
Digital Futures and Global Power

Marco Cepik

INSTITUTO LULA

Power to the People in the Digital Era

International Chair: Professor Aaron Schneider (University of Denver)

March 26

Thanks to Aaron Schneider for the invitation to be part of this important initiative. Congratulations to the Instituto Lula for bringing people together to critically think and act on this topic. Pedro Brancher, thanks for the partnership in this project. Thanks to Arthur Cepik for discussing ideas and assisting with much valued tech insights. Our aim is to contribute to the development of an emancipatory social alternative to the ongoing transformations in the contemporary world.

This talk will be divided into two parts. In the **FIRST** part, we will clarify the meaning we will assign to Digital Era and related concepts. Some empirical information will also exemplify the two general dynamics of digital transformation: datafication and network building. In the **SECOND** part, we will discuss the digital inequalities levels and types. Additional comments will be made regarding international governance deficits and conflicts.

1. Digital Transformation

-
- **Concepts**
 - **Dynamics**
-

Digital Age

By Digital Age, one should understand the historical period since 1971 (the first microprocessor), distinguished by the growing centrality of digitized science, technology, and innovation systems for the production, circulation, and consumption of material and cultural values engendered by networked intellectual work (Cepik; Brancher, 2022). In this sense, the two most important properties and dynamics of the Digital Age are exponential **datafication** and free-of-scale **networking** (Śledziwska & Włoch, 2021).

The transition to the Digital Age is also characterized by the hegemony of financial capital (**financialization**) and the **global power struggle** between the United States of America (USA) and the People's Republic of China (PRC). Our current research project will analyze the strategic response of **Latin American** and **Southeast Asian** peoples and governments to the challenges and opportunities engendered by the advancement of digitalization in various social formations.

Although the Digital Age is not yet a new Mode of Production (Marx), the growing contradictions between the new productive forces, the inherited social relations, and the natural environment in the current phase of capitalism are at least as radical as the processes experienced in the Modern Age. The future of humanity and the planet depend on the **global working class's strategic struggle** to transform the Digital Age into a more democratic, equal, and sustainable system (*Gesellschaftsformation*). Neither dystopian pessimism nor utopian optimism will be able to build a better future.

Cyberspace

Cyberspace is the environment created by people, devices, infrastructure, information, and communication systems using the electromagnetic spectrum. More or less interconnected **analog and digital** networks define cyberspace as temporally and spatially larger than the Internet (Kuehl, 2009).

Digital Transformation

Digital transformation, therefore, is the process through which organizations create and incorporate digital technologies that increasingly integrate the **physical**, **application**, and **cognitive** layers of cyberspace shared by billions of people.

Platformization

Digital platforms are the dominant **organizational form** of firms and institutions in the contemporary world (Srnicek, 2016). First, the platforms' center of gravity is cyberspace itself, where leading corporations impose entry barriers and interaction norms (Djick, Poell & Waal, 2018). Second, platforms develop reprogrammable software. Abundant data and financial concentration allow continuous updating of interfaces and algorithms and novel applications from core components (Helmond, 2015). Third, the market capitalization **value** of the digital platform is not based on earnings, physical assets, or even scale and scope economies but on **network traffic generating Big Data**. The more users operate on the platform, the more valuable it becomes for the users themselves and the company since more personalized products and services can be generated (Cusumano, Gawer & Yoffie, 2019).

Dynamics

According to Lang (2021), general-purpose technologies and specific innovation breakthroughs have defined the Digital Age. Three exponential laws predicted the **general direction** of such changes:

- **Moore's law** (number of processing units in computer chips doubles every 18 months)
 - **Butter's law** (network communication speed doubles every nine months)
 - **Kryder's law** (storage capacity doubles every 13 months).
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ESSENTIAL DIGITAL HEADLINES

