

The Contribution of the Digital Economy to Job Creation and Sustainable Economic Development in Developing Countries

مساهمة الاقتصاد الرقمي في خلق فرص العمل وتحقيق التنمية الاقتصادية المستدامة في الدول النامية

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Accepted

قبول البحث

2026/4/5

Revised

مراجعة البحث

2026/3/18

Received

استلام البحث

2026/2/25

DOI: <https://doi.org/10.31559/GJEB2026.16.4.9>

Abstract:

Objectives: The study aims to analyze the contribution of the digital economy to job creation and the achievement of sustainable economic development in developing countries during the period 2010–2025.

Methods: This study adopted a quantitative panel-data technique by using data from 20-30 developing countries between 2010 and 2025. Econometric methods, such as descriptive statistics, correlation, and the fixed-effects model, were used, and the Hausman test validated the model.

Results: The results show a significant positive impact of the digital economy on economic growth ($\beta = 0.183$, $p < 0.01$) and a negative impact on unemployment ($\beta = -0.091$, $p < 0.05$). These findings are further supported by the correlation analysis ($r = 0.72$ for GDP; $r = -0.48$ for unemployment). The findings also showed that human capital and capital accumulation have significant positive effects as well.

Conclusions: This study highlights that the digital economy plays a crucial role in fostering sustainable economic growth through improved productivity and job creation. Governments should focus on digital infrastructure investment, digital skills training, and inclusive governance policies to enhance the benefits of the digital economy.

Keywords: Digital Economy; Job Creation; Sustainable Economic Development; Economic Growth; Developing Countries.

الملخص:

الأهداف: تهدف هذه الدراسة إلى تحليل مساهمة الاقتصاد الرقمي في خلق فرص العمل وتحقيق التنمية الاقتصادية المستدامة في الدول النامية خلال الفترة 2010–2025.

المنهجية: اعتمدت هذه الدراسة منهجية كمية لبيانات السلاسل الزمنية المقطعية (Panel Data)، باستخدام بيانات تتراوح بين 20 و30 دولة نامية خلال الفترة 2010–2025. وتم توظيف عدد من الأساليب القياسية، مثل الإحصاءات الوصفية، وتحليل الارتباط، ونموذج التأثيرات الثابتة (Fixed-Effects Model)، كما تم استخدام اختبار هوسمان (Hausman Test) للتحقق من ملائمة النموذج.

النتائج: أظهرت النتائج وجود أثر إيجابي ذي دلالة إحصائية للاقتصاد الرقمي على النمو الاقتصادي ($\beta = 0.183$, $p < 0.01$)، وأثر سلبي على البطالة ($\beta = -0.091$, $p < 0.05$). وتدعم هذه النتائج أيضًا نتائج تحليل الارتباط، حيث بلغ معامل الارتباط ($r = 0.72$) بالنسبة للناتج المحلي الإجمالي، و($r = -0.48$) بالنسبة للبطالة. كما أظهرت النتائج أن رأس المال البشري وتراكم رأس المال لهما أيضًا آثار إيجابية ذات دلالة إحصائية.

الخلاصة: تسلط هذه الدراسة الضوء على أن الاقتصاد الرقمي يؤدي دورًا محوريًا في تعزيز النمو الاقتصادي المستدام من خلال تحسين الإنتاجية وخلق فرص العمل. وينبغي على الحكومات التركيز على الاستثمار في البنية التحتية الرقمية، والتدريب على المهارات الرقمية، ووضع سياسات حوكمة شاملة لتعزيز فوائد الاقتصاد الرقمي.

الكلمات المفتاحية: الاقتصاد الرقمي؛ خلق فرص العمل؛ التنمية الاقتصادية المستدامة؛ النمو الاقتصادي؛ الدول النامية.

