Digital technologies and their impacts on the international knowledge gap and leapfrogging

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Short courses for Geneva delegates

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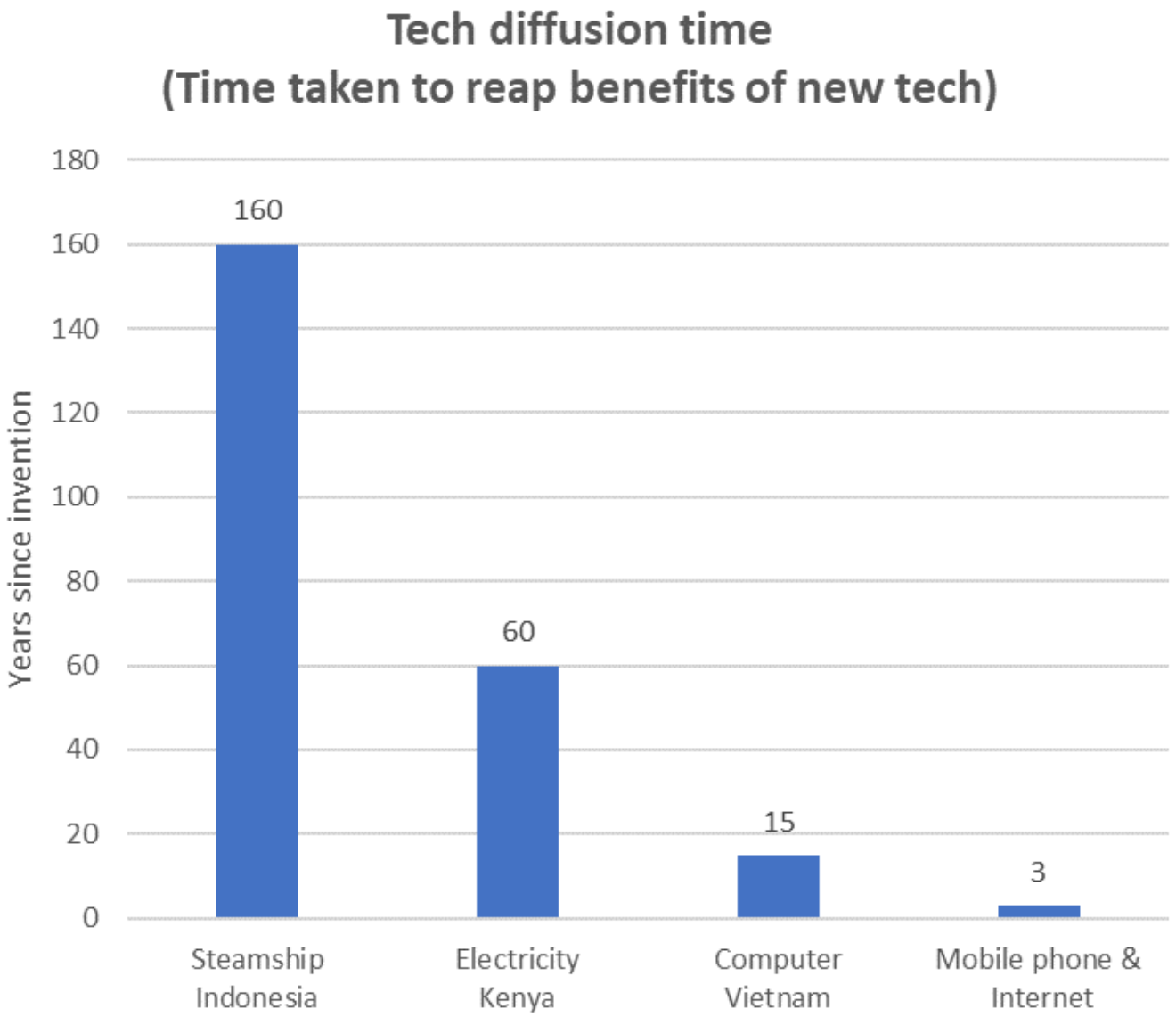
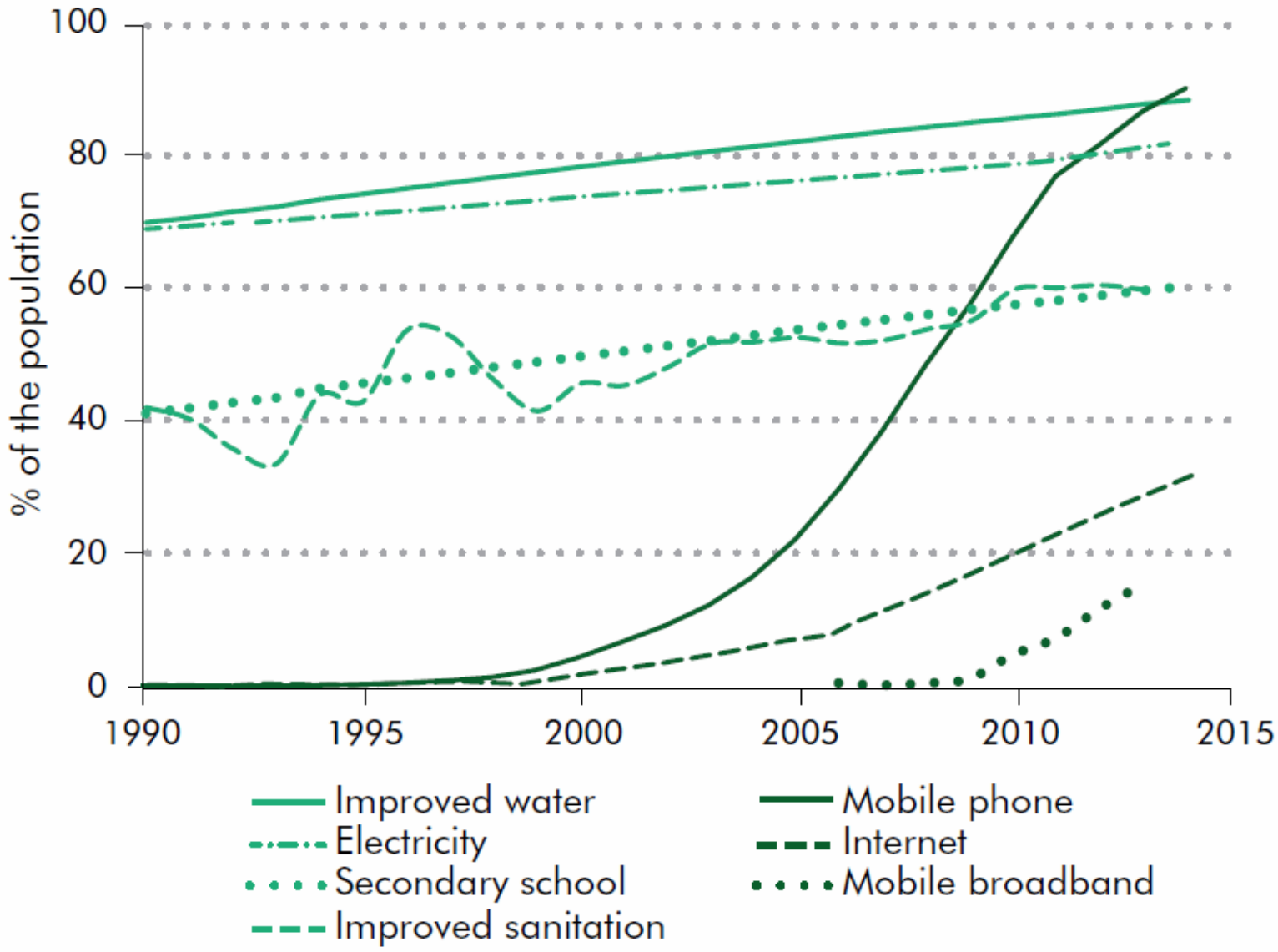
Digital tech diffusion