OVERVIEW OF THE ADOPTION AND USE OF CONNECTED DEVICES AND SERVICES



TOTAL
POPULATION

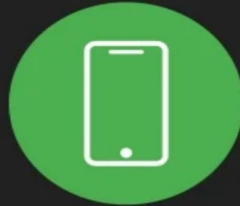


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7.91
BILLION

URBANISATION
57.0%

UNIQUE MOBILE
PHONE USERS



5.31
BILLION

vs. POPULATION
67.1%

INTERNET
USERS



4.95
BILLION

vs. POPULATION
62.5%

ACTIVE SOCIAL
MEDIA USERS



4.62
BILLION

vs. POPULATION
58.4%

9

SOURCES: UNITED NATIONS, U.S. CENSUS BUREAU, GOVERNMENT BODIES, GSMA INTELLIGENCE, ITR, GWE, EUROSTAT, ONNIC, ARIE, CIA WORLD FACTBOOK, COMPANY ADVERTISING RESOURCES AND EARNING'S REPORTS, OECD, TECHRASA, KEPIOS ANALYSIS. **ADVISORY:** SOCIAL MEDIA USERS MAY NOT REPRESENT UNIQUE INDIVIDUALS. **COMPARABILITY:** SOURCE AND BASE CHANGES.

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OVERVIEW OF INTERNET USE

ESSENTIAL INDICATORS OF INTERNET ADOPTION AND USE



TOTAL
INTERNET
USERS



4.95
BILLION



INTERNET USERS AS
A PERCENTAGE OF
TOTAL POPULATION



62.5%

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YEAR-ON-YEAR CHANGE
IN THE NUMBER OF
INTERNET USERS



+4.0%
+192 MILLION

AVERAGE DAILY TIME SPENT
USING THE INTERNET BY
EACH INTERNET USER



6H 58M
+1.0% (+4M)



PERCENTAGE OF USERS
ACCESSING THE INTERNET
VIA MOBILE PHONES



92.1%

GWI.

20

SOURCES: KEPIC'S ANALYSIS, IFL, GSMA INTELLIGENCE, EUROSTAT, GWI, CIA WORLD FACTBOOK, OHNIC, APRI, LOCAL GOVERNMENT AUTHORITIES, UNITED NATIONS. TIME SPENT AND MOBILE SHARE DATA FROM GWI (Q3 2021), BASED ON A BROAD SURVEY OF INTERNET USERS AGED 16 TO 44. SEE [GWI.COM](https://www.gwi.com) FOR MORE DETAILS. **ADVISORY:** DUE TO COVID-19-RELATED DELAYS IN RESEARCH AND REPORTING, FIGURES FOR INTERNET USER GROWTH MAY UNDER-REPRESENT ACTUAL TRENDS. SEE [NOTES ON DATA](#) FOR MORE DETAILS. **COMPARABILITY:** SOURCE AND BASE CHANGES.

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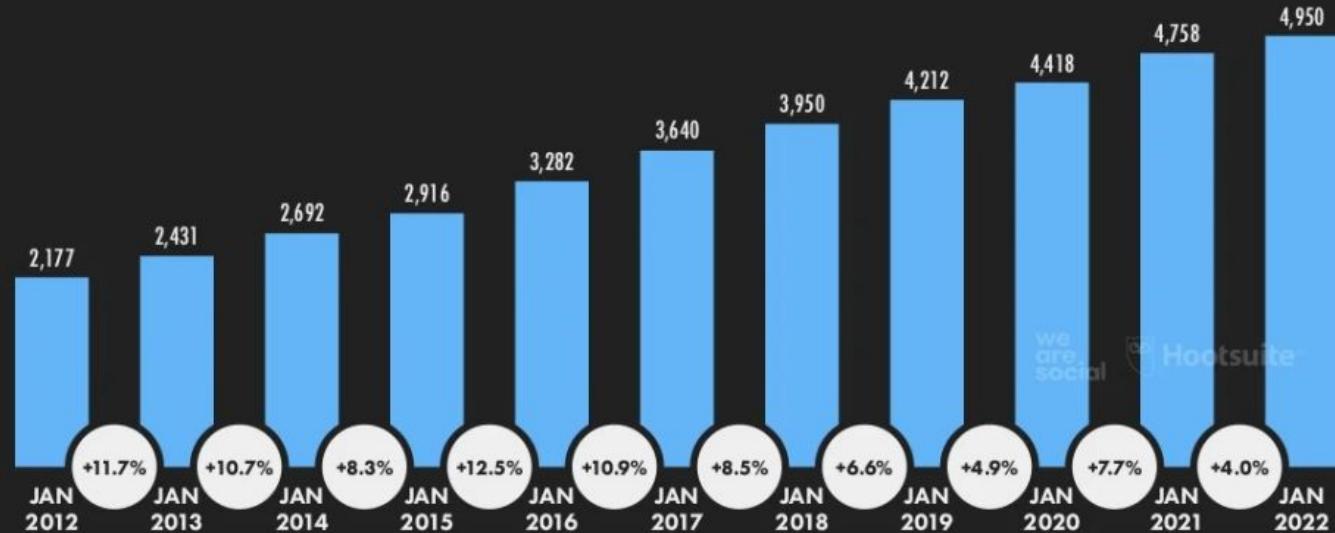


