia. *Indonesian Journal Economic Review (IJER)*, 6(2), 380–387. <https://doi.org/10.59431/ijer.v6i2.769>.