Intl tech diffusion is accelerating



Digital tech diffusion

a. Digital technologies are spreading rapidly in developing countries



Digital tech diffusion

Often digital tech with wider diffusion than “traditional” techs

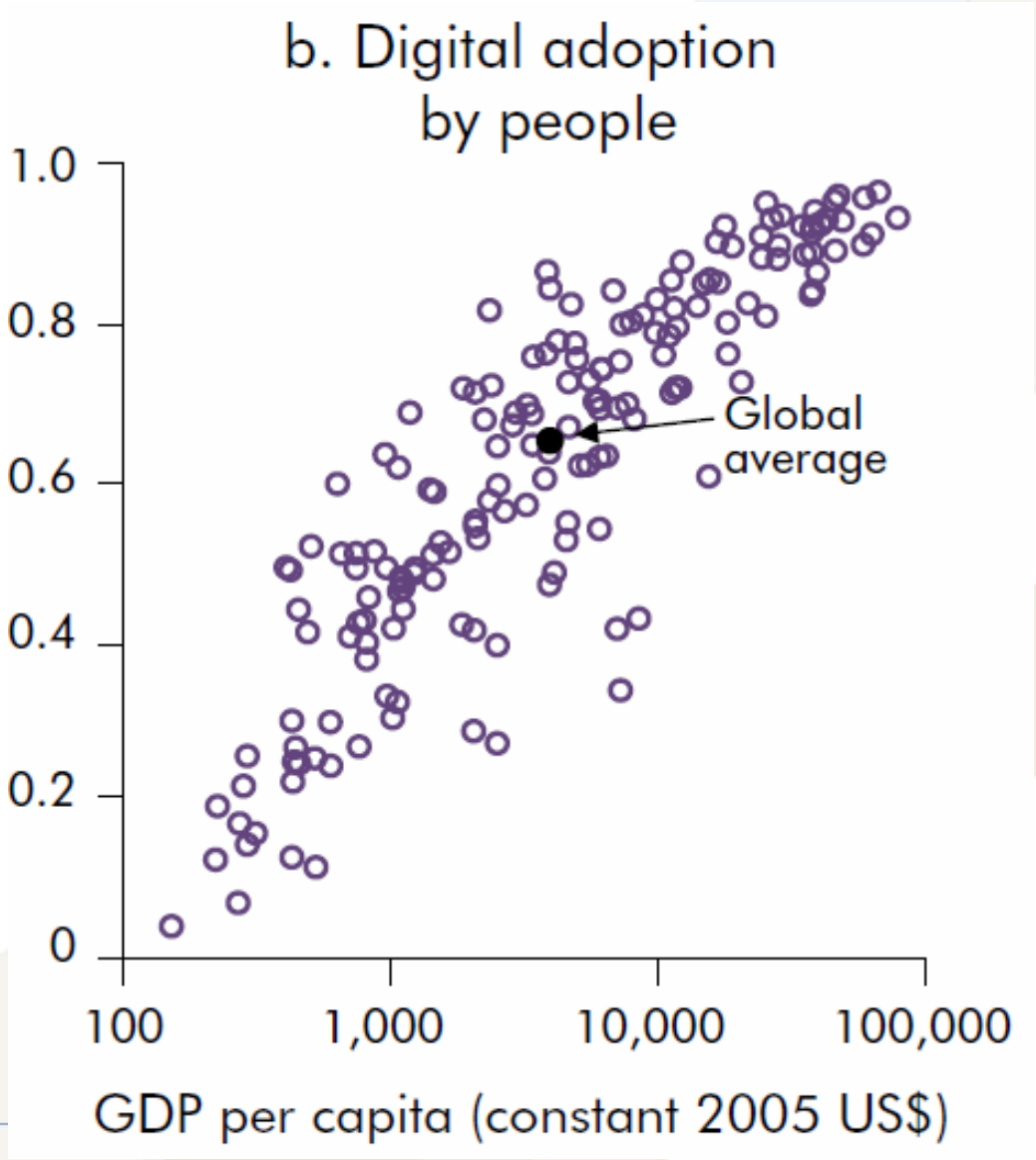
- E.g. electricity, roads

→ What about the digital divide?