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INTERNET USERS OVER TIME

NUMBER OF INTERNET USERS (IN MILLIONS) AND YEAR-ON-YEAR CHANGE



21

SOURCES: KERIOS ANALYSIS, IFL, GSMA INTELLIGENCE, EUROSTAT, GWI, CIA WORLD FACTBOOK, ONI/C, APPI, LOCAL GOVERNMENT AUTHORITIES. ADVISORY: DUE TO COVID-19 RELATED DELAYS IN RESEARCH AND REPORTING, FIGURES FOR INTERNET USER GROWTH AFTER 2020 MAY NOT FULLY REPRESENT ACTUAL TRENDS. SEE NOTES ON DATA FOR MORE DETAILS. COMPARABILITY: SOURCE AND BASE CHANGES. FIGURES MAY NOT MATCH OR CORRELATE WITH FIGURES PUBLISHED IN PREVIOUS REPORTS.

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DIGITAL HEALTH OVERVIEW

HEADLINES FOR THE ADOPTION AND USE OF DIGITALLY ENABLED HEALTHCARE DEVICES AND SERVICES



NUMBER OF PEOPLE
USING DIGITAL HEALTH
DEVICES AND SERVICES



statista

3.26
BILLION

YEAR-ON-YEAR CHANGE
IN THE NUMBER OF
DIGITAL HEALTH USERS



+8.9%
+267 MILLION

TOTAL ANNUAL
VALUE OF THE DIGITAL
HEALTH MARKET (USD)



statista

\$128.8
BILLION

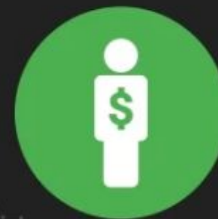
YEAR-ON-YEAR CHANGE
IN THE VALUE OF THE
DIGITAL HEALTH MARKET



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+23.5%
+\$24 BILLION

AVERAGE ANNUAL
SPEND ON DIGITAL
HEALTH PER USER (USD)



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\$39.46
YOY: **+13%**

251

SOURCE: STATISTA DIGITAL MARKET OUTLOOK. SEE [STATISTA.COM](https://www.statista.com) FOR MORE DETAILS. NOTES: "DIGITAL HEALTH" INCLUDES DIGITAL FITNESS & WELLBEING DEVICES AND APPS, HEALTH DEVICES AND APPS, OVER-THE-COUNTER PHARMACEUTICALS SOLD VIA THE INTERNET, AND ONLINE DOCTOR CONSULTATION. DOES NOT INCLUDE SMART CLOTHING, SMART SHOES, OR SMART EYEWEAR. APPS FOR TRACKING SLEEP OR TRACKING HEALTH, MOOD IMPROVEMENT APPS, OR APPS TO MANAGE ADDICTION, DEPRESSION, EATING DISORDERS, OR SCHIZOPHRENIA. FIGURES REPRESENT ESTIMATES FOR FULL-YEAR 2021, AND COMPARISONS TO EQUIVALENT VALUES FOR THE PREVIOUS CALENDAR YEAR. FINANCIAL VALUES ARE IN U.S. DOLLARS. PERCENTAGE CHANGE VALUES ARE RELATIVE. "BPS" VALUES SHOