INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) INVESTMENT, PRODUCTIVITY AND STRUCTURAL TRANSFORMATION IN UZBEKISTAN

Yusupbayeva Ulmeken Kenesbaevna
Head of Division, Ministry of Investments, Industry and Trade
Email: u.yusupbayeva@gmail.com | Phone: +998909408811

Annotatsiya / Abstract : *This paper analyses how investments in information and communication technologies (ICT) have contributed to productivity growth and structural transformation in Uzbekistan over the period 2000–2024. Using sectoral national accounts (value-added, employment, gross fixed capital formation), World Bank / ITU ICT indicators and UNIDO manufacturing statistics, the study applies a transparent, non-technical three-stage approach: sectoral growth-decomposition, sector × year panel associations of ICT intensity with productivity dynamics, and input–output structural decomposition to separate within-sector gains from inter-sectoral resource shifts. Key findings: (1) Uzbekistan's rapid expansion of digital access and infrastructure provides a favourable environment for ICT diffusion; (2) sectors that accumulated higher ICT intensity show stronger productivity gains and modest evidence of value-added upgrading; (3) policy complementarities — digital skills, e-government, and trade facilitation — materially strengthen ICT's impacts. The paper concludes with actionable policy recommendations to accelerate inclusive structural upgrading. Technical appendix and code available upon request.*

KEYWORDS: *ICT investment; productivity; structural transformation; Uzbekistan; digital strategy; sectoral analysis*

INTRODUCTION

Uzbekistan's strategic agenda places digital transformation at the centre of economic modernization. The national Digital Uzbekistan-2030 strategy and a sequence of presidential measures have mobilised public investment in digital infrastructure, e-government and skills development. President Mirziyoyev's recent addresses reaffirm the need to expand digital investment and align institutional frameworks with international best practice (Mirziyoyev, 2025). These policy commitments, coupled with rapid increases in Internet and broadband penetration, make Uzbekistan a timely case to examine ICT-driven productivity and structural change.

RESEARCH QUESTIONS AND CONTRIBUTION

This paper addresses three related questions:

1. To what extent do ICT investments explain sectoral productivity gains in Uzbekistan?

2. Do ICT investments contribute to structural transformation toward higher value-added sectors?

3. Which policy complements (digital skills, e-government, trade facilitation) amplify ICT's effect?

Our contribution is an applied, policy-oriented sectoral analysis that ties measurable ICT intensity to productivity residuals and to observable shifts in value-added shares, using official national data and internationally comparable ICT indicators.

POLICY CONTEXT AND LEGAL FRAMEWORK

Key policy instruments include the Digital Uzbekistan-2030 strategy (Presidential Decree UP-6079) and subsequent regulations promoting ICT parks, e-services and digital trade facilitation. WTO accession momentum provides an external anchor for harmonising trade and digital regulations, which can reduce trade costs and improve predictability for exporters and investors. Recent presidential initiatives in 2024–2025 reinforced digital infrastructure projects and skills programmes that are central for translating ICT capital into productivity gains.

DATA AND METHODS (NON-TECHNICAL)

Data sources: sector × year value-added, employment and gross fixed capital formation from Uzbekistan's national accounts; ICT access indicators (Internet, broadband, mobile) from World Bank / ITU; UNIDO manufacturing profiles and available input-output tables; national decrees and presidential speeches to identify policy dates. (Full source list below.)

Analytical approach (non-technical):

• Stage 1 — Growth-decomposition: attribute sectoral output changes to labour, non-ICT capital and productivity residuals, and compare residual dynamics with ICT intensity trends.

• Stage 2 — Sectoral panel analysis: estimate associations between sectoral ICT intensity and productivity growth using sector fixed effects and controls (human capital proxies, export orientation); apply lag specifications and alternative ICT proxies to check robustness.

• Stage 3 — Structural decomposition: use input-output information to separate within-sector productivity gains from inter-sectoral resource reallocations to higher value-added activities.

Identification concerns (reverse causality) are addressed by lagging ICT measures, testing alternative proxies (ICT imports, broadband penetration), and performing event-style comparisons around the roll-out of major policy instruments. Detailed technical specifications and code are available from the authors on request.

EMPIRICAL OBSERVATIONS (HIGHLIGHTS)

• Digital access expanded rapidly. Internet and broadband penetration increased markedly in the last decade, improving conditions for firm adoption of digital technologies.

• ICT intensity correlates with productivity gains. Manufacturing and selected services sectors that accumulated greater ICT intensity experienced stronger improvements in measured productivity residuals, robust to basic controls and lag structures.

• Partial structural upgrading. Input-output decomposition shows that much of recent growth in medium-tech manufacturing reflects within-sector productivity improvements consistent with ICT adoption; however, movement into high-tech segments remains limited, pointing to constraints in skills and capital deepening.

• Policy complementarities matter. Positive ICT-productivity associations are stronger where digital skills programmes, efficient e-government services and trade facilitation measures are present.

POLICY IMPLICATIONS AND RECOMMENDATIONS

1. Targeted ICT capital programmes for manufacturing clusters (textiles, agro-processing, light manufacturing) combined with workforce digital skills and managerial training.

2. Scale digital trade infrastructure (single-window customs, electronic documentation) to lower trade costs and facilitate export upgrading; align regulatory changes with WTO obligations.

3. Demand-side incentives for SMEs (matching grants, tax allowances conditional on training) to raise ICT intensity among smaller firms.

4. Monitoring and evaluation: publish regular sector dashboards tracking ICT intensity, productivity decomposition and employment shifts to guide dynamic policy choices.

CONCLUSION

ICT investment is a strategic instrument for Uzbekistan's productivity growth and structural transformation, but its benefits depend on complementary investments in human capital, organisational change and regulatory alignment. The Digital Uzbekistan agenda and ongoing WTO integration provide a favorable window to design sequenced policies that accelerate inclusive upgrading. Further firm-level research and deeper input-output data would refine targeting of the highest-return interventions.

REFERENCES:

1. Mirziyoyev, S. (2025). Address by the President of the Republic of Uzbekistan. President of Uzbekistan. Retrieved from https://president.uz/en/lists/view/8034 (Accessed: 02 Sep 2025).

2. Presidential Decree UP-6079 (2020). Strategy "Digital Uzbekistan-2030". CIS Legislation / Government portal. Retrieved from https://cis-legislation.com/document.fwx?rgn=130974 (Accessed: 02 Sep 2025).

3. RP-4321 (2019). Measures for the development of the digital economy and e-government. Lex.uz. Retrieved from https://lex.uz/docs/7571639 (Accessed: 02 Sep 2025).

4. World Bank. Uzbekistan — Data and ICT indicators. World Development Indicators. Retrieved from https://data.worldbank.org/country/uzbekistan and https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=UZ (Accessed: 02 Sep 2025).

5. UNIDO. Uzbekistan — Manufacturing Profile. Retrieved from https://stat.unido.org/sites/default/files/file/country_profile/UZB.pdf (Accessed: 02 Sep 2025).

6. WTO. Uzbekistan accession information and trade facilitation materials. Retrieved from https://www.wto.org/english/thewto_e/acc_e/a1_ouzbekistan_e.htm (Accessed: 02 Sep 2025).

7. OECD / World Bank. Digital skills and digital economy country guidance. (Selected reports). Retrieved from https://www.worldbank.org/en/publication/digital-economy-report (Accessed: 02 Sep 2025).