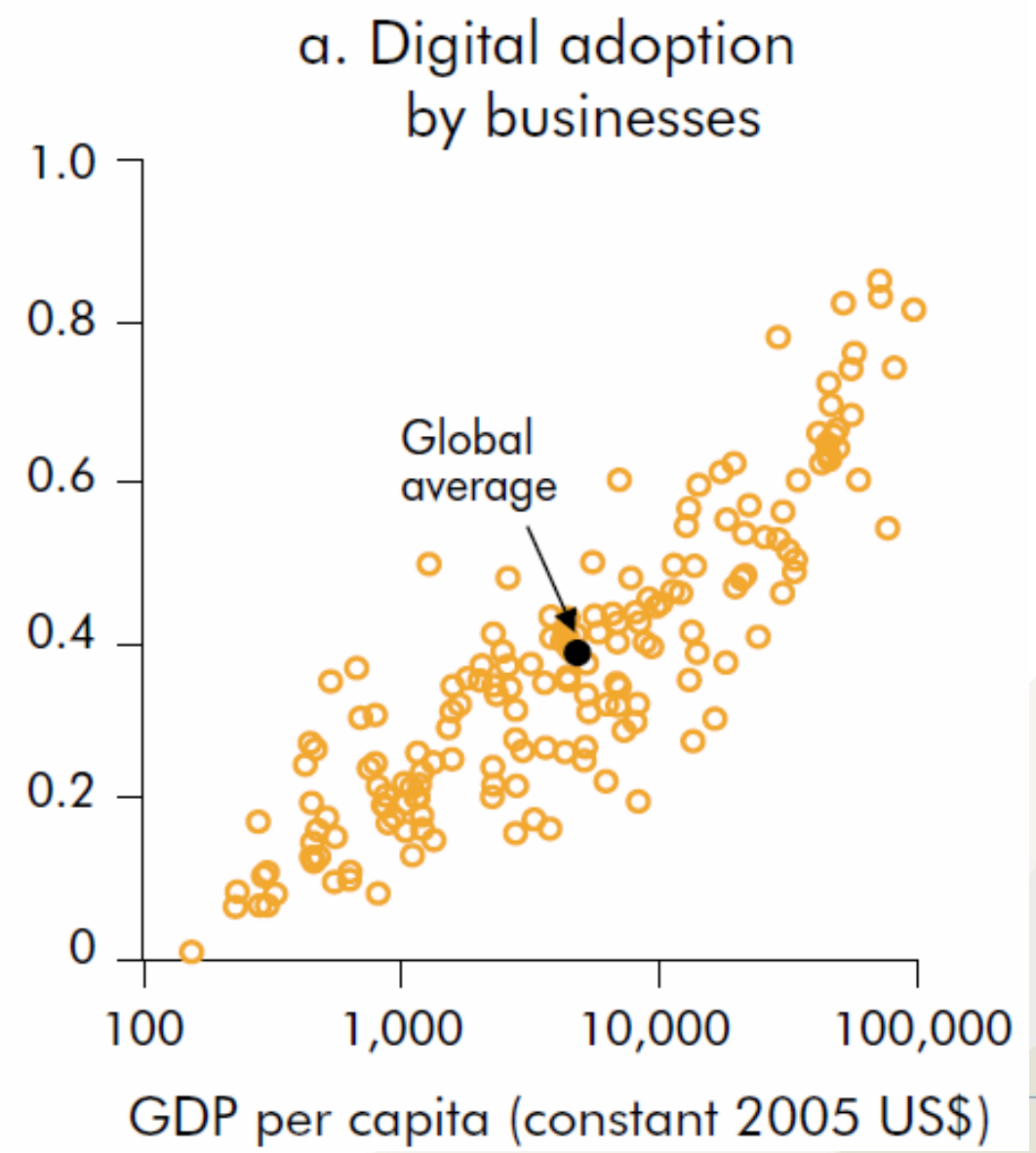
Digital tech diffusion

Access to internet (% pop, 2014):

- ICs: 80%
- DCs: 31%



Digital tech diffusion



→ Acceleration at higher end!

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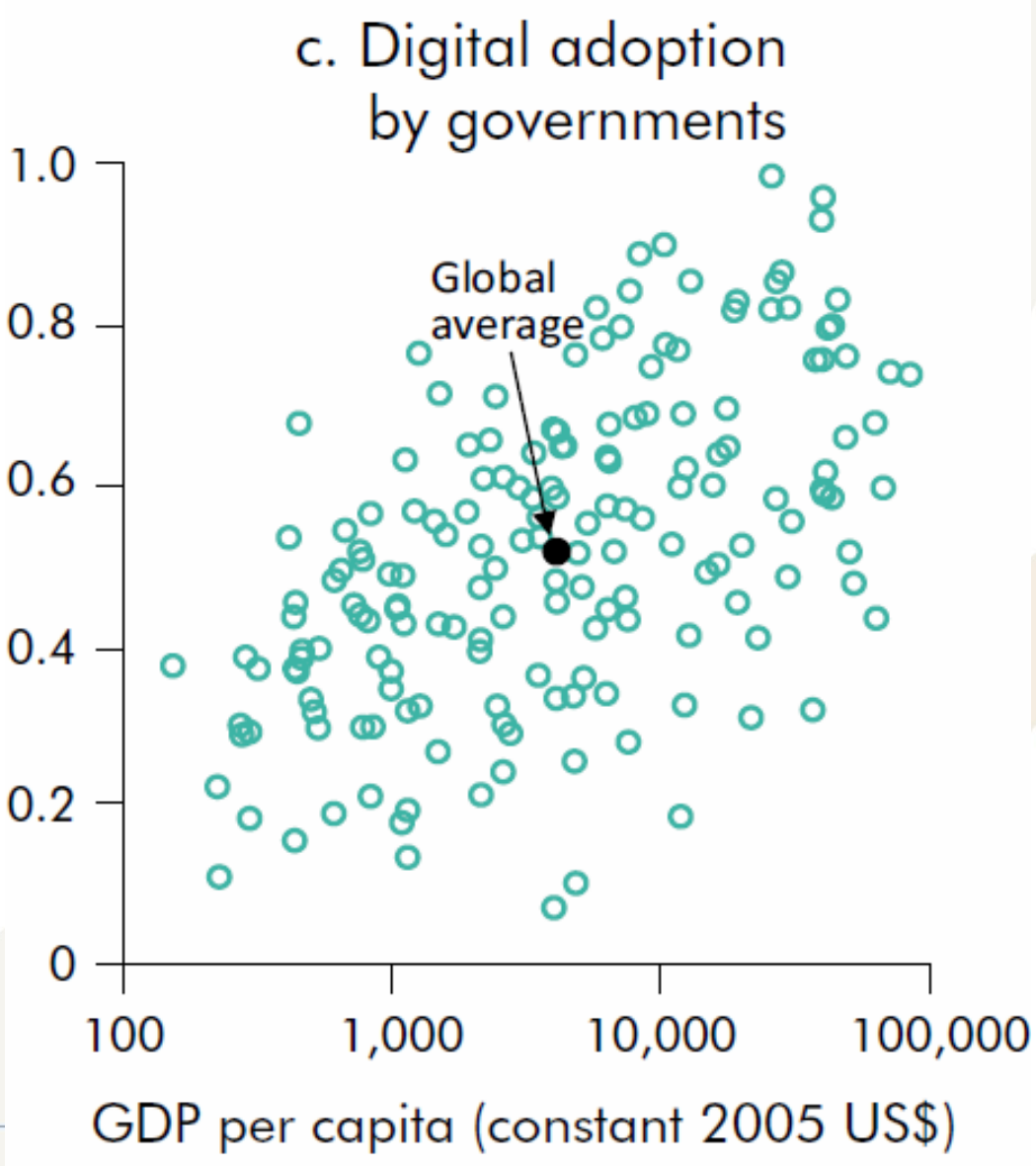
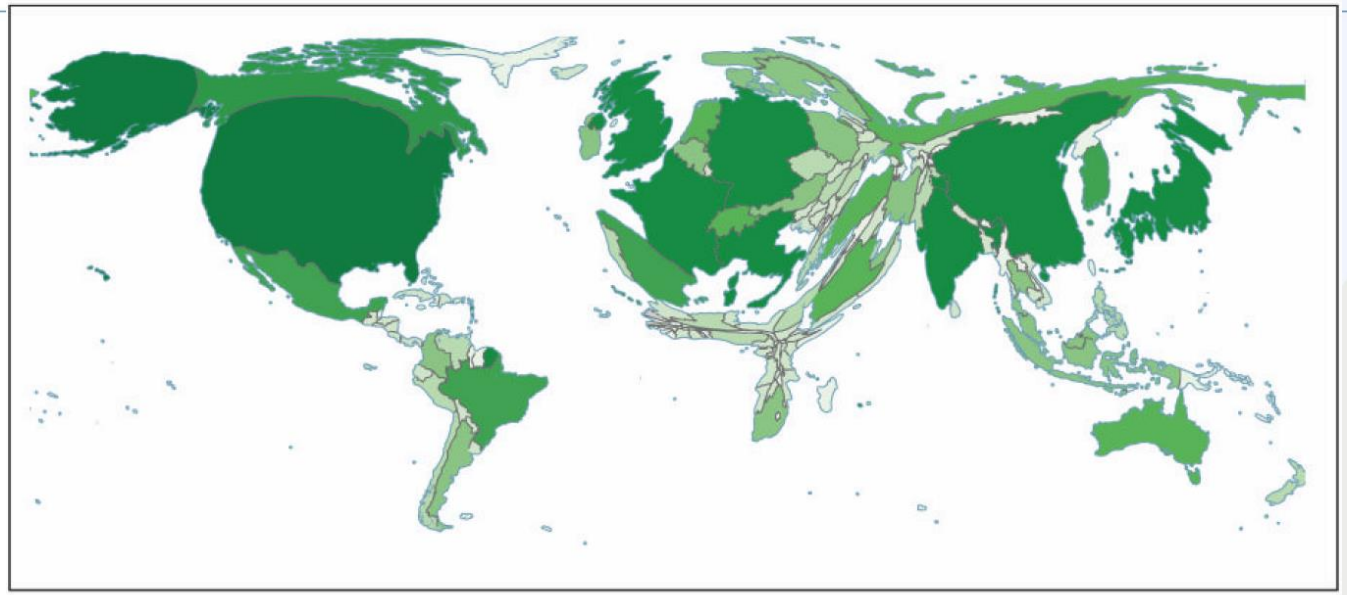
Digital tech diffusion