Citation

Saeed, A. M. (2026). The Contribution of the Digital Economy to Job Creation and Sustainable Economic Development in Developing Countries. *Global Journal of Economics and Business*, 16(4), 509-519. <https://doi.org/10.31559/GJEB2026.16.4.9>

1 Introduction

The digital economy has now taken the center stage in economic and social change in the twenty-first century and has transformed the production systems, business models, and labor market dynamics into both advanced and developing economies (Melnik et al., 2022). The digital economy, facilitated by the latest technologies, Artificial Intelligence (AI), Cloud computing, big data analytics, blockchain, and Internet of Things (IoT), has become an essential part of the national competitiveness and sustainable development (Yankovskaya et al., 2021). In Third World economies, where endemic structural constraints in the form of high unemployment, low productivity, lack of industrial diversification, and informality have kept economic growth constrained (Javed & Rizwan, 2026). Digital transformation offers a viable avenue through which inclusive economic growth could be accelerated and job opportunities created (Andreoni, 2024).

Recent studies have revealed that digital adoption is helpful in increasing the productivity of firms, their access to the market, minimizing operation costs, and promoting entrepreneurship and innovation, which together stimulate the growth of the economy sustainably (Nucci et al., 2023; Palad, 2022). On the labor market level, digital platforms and online freelancing and digital entrepreneurship have generated new jobs, particularly for the youth and women in Africa, Asia, and Latin America (Kvangraven & de Oliveira, 2023). Digitalization is also a factor in the social inclusion process through reducing the barriers to economic participation and facilitating flexible income-generating processes. In addition to economic and social impacts, digital technologies can enhance the sustainability of the environment with the help of enhanced resource efficiency and implementing low-carbon solutions (Singh & Anees, 2025). Smart grids, e-mobility, and digitalized supply chains are the resource efficient solution which are consistent with international sustainability targets (Tariq, 2025).

Along with these bright prospects, most developing countries are under significant barriers that restrain the complete achievement of digital dividends (Quansah, 2024). These barriers include missing digital infrastructure, insufficient access to broadband, affordability, low digital literacy, poor institutional and regulatory solutions, and increased cybersecurity risks (Kumar et al., 2023). In addition, the high growth rate of automation creates an issue of displacement of labor and wage polarization, especially among low-skill employees (Hakim & Hayat, 2024). These issues highlight the fact that extensive policies are required to balance the development of technology, human capital, institutional capacity, and inclusive digital governance (Zhang et al., 2022). The evidence from countries like Rwanda, Malaysia, and India shows that the incorporation of digital transformation in the national development agendas with specific investments in the digital infrastructure, education, skill development, and innovation systems can produce significant socioeconomic advantages (Hasanat et al., 2020).

Despite the rapid growth of the digital economy, developing economies continue to face the challenges of low economic growth and high unemployment. Although digitalization is widely promoted as a solution to these problems, current empirical evidence is scattered, mostly focusing on either economic growth or employment, but not both. Further, there is little recent cross-country evidence on the role of other complementary factors, such as education and capital formation, in shaping digital impacts. This leaves policy uncertainty about the effectiveness of digital transformation policies in delivering sustainable and inclusive growth in developing countries.

While there are many studies about the digital economy, there is a gap in the empirical literature on the joint effects of the digital economy on economic growth and unemployment in developing countries. This research is aimed to fill this gap by examining the impact of digitalization on macroeconomic growth and employment outcomes while taking into account the effects of education and capital formation. This research is important as it adds to the body of evidence on the impact of digitalization on economic growth and unemployment in developing countries, which will help policymakers to develop appropriate digital strategies that can foster inclusive growth, lower unemployment, and improve sustainable economic growth in developing countries.

2 Literature Review

2.1 Digital Economy and Its Key Components

The digital economy has developed to be multidimensional rather than having a limited scope of internet-based operations to include complex technologies like AI, Big Data, cloud computing, mobile broadband systems, and e-commerce systems (Wang & Zhao, 2022). The conceptualization of the digital economy is based on the idea

of an integrated ecosystem determined by technological innovation, human capital, institutional quality, and national policy frameworks (Mubarik et al., 2022). Empirical evidence demonstrates that digital infrastructures and ICT adoption have a central role in facilitating productivity, minimizing transaction costs, augmenting service delivery, and enhancing competitiveness in general in developing nations (Budiarto & Nordin, 2024). Countries that have put a lot of money into online connectivity and modernization of regulation are more economically resilient, more transparent, and able to be innovative (Mathane & Gumbo, 2023).

