Can Economies Leapfrog to Digital Success? Evidence from Global E-commerce Development Pathways

Discussion by Dina Azhgaliyeva 28 Oct 2025

Well written, easy to follow, clear, innovative, good visualization, rich data, with some scope for improvement

Digital technologies promote inclusive and sustainable development through five channels

Nudge behavioral changes

- Encourage responsive behaviors and decisions, e.g., sustainability-aligned initiatives via platforms

Improve productivity and efficiency

- Economic growth, innovation, efficient factor allocation, and resource usage, e.g., automation, AI, IoT

Foster innovative and scaled solutions

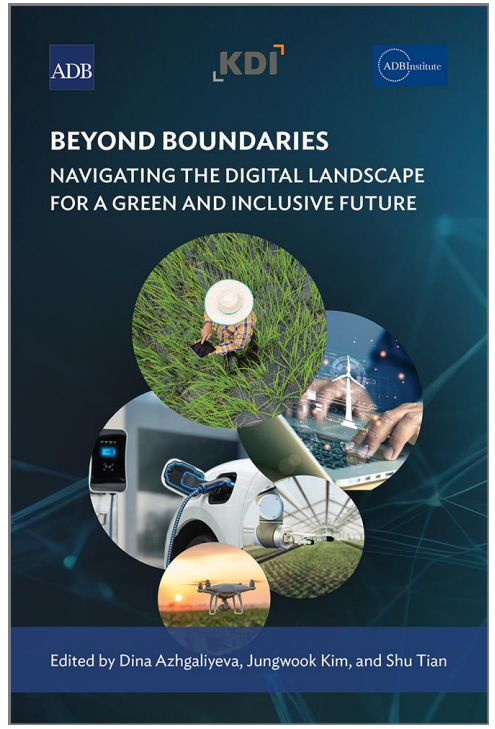
- Business creation, enabling entrepreneurship and SMEs, e.g., e-commerce, trade

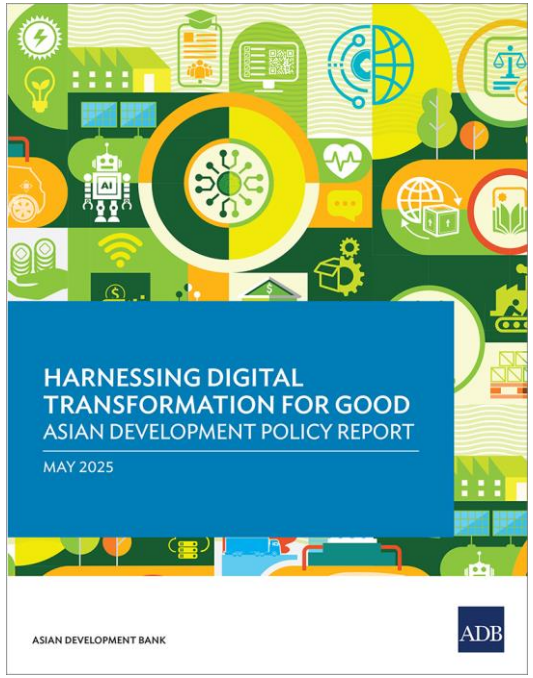
Enhance access to information and services

- Create jobs, business, and investment opportunities, e.g., platforms, fintech

Strengthen monitoring and response

- Greater resilience to disasters, e.g., IoT, Sensors, AI, big data analytics





Summary and key takeaways

- The paper investigates how digital infrastructure and Digital Public Infrastructure (DPI) affect e-commerce
- **Three development pathways:** infrastructure-first, DPI-enabled leapfrogging, and integrated synergistic approaches.
- **Infrastructure quality** (e.g., bandwidth, broadband) strongly predicts e-commerce revenue.
- DPI quality has independent causal effects, validating **leapfrogging potential**.
- **Synergistic** deployment of infrastructure and DPI amplifies digital outcomes.
- **Five pathway types**: Digital Leaders, Infrastructure Advantage, DPI Innovators, Emerging Digital, and Pre-Digital Foundations.
- **Literature gap:** There is insufficient understanding of how countries with limited infrastructure can still achieve digital success through DPI deployment.
- **Research question:** Can countries achieve digital economic success through alternative development pathways—specifically, by leapfrogging traditional infrastructure constraints via strategic deployment of Digital Public Infrastructure systems?
- **Contribution:** Countries with limited infrastructure can still achieve digital success by investing in high-quality DPI systems—especially digital identity, payments, and data exchange.
- **Implications:** Support for DPI implementation (technical assistance, funding, governance frameworks) can accelerate digital inclusion and economic participation.

Major comments

- **Instrument Validity**: The use of income-group averages as instruments has small sample of observations, which reduces statistical power. Income-group averages may mask important country-level differences, especially in resource rich countries or countries with high income-inequality.
- **Country and time-fixed effects** are missing, other omitted variables which could influence dependent variables
- **Model 4** in results and in equation do not match (infrastructure is missing)
- **The classification into five pathway types** is compelling. However, more detail on how countries were assigned to each type (e.g., thresholds, clustering methods) would improve transparency.
- **Acknowledge Limitations (in section 6)**
  - Country-level data (while could be variability across provinces and urban/rural)
  - Potential omitted variable bias.
  - IV
  - Affordability of digital infrastructure is not included

Policy recommendations

1. Region-specific recommendations

- Regional concentrations are provided for Asia-Pacific, would be better to breakdown across DMCs into regions such as Caucasus and Central, East, South, South-East Asia and Developing Pacific.
- Provide recommendations across regions (if possible)
- Can these results be interpreted for province-level, not only country-level (for local government use)?

2. Action-based recommendations

- **No one-size-fits-all model:** Encourage governments to assess their digital starting conditions and choose pathways accordingly**.**
- **Infrastructure and DPI are complements**: Recommend coordinated investment strategies that align infrastructure expansion with DPI rollout to maximize impact.

Minor comments (to improve readability)

- **Terminology Consistency:** Use consistent terms for digital infrastructure and DPI in equations, tables and text.
- **Equations**: list and describe each variable under the equation when used for the first time, for fitted variables use hat.
- **Tables**: Include all variables in summary stat. table and could group variables in results tables.
- Rename section 6 as Conclusion and **Policy Recommendations**