Gov't adoption more widespread / variable than by businesses / individuals

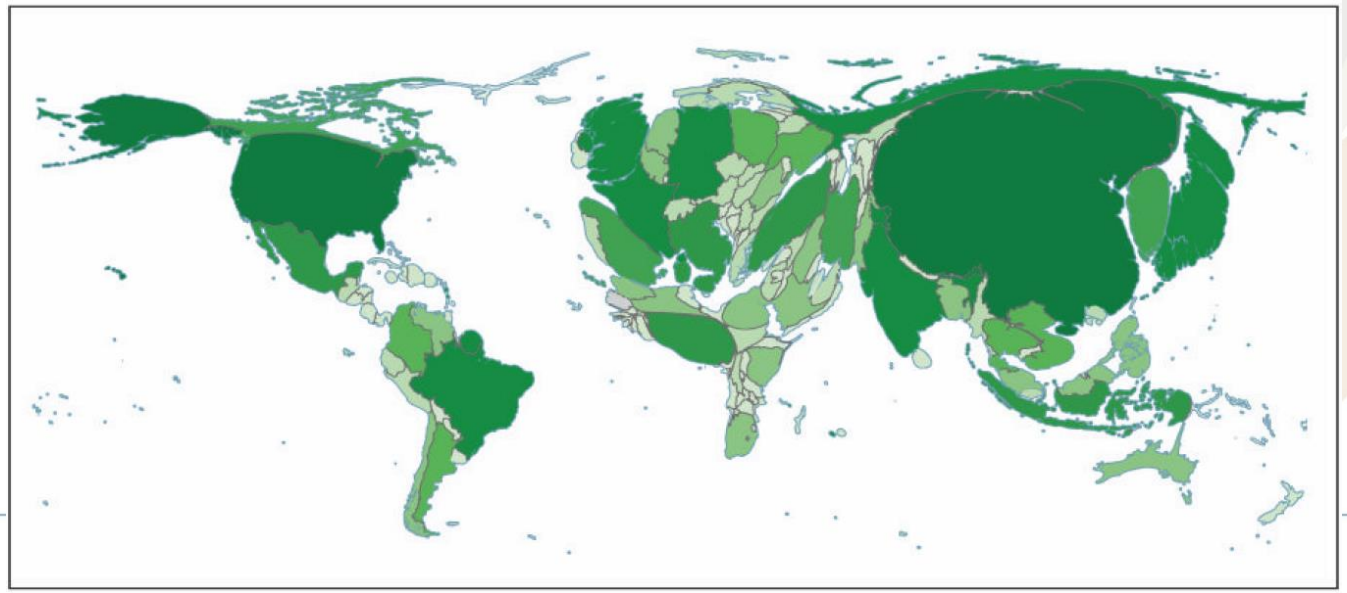


Map O.1 The internet is more evenly spread than income

a. Based on national income, 2014



b. Based on internet population, 2014



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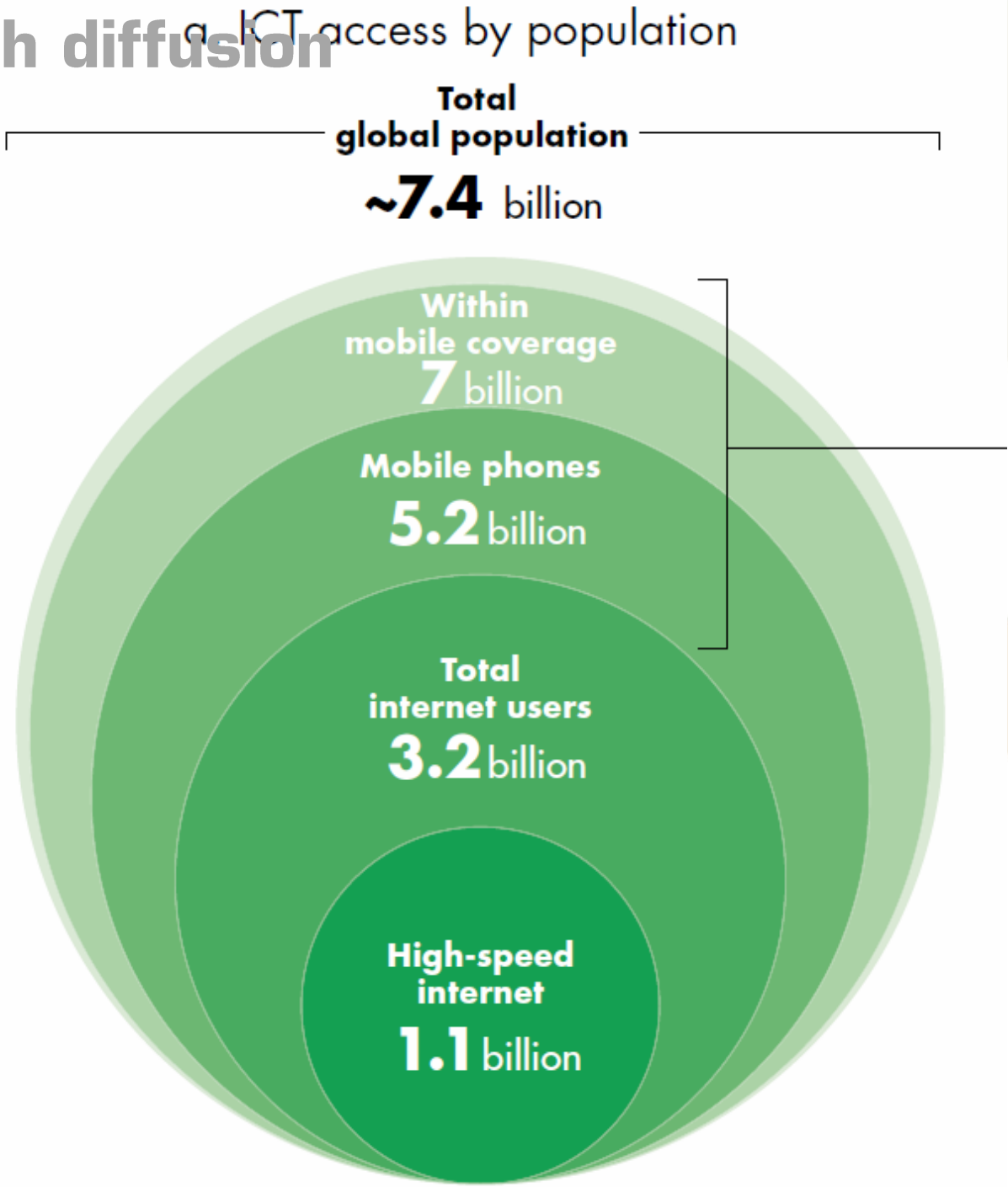
Digital tech diffusion