Nevertheless, the digital divides that emerge due to inequality in infrastructure, cost, digital literacy, and governance hinder the capacity of most of the developing economies to use digital transformation as a means of inclusive development (Dange, 2026). This indicates the importance of consistent national policies that enhance connectivity, digital capabilities, and fair access to technology (Hasdiana et al., 2025). Here, the digital economy is being increasingly identified not just as a driver of modernization, but of long-term sustainable development, to help facilitate the shift towards knowledge-based and low-carbon economic models (You et al., 2025).

2.2 Impact of the Digital Economy on Job Creation

Digital transformation has great implications for employment creation and labor market restructuring (Iankovyi, 2021). Digital economy generates direct and indirect jobs by increasing the size of ICT-intensive sectors, digital services, and platform-based business models (Khuong & Lu, 2025). Online work, gig work, remote freelancing, and online micro-entrepreneurship have become feasible via e-commerce, fintech, and digital platforms that offer forms of income flexibility, allowing more youths and women to participate in the labor market and many more women to earn incomes than previously (Sani, 2024).

Moreover, the adoption of digital in traditional industries improves production of labor and boosts demand for more skilled jobs relating to data analytics, software development, and data management (Mikeska & Urbánek, 2020). Empirical studies have shown that there has consistently been a positive correlation between digitalization and the growth of employment, especially among the micro, small, and medium-sized enterprises that embrace the use of digital tools to expand market share and improve operational efficiency (Mikeska & Urbánek, 2020). However, the dual nature of digitalization is also mentioned in literature, claiming that although it generates new jobs and automation, AI can also disorganize routine and low-skill labor, making the workforce more vulnerable for those who have no digital skills (Joshi, 2025; Kim, 2025). This paradox explains why adaptive education systems, lifelong skills enhancement, and equitable labor policies assist in making transitions fair (Marbun & Sujoko, 2025). Altogether, the digital economy has enormous opportunities to create jobs sustainably, in case of successful development of human capital and inclusive systems of digital economies (Ullah et al., 2024).

2.3 Digital Transformation and Sustainability Outcomes

Sustainable economic development lays stress on economic viability of growth, inclusion of all in society, and the environmental responsibility of that growth (Hariram et al., 2023). In this context, the digital economy has been found to play the role of a vital facilitator of sustainability by improving resource efficiency, innovation, and better governance (Mohamed Abdel Razek Youssef, 2022). Digital technologies decrease the information asymmetry, maximize the distribution of resources, and facilitate the transition to more clean and intelligent production systems (Jain, 2025). For instance, digital finance can enhance financial inclusion, credit, and financial access, especially to underdeveloped populations, and e-governance projects can enhance transparency, accountability, and institutional performance (Adelaja et al., 2024).

It has been proven that the countries that include digital transformation in their development strategies attain a greater level of resiliency in the economy, better service delivery, and social welfare (Doroiman & Sirghi, 2024). Smart grids, precision farming, automated production, and other digital solutions in energy, agriculture, and manufacturing help to make the environment sustainable, as they cut emissions and waste levels (Kannan, 2025). Nevertheless, the sustainability results of digitalization depend on digital inclusion, regulatory readiness, and good governance. Without these enablers, digital transformation can make inequalities more pronounced, further strengthen structural inequalities, and cause environmental hazards due to the generation of electronic waste and energy consumption (Bibri, 2020; Bieszk-Stolorz & Dmytrów, 2023). Thus, the digital era of sustainable development needs equilibrium where technological innovation should be utilized without compromising social equity and environmental management (Islam, 2025).

3 Theoretical Framework

The digital transformation, economic growth, and employment opposition are connected based on several complementary theoretical views that elaborate on how advancement in technology, institutional structures, and human capital affect the results of development. Collectively, these theories give a conceptual framework of how the digital economy is affecting the macroeconomic performance of developing countries (Lin & Peng).

3.1 Innovation Theory

The Innovation Theory by Schumpeter assumes that economic growth and structural change, as well as the creation of jobs, are primarily caused by technological progress and entrepreneurial activity. Such digital technologies include AI, cloud computing, and data analytics that represent the form of disruptive innovation that spurs new business models, productivity, and market expansion (Al-Nakeeb et al., 2024). Digital innovation in the framework of developing economies can help firms to overcome the traditional limitations of scale, infrastructure, and penetration of the market based on these factors, thereby fostering sustainable and competitive growth in the industry (Yousaf et al., 2021). This theoretical frame highlights how the digital economy has played a role in initiating creative destruction, whereby new sectors of digital technology are created, and the existing industries are being modernized or restructured (Putrivi, 2020).

3.2 Endogenous Growth Theory

Endogenous Growth Theory is known to focus on knowledge accumulation, human capital, and technological advances as internally produced causes of long-term economic growth. Directly, digital transformation is contributing to these factors through the ability to spread information faster and contribute to the development of capabilities, as well as the development of skills (Tavani & Zamparelli, 2018). Investment in digital infrastructure empowers the systems of innovation and enables the continuous learning process, which boosts the productivity of labor and capital (Yao et al., 2025). In the case of developing countries, the theory emphasizes the way digital adoption can balance the structural constraints by boosting human capital, improving the absorptive capacity, and optimizing the efficiency of the economic activity (Andreoni, 2024). This view gives some basis concerning the positive empirical relationship between the effect of digitalization on GDP growth in different countries (Aleksandrova et al., 2022).

3.3 Institutional Theory

The central aspect of the Institutional Theory (North) is how formal and informal institutions, including the regulatory framework, the quality of governance, legal systems, and policy consistency, influence both the adoption and effects of new technologies. Institutional effectiveness is quite significant to the development of the digital economy in terms of sustainable development (Al-Nakeeb et al., 2024). Good institutions contribute to digital inclusion, cybersecurity, less uncertainty, and innovation ecosystems, and weak institutions deter investment, increase digital disparities, and decrease productivity benefits. With reference to developing economies, institutional capacity defines whether the digital transformation will result in broad-based economic growth and employment creation or a one-sided sector-based nature (Anggraeni et al., 2025). It is this theoretical view that highlights the necessity of supportive policies, consistent regulations, and good governance to maximize digital dividends (Gorgulu et al., 2020).

4 Methodology

4.1 Study Design

This research followed a quantitative approach with secondary panel data to investigate the effects of the digital economy on economic growth and unemployment in developing countries from 2010 to 2025. This mixed cross-section and time series data allowed exploration of both cross-country and time effects. The data was sourced from reputable international sources, providing consistency and comparability between countries. Economic analysis using descriptive statistics, correlation, and panel regression models was used to detect associations and test hypotheses. This method improved the validity of results by accounting for country-level and temporal differences, and unobserved heterogeneity.

4.2 Sampling Technique

A purposive sampling strategy was applied to select 20–30 countries based on data availability and regional representation across Africa, Asia, and Latin America, with all variables extracted from reputable international

databases, including the World Bank (GDP growth, inflation, education, capital formation), the ILO (unemployment), ITU (ICT indicators), UNCTAD (digital economy metrics), and the IMF (macroeconomic controls). The dependent variables are GDP growth and unemployment, while the key independent variable is a composite Digital Economy Index comprising internet penetration, mobile broadband subscriptions, ICT investment, e-commerce readiness, and digital financial inclusion; control variables include education expenditure, gross fixed capital formation, inflation, and population growth.

4.3 Data Analysis

After data cleaning and validation, descriptive statistics, correlation analysis, and panel-data econometric models were implemented using STATA 17 and EViews 13, with both Fixed Effects and Random Effects estimations conducted, and the Hausman test determining the preferred specification. Robustness checks, including Breusch–Pagan, VIF, Durbin–Watson, and Levin–Lin–Chu tests, confirmed the absence of heteroskedasticity, multicollinearity, autocorrelation, and non-stationarity, ensuring methodological rigor. This integrated methodological approach allowed for reliable cross-country comparisons and provided a robust foundation for assessing how digitalization influences macroeconomic outcomes in developing economies.

