Digital revolution has brought many private benefits

A typical day in the life of the internet

- 186 million Instagram photos
- 152 million Skype calls
- 36 million Amazon purchases
- 2.3 billion GB of web traffic
- 803 million tweets
- 4.2 billion Google searches
- 8.8 billion YouTube videos watched

207 billion emails sent

But are countries reaping sizable digital dividends?

DIGITAL DIVIDENDS

Growth  Jobs  Services

Business  People  Government

AGENTS

Are the benefits reaching everyone, everywhere?
Digital technologies are transforming BUSINESS

DIGITAL MARKETPLACE

Number of small & medium enterprises on Taobao (Alibaba):

5 MILLION & COUNTING

SOURCE: http://www.alizila.com/chinas-online-cowboy-rounds-buyers
Digital technologies are transforming PEOPLE’S LIVES

DIGITAL PAYMENTS

Number of mobile money accounts worldwide:
300 MILLION & COUNTING
(end of 2014)

Where mobile money accounts outnumber bank accounts

Digital technologies are transforming **GOVERNMENT**

**DIGITAL IDENTITY**

*Trafficking Victims see New life in Aadhaar*

By Daniel Thimmayya | Published: 30th March 2015 06:00 AM  Last Updated: 30th March 2015 10:57 AM

**SOURCE:** http://www.newindianexpress.com/cities/chennai/Trafficking-Victims-see-New-life-in-Aadhaar/2015/03/30/article2737396.ece

**Indians with digital identity:**

**950 MILLION & COUNTING**
The main mechanisms to promote development

**DIGITAL TECHNOLOGIES**

- **Search and information**
- **Automation and coordination**
- **Scale economies and platforms**

**INCLUSION**

**EFFICIENCY**

**INNOVATION**

Expand the information base, lower information costs and create information goods

**SOURCE:** WDR 2016
Then why the deep pessimism surrounding the global economy?

Not because of digital technologies, but in spite of them

SOURCE: Total Economy Database, Conference Board; and WDR 2016 team; Christoph Lakner and Branko Milanovic 2013; Bishop and Hoeffler 2014.
1. A significant digital divide remains

- **6 BILLION** without **BROADBAND**
- **4 BILLION** without **INTERNET**
- **2 BILLION** without **MOBILE PHONES**
- **0.4 BILLION** without **A DIGITAL SIGNAL**

Divides persist between and within countries—in access and capability

**SOURCE:** WDR 2016 team based on Research ICT Africa and ITU data
... between and within countries—in access and capability
SECTORAL POLICIES

SUPPLY SIDE ISSUES

• Competition policy
• Public-private partnerships
• Effective telecom & internet regulation

Making internet access universal, affordable, open and safe

![Graph showing mobile cellular subscriptions in the Horn of Africa](image)

- Kenya [4]
- Sudan [3]
- Somalia [7]
- Djibouti [1]
- Ethiopia [1]
- Eritrea [1]

Source: ITU. [© number of mobile operators in each country]
SECTORAL POLICIES

A Framework for considering policy interventions

**INVISIBLE MILE**
Hidden elements that are vital to ensuring the integrity of the value chain

Nonvisible network components include the spectrum, network databases, cybersecurity, etc., but can also include potential bottlenecks, like international frontiers.

**FIRST MILE**
Where the internet enters a country

International internet access, including submarine cables, landing stations, satellite dishes, cross-border microwave, etc.

**MIDDLE MILE**
Where the internet passes through that country

National backbone and intercity network, including fiber backbone, microwave, internet exchange points (IXPs), local hosting of content, etc.

**LAST MILE**
Where the internet reaches the end user

Local access network, including local loop, central office exchanges, wireless masts
2. Digital technologies hold benefits as well as risks

What are those complements?
Digital technology can accelerate growth …

**TRADE**
The internet enables more firms to reach new markets, 2001-12

**PRODUCTIVITY**
Vietnamese firms using e-commerce have higher total factor productivity growth, 2007-12

**COMPETITION**
Average monthly trips per traditional taxi in San Francisco after Uber started operation

**Graphs and Data**
- Intensive margin vs. Extensive margin
- Percentage points vs. Labor productivity growth effect vs. TFP growth effect
- Number of trips over time

**Source:** WDR16 team, Osnago and Tan 2015, Nguyen and Schiffbauer 2015 for the 2016 WDR, Eurostat, circa 2014 (EU, various years).
...but scale without **COMPETITION**

→ **risks of lower digital adoption and growing divergence**
Digital technology can expand opportunities…

**JOB CREATION**

Number of oDesk contractors

**CONSUMER SURPLUS**

Africa: Respondents that agree with each statement on benefits and use of mobile phones, 2011–12

**SOURCE:** WDR16 team, Osnago and Tan 2015, Nguyen and Schiffbauer 2015 for the 2016 WDR, Eurostat, circa 2014 (EU, various years).
...but automation without **SKILLS**

→ *risks of polarized labor markets and greater inequality*

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**Annual average change in employment share, circa 1995–circa 2012**

- **High-skilled occupations** (intensive in nonroutine cognitive and interpersonal skills)
- **Middle-skilled occupations** (intensive in routine cognitive and manual skills)
- **Low-skilled occupations** (intensive in nonroutine manual skills)

**SOURCE:** WDR 2016 team, based on ILO KILM (ILO, various years); I2D2 (World Bank, various years); National Bureau of Statistics of China (various years)
Digital technology can improve service delivery...

**CAPACITY**

Complaints were resolved quickly in the Nairobi water utility after the introduction of digital customer feedback

**TRANSPARENCY**

e-government systems increase the transparency of government budgets, 2014

**SOURCE:** WDR16 team, Osnago and Tan 2015, Nguyen and Schiffbauer 2015 for the 2016 WDR, Eurostat, circa 2014 (EU, various years).
...but information without **ACCOUNTABILITY**

→ *risks of greater state control and elite capture*

**SOURCE:** WDR team, based on Polity IV 2015; UN 2014; Open Net Initiative 2013.
Race between technology and complements

Complements: Index of quality of institutions, skills and regulations.

Technology: Digital adoption index - businesses, people and governments.

SOURCE: WDR 2016 team. For more details see figure 5.3 in the full Report.
Analog foundations for a digital economy

**NATIONAL PRIORITIES**

**REGULATIONS**
that promote competition and entry

**SKILLS**
to leverage digital opportunities

**INSTITUTIONS**
that are capable and accountable

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**EMERGING**
- Remove barriers to adoption
- Foundational skills and basic ICT literacy
- Mobile phone-based services and monitoring

**TRANSITIONING**
- Competition regulation and enforcement
- Prepare for careers instead of jobs
- e-government delivery and citizen engagement

**TRANSFORMING**
- Platform competition
- Facilitate lifelong learning
- Participatory policy making and digital collaboration

**SOURCE:** WDR 2016 team.
Digital development strategies need to be broader than ICT strategies

Connectivity + Complements \(\rightarrow\) Digital Dividends

- Regulations that allow firms to connect and compete
- Skills that leverage technology
- Institutions that are accountable and capable

Match policies to the level of digital development

- Emerging: Lay the foundations by promoting digital adoption
- Transitioning: Enable everyone to take advantage of new technologies
- Transforming: Deal with the wicked problems faced in the new economy

The payoff

- Increasing digital dividends:
  Faster growth, more jobs and better services