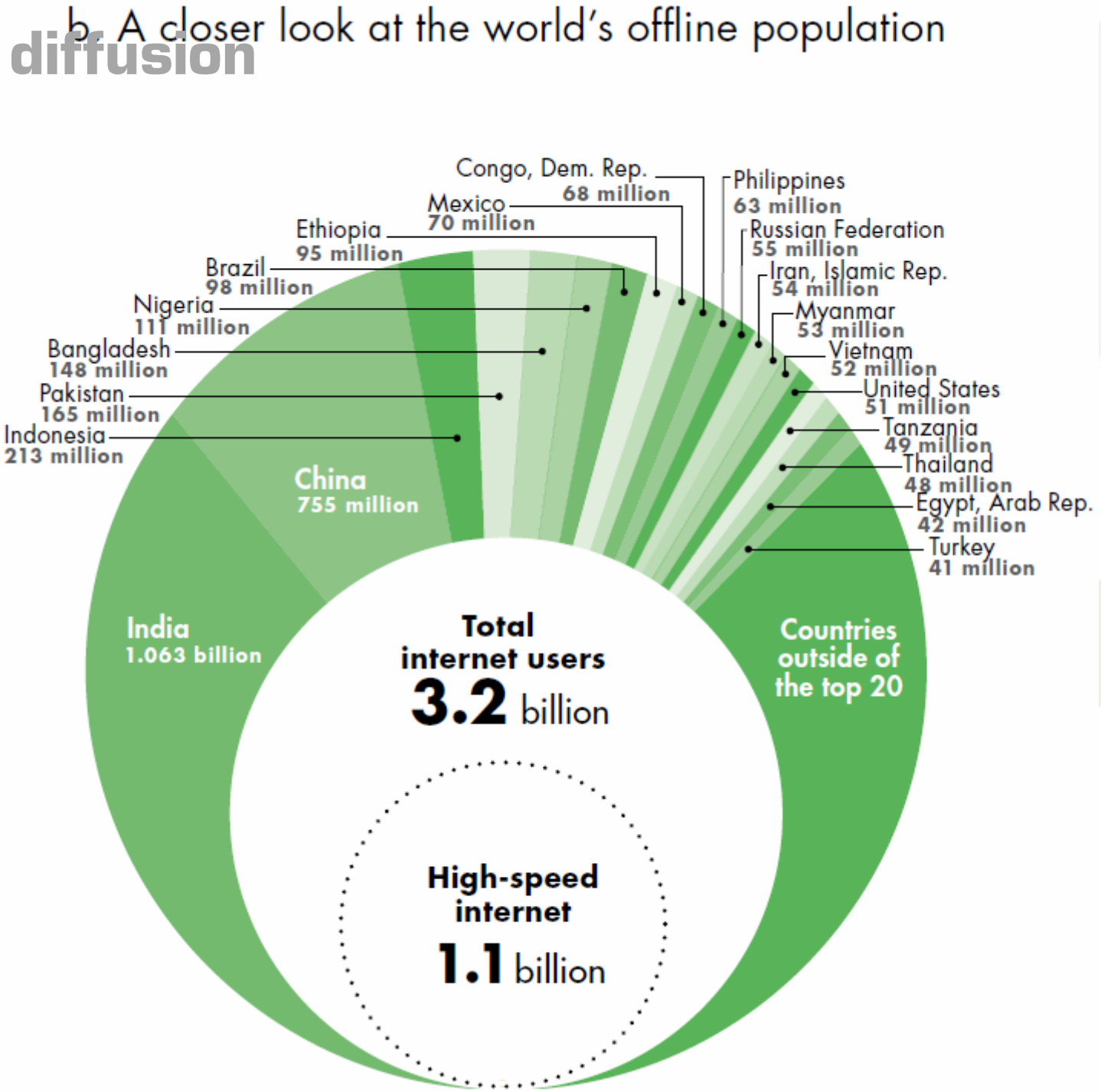
≠ layers of access!

4.2 million without internet access

→ **57% world population!**



Digital tech diffusion



Digital tech diffusion

- In spite of rapid dissemination of digital tech…
- …the digital divide is still very wide
  - *among* countries
  - *within* countries
  - *quantitatively*
  - *qualitatively*

Digital tech diffusion does not *per se* narrow knowledge divide!

Digital tech diffusion

Why hasn't the diffusion of digital tech been wider / quicker?

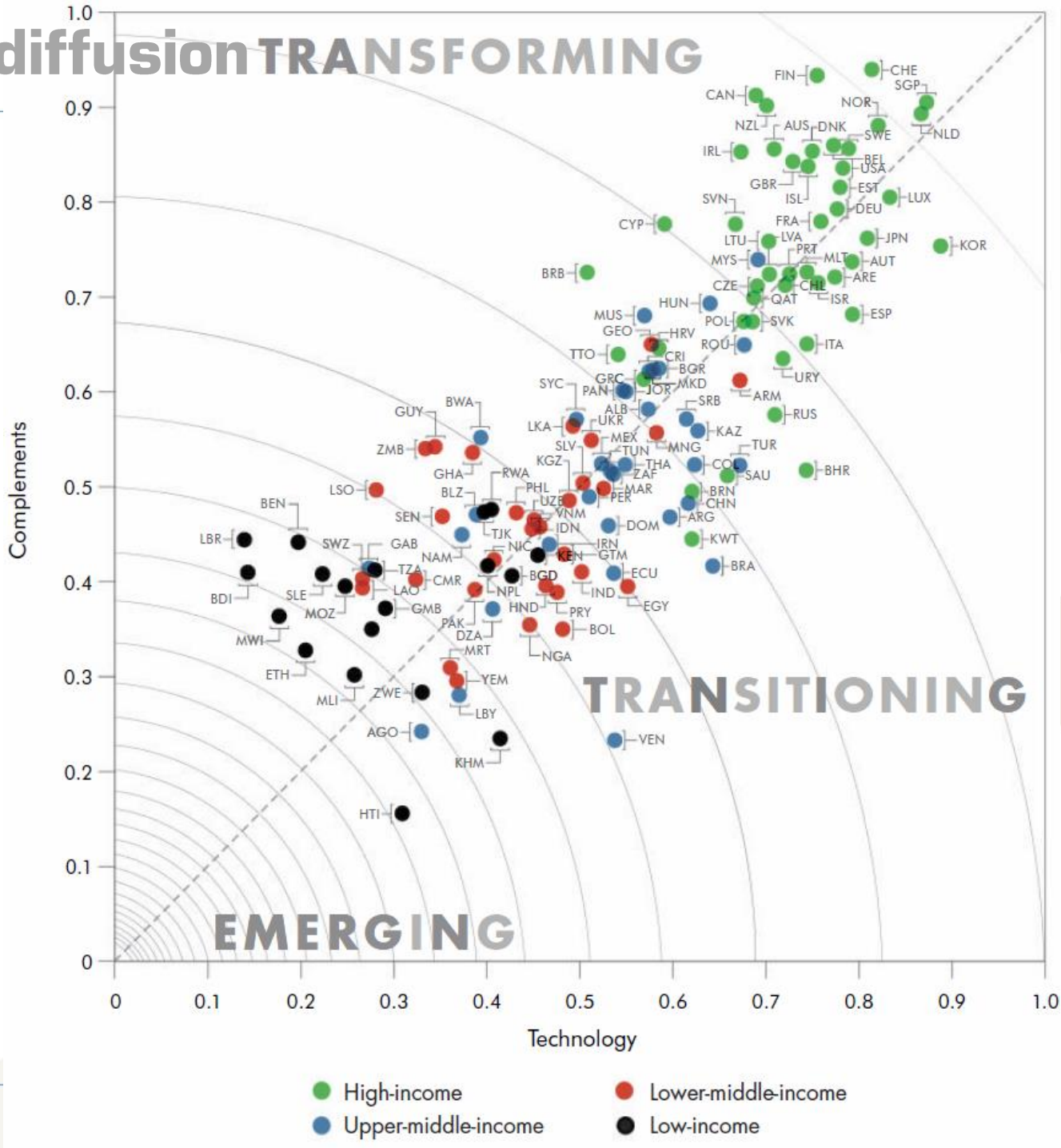
1. Missing other techs: electricity, infrastructure