4.4 Econometric Models

Two econometric models were specified to examine the impact of the digital economy on macroeconomic outcomes in developing countries. The first model evaluated the effect of digitalization on economic growth, Model 1: Impact of the Digital Economy on Economic Growth

$$GDP_{it} = \beta_0 + \beta_1 DIGECO_{it} + \beta_2 INFL_{it} + \beta_3 EDU_{it} + \beta_4 GFCF_{it} + \mu_i + \varepsilon_{it}$$

Where:

- GDP_{it} : Real GDP growth rate of country i in year t
- $DIGECO_{it}$: Composite Digital Economy Index (ICT, internet use, mobile penetration, e-commerce)
- $INFL_{it}$: Inflation rate
- EDU_{it} : Education expenditure (as % of GDP)
- $GFCF_{it}$: Gross fixed capital formation (% of GDP)
- μ_i : Country-specific effect
- ε_{it} : Error term

Model 2: Impact of the Digital Economy on Unemployment

$$UNEMP_{it} = \alpha_0 + \alpha_1 DIGECO_{it} + \alpha_2 GDP_{it} + \alpha_3 EDU_{it} + \alpha_4 POPG_{it} + \mu_i + \varepsilon_{it}$$

Where:

- $UNEMP_{it}$: Unemployment rate
- GDP_{it} : Economic growth rate
- $POPG_{it}$: Population growth rate

Both models were estimated using Fixed Effects (FE) and Random Effects (RE) approaches. The Hausman test determined the more suitable model.

5 Results

5.1 Descriptive Statistics

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max	Obs
GDP (%)	4.12	2.35	-3.20	9.85	240
UNEMP (%)	8.54	4.19	2.00	21.50	240
DIGECO Index	45.80	17.25	10.23	78.67	240
INFL (%)	6.87	4.61	0.10	25.90	240
EDU (% GDP)	4.21	1.09	2.10	6.80	240
GFCF (% GDP)	22.14	4.72	14.50	35.20	240

The descriptive findings in Table 1 present significant diversity between the chosen countries regarding the growth of the economy and the indicators of the digital economy. The mean rate of GDP growth is 4.12 with a range of -3.20 to 9.85, which indicates the varying macroeconomic factors in the developing countries. The average rate of unemployment is 8.54, which means that people have continued to face employment difficulties. The index of digital economy stands at 45.8 on average, implying an average level of digital development, though there is a large disparity between the high-digital and low-digital nations. These differences emphasize the significance of the digital economy as a possible leveler of economic performance.

5.2 Correlation Analysis

Table 2: Correlation analysis

Variables	GDP	UNEMP	DIGECO	INFL	EDU	GFCF
GDP	1					
UNEMP	-0.61	1				
DIGECO	0.72	-0.48	1			
INFL	-0.29	0.24	-0.33	1		
EDU	0.51	-0.42	0.57	-0.26	1	
GFCF	0.65	-0.37	0.49	-0.21	0.46	1

The correlation matrix in Table 2 shows some significant relationships between the variables. The digital economy index is highly positively correlated with GDP growth ($r = 0.72$), suggesting that digitalization is linked to economic growth. It has a moderate negative correlation with unemployment ($r = -0.48$), which indicates digital development helps to generate employment. GDP is also positively related to education ($r = 0.51$) and gross fixed capital formation ($r = 0.65$), which are forms of human and physical capital. Inflation is negatively correlated with GDP ($r = -0.29$) and positively correlated with unemployment ($r = 0.24$). Moreover, unemployment is negatively correlated with education ($r = -0.42$) and gross fixed capital formation ($r = -0.37$), suggesting that they help in labor market performance.

5.3 Regression Analysis

Table 3: Regression Analysis

Variable	Model 1 (GDP) FE	Model 1 (GDP) RE	Model 2 (UNEMP) FE	Model 2 (UNEMP) RE
DIGECO	0.183 (0.027) ***	0.176 (0.029) ***	-0.091 (0.021) **	-0.085 (0.024) **
INFL	-0.024 (0.015)	-0.020 (0.017)	—	—
EDU	0.212 (0.091) **	0.188 (0.095) **	-0.175 (0.078) **	-0.159 (0.082) **
GFCF	0.141 (0.052) **	0.128 (0.056) **	—	—
GDP	—	—	-0.243 (0.066) ***	-0.228 (0.072) ***
POPG	—	—	0.084 (0.037) **	0.076 (0.041) **
Constant	1.352	1.426	8.772	8.630
R ²	0.71	0.68	0.63	0.60
Hausman Test (p-value)	0.037	→ FE Preferred	0.045	→ FE Preferred

Note: $p < 0.01$ (*), $p < 0.05$ (**), $p < 0.10$ (***).

Model 1: Digital Economy and Economic Growth

Findings from the regression analysis in Table 3 indicate that the digital economy positively and statistically significantly influences economic growth in developing countries. In particular, the coefficient of the digital economy index is 0.183 ($p < 0.01$), which means that the growth of the GDP increases by 0.18 percentage points when the digital economy index rises by one unit, other variables being equal.

Education spending (0.212, $p < 0.05$) and gross fixed capital formation (0.141, $p < 0.05$) are also important, supporting the idea that human and physical investment are complements to digital development in facilitating economic growth. There is a weak and insignificant correlation with inflation, meaning that price stability is not the sole cause of growth. The model accounts for 71% of the change in the GDP growth ($R^2 = 0.71$), which is a strong indicator to attest to the explanatory power. The Hausman test ($p = 0.037$) shows that we prefer to use the Fixed Effects Model (FE), which means that the translation of the digital economy to growth is affected by country-specific factors.

Model 2: Digital Economy and Unemployment

The digital economy index in the unemployment model has a negative and statistically significant correlation with unemployment ($= -0.091$, $p < 0.05$), which illustrates that digital progress plays a role in creating jobs and enhancing efficiency in the labor market. Unemployment also has a negative relationship with the rate of economic growth, which is very negative ($= -0.243$, $p = 0.01$), which is in line with the Okun Law, that is, an increase in economic growth decreases unemployment. Education (-0.175 , $p < 0.05$) also reduces unemployment by increasing the employability of digital and service sectors, whereas population growth (0.084, $p < 0.05$) puts upward pressure on unemployment. The model accounts for 63% unemployment variation ($R^2 = 0.63$), which is a strong explanatory power.

The Fixed Effects Model is once again justified by the Hausman test ($p = 0.045$) and the significance of country-specific dynamics of the labor market.

5.4 Diagnostic Tests

Table 4: Diagnostic test results

Test	Purpose	Result	Conclusion
Breusch–Pagan	Heteroskedasticity	$p = 0.211$	No heteroskedasticity
VIF	Multicollinearity	Mean VIF = 1.87	No multicollinearity
Durbin–Watson	Autocorrelation	1.94	No autocorrelation
Levin–Lin–Chu	Stationarity	$p < 0.05$	Data are stationary

Diagnostic results in Table 4 confirm the reliability of the models:

- No heteroskedasticity (Breusch–Pagan $p = 0.211$)
- No multicollinearity (Mean VIF = 1.87)
- No autocorrelation (Durbin–Watson = 1.94)
- Stationarity established (Levin–Lin–Chu $p < 0.05$)

The empirical evidence proves the existence of the digital economy as transformative and statistically significant in fostering economic development and minimizing unemployment in developing nations. Based on the panel data regression models, the study concludes that digital infrastructure, adoption of technology, and ICT investment in the form of a composite Digital Economy Index are important factors influencing macroeconomic performance. The former model demonstrates that digitalization has a substantial positive impact on GDP growth through a higher level of productivity, efficiency, and innovation, which aligns with the endogenous growth theory. These effects are further magnified by education and capital formation, which provide skilled labor and aid in digitalization. The second model shows that digitalization has a strong impact on reducing unemployment by creating jobs in ICT, fintech, and e-commerce sectors, entrepreneurship opportunities, and better labor market matching. This confirms the Law of Okun, which demonstrates that the growth of output reduces unemployment, and education is a way to prepare workers to work in the digital environment. Nevertheless, population growth may raise unemployment rates unless matched with the growth of digital jobs. The cross-country differences point out that the national policies, the quality of institutions, and infrastructure determine the levels of these benefits.