2. Digital & "Analog complement" need to *co-evolve*
   - Regulations → e.g. Competition
   - Skills
   - Institutions

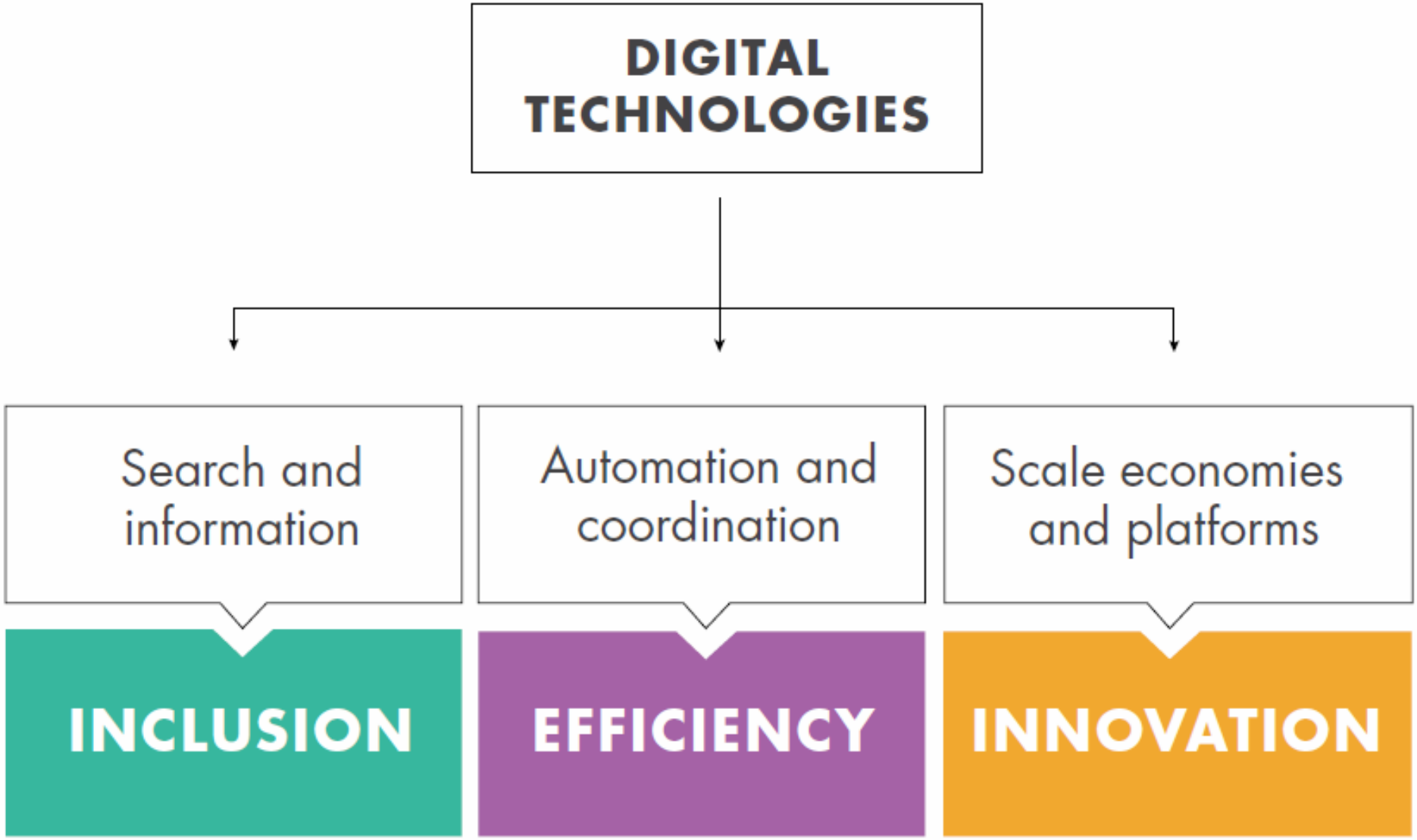
Digital tech diffusion

“Transforming” = countries at tech frontier

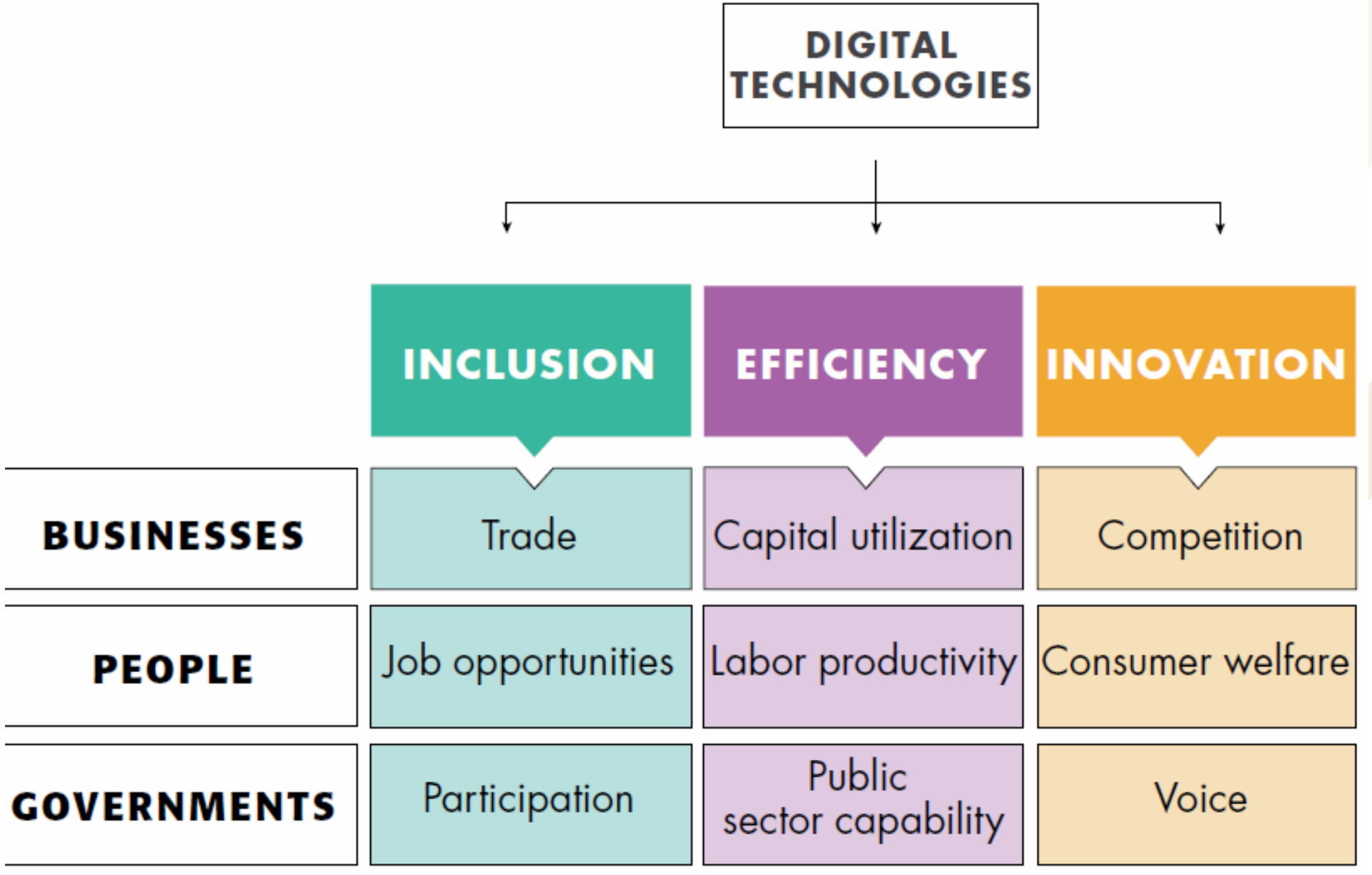
“Emerging” = backward countries



Digital tech potential



Digital tech potential



Digital tech potential

Table O.1 Benefits of digital technologies for workers and consumers: A scorecard

Channel	Impact so far		Potential impact	
	Poor	Nonpoor	Poor	Nonpoor
Creating jobs				
In the ICT sector and occupations	Negligible	L	Negligible	L
In sectors that use ICT	L	M	L	M
Increasing worker productivity				
Increasing returns to human capital	L	M	L	H
Connecting people to work and markets	M	H	H	H
Benefiting consumers				
Increasing consumer surplus	M	H	H	H

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Who benefits most from potential?

Countries that are capable to swiftly adjust to evolving digital economy

Digital tech $\Rightarrow$ NO shortcut for development, but

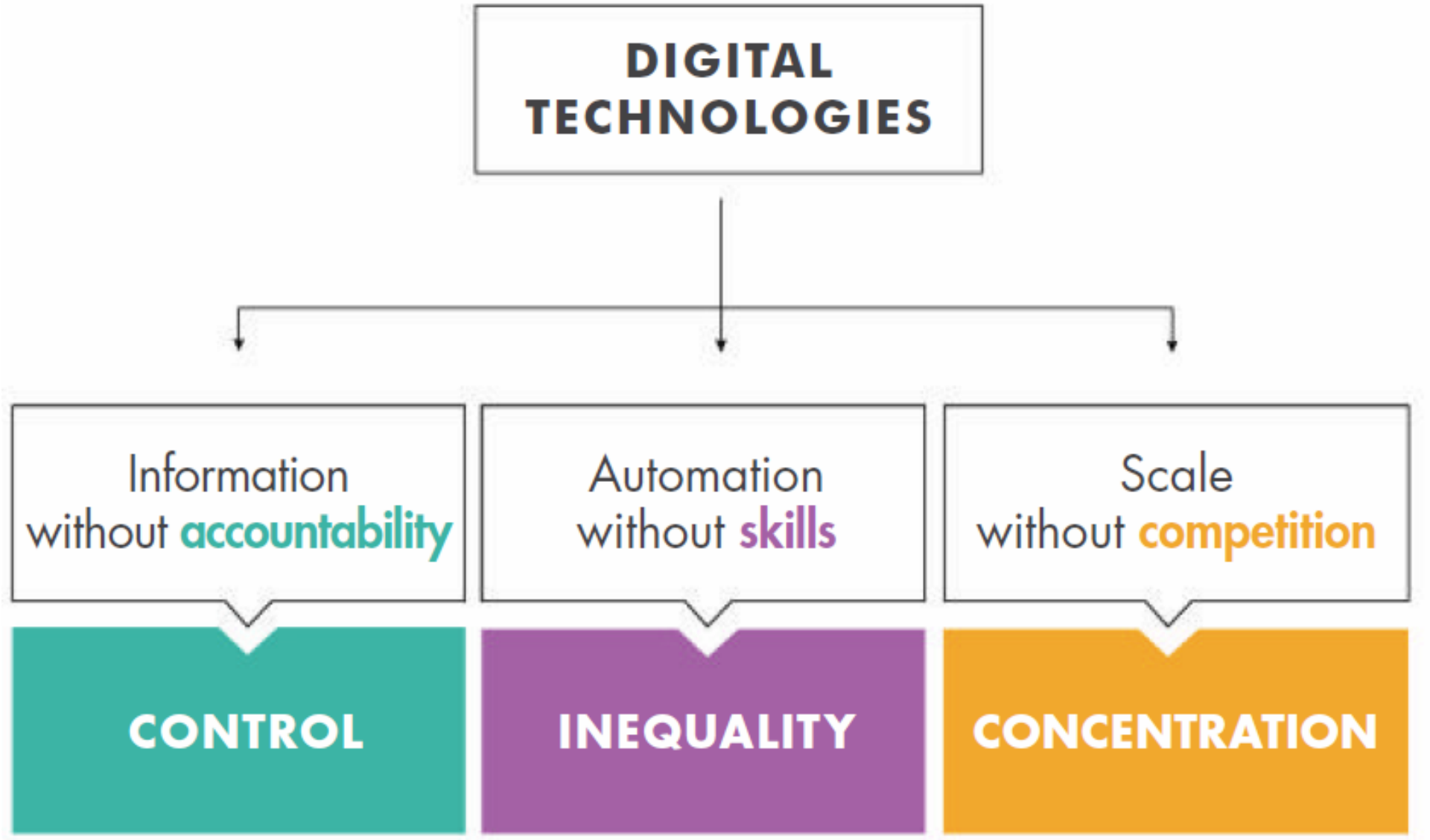
- $\uparrow$ quality of complements

BUT digital dividend not fully realized
→ Why?

1. For potential of digital tech to deploy its potential, dissemination needs to be as widespread as possible

2. Benefits are partly compensated by **risks** = downsides

Downsides for developing countries



Downsides for developing countries

Meso level

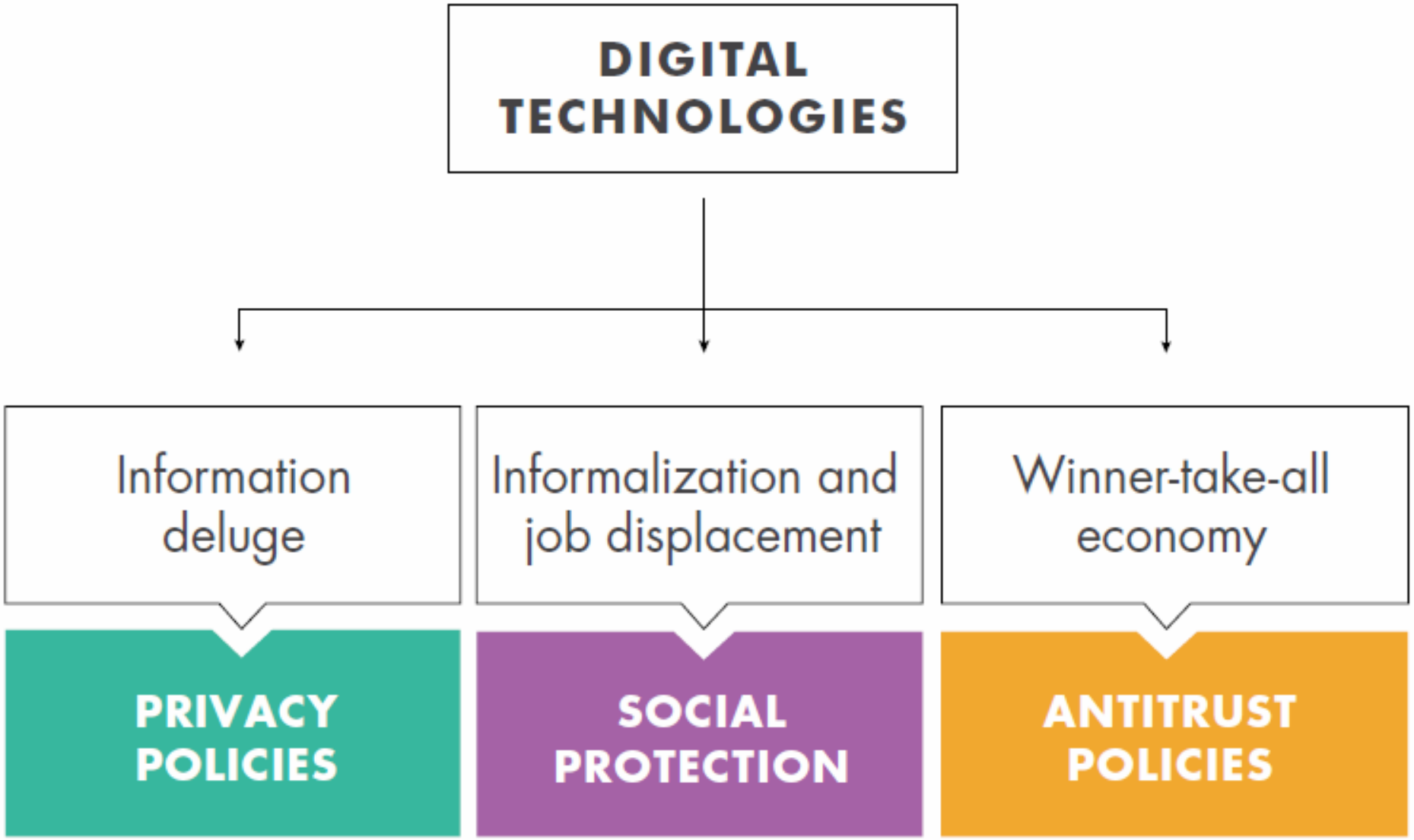
- Low marginal costs ⇒ creation of large monopolies
- Price dispersion persists
  - Because large firms differentiate between different segments of demand
- Creative destruction vs. offline firms
  - The latter (& related institutions) need to adapt
- ↑ complexity ⇒ people don't understand what's going on

Downsides for developing countries

Intl level

- ↑ digital divide
- ↑ opportunity cost of being left behind
  - i.e. of being a laggard country
- Automated production can become cheaper than *any* work
  - Does re-shoring mean end of cheap-labour-based industrialization?
- Risk of some countries being caught in low-tech-poverty trap

Policies for digital tech



Policies for digital tech

- Govts to adopt STI policies which leapfrog techs with negative aspects (e.g. “grey / brown” techs)

Policies for digital tech

- Emphasis on sectors of present / future comparative advantage

- More flexible educational / training systems

Thank you

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