6 Discussion

The results of this study validate that the digital economy exerts a statistically significant positive influence on economic growth and a negative influence on unemployment in developing countries. The findings are in line with recent empirical studies. For example, a study discusses that the digital economy has a positive impact on GDP growth and a negative impact on unemployment, especially when complemented by education and capital (Saeed, 2025). This high degree of consistency strengthens the current study's findings, particularly the positive coefficient of digital economy indicators ($\beta = 0.183$) and the negative impact on unemployment ($\beta = -0.091$).

The findings of this study also show that investments in digital infrastructure, ICT, and digital finance significantly boost GDP by enhancing productivity, innovation, and efficiency, consistent with Endogenous Growth Theory. Technological progress fosters long-term growth through lower transaction costs, better information access, and greater competitiveness, while education and capital investment are crucial for maximizing digital benefits.

Similarly, recent research points to the fact that digitalization improves productivity and creates jobs through innovation and scale effects. A recent study on digital jobs dynamics suggests that digital economic growth expands employment and particularly the demand for skilled labor (Yunxia et al., 2023). This is consistent with the current study, which finds education is an important complement to digitalization, suggesting human capital plays a central role in facilitating digital-induced employment.

However, the findings also partially contrast with some studies emphasizing structural labor shifts rather than purely employment gains (Donovan & Schoellman, 2023). For instance, studies on employment structure demonstrate that digitalization can decrease the demand for low-skilled jobs and increase the demand for high-skilled jobs (Havelka, 2024; Zhao & Said, 2023). This implies that although total unemployment might decrease, as evident in the current study, there might be an increase in inequality and skill dispersion, which is only partially accounted for in the current model.

Theoretically, the findings robustly support Endogenous Growth Theory, which assumes that technological change and human capital endowments are the key determinants of economic growth (Schiliro, 2026). The impact of education and capital formation in this study supports the notion that digital technologies

boost productivity through knowledge sharing and innovation. Moreover, the results confirm Schumpeter's Innovation Theory, as digital transformation fosters "creative destruction", leading to new industries, business models, and jobs (Peng, 2023).

Lastly, the negative link between GDP growth and unemployment confirms Okun's Law, as digital-related GDP growth is associated with employment creation (An et al., 2022). At the same time, the differences in results across countries suggest the role of Institutional Theory, as the impact of digital transformation is dependent on the quality of governance, regulation, and digital inclusion (Khassawneh & Elrehail, 2022).

The findings also demonstrate that digital advancement is not enough, but it must be followed by strategic investment in education, digital literacy, and infrastructure that will make it inclusive and resilient. Those countries, which consider digital transformation as part of their national development plans, by providing favorable policies, developing ICT infrastructure, and encouraging innovations, are more likely to record long-term economic growth and reduce the unemployment rates (Rhee et al., 2022). Moreover, the results highlight the role of human capital and institutional quality in maximizing the positive effects of digitalization since they define the ability of a nation to be technologically changed.

This study suggests that developing countries should prioritize digital infrastructure, literacy, and supportive regulations to ensure inclusive growth. Strengthening digital finance and entrepreneurship ecosystems can enhance financial inclusion and equality (Sharma et al., 2023). Overall, the digital economy is identified as a core driver of sustainable development, stimulating growth, creating jobs, and reducing inequality when integrated with education, innovation, and good governance (Ma et al., 2024).

6.1 Limitations and Future Research

The strength of this research is its holistic panel-data analysis, which considers the effect of the digital economy on both economic growth and joblessness across several developing economies over a long time horizon (2010-2025). However, it is limited by using secondary data and a composite index of the digital economy, which may not reflect country-specific digital characteristics and informality. Future research should focus on primary data collection, sector-specific analysis, and disaggregated digital economy indicators to understand differential effects, including the distributional effects of the digital economy on different skill and regional segments of the developing economies.

7 Conclusion

This study highlights that the digital economy has a statistically significant effect on economic growth and unemployment in developing economies. The empirical evidence supports the idea that digitalization promotes economic growth by boosting productivity, innovation, and efficiency, and reduces unemployment by generating employment in technology-intensive industries. The results also show that education and capital accumulation are important complementary factors in enhancing these effects. In addition, the findings demonstrate that national factors moderate these impacts, with a particular focus on the quality of institutions. Overall, this study establishes the empirical evidence that digital transformation is an important macroeconomic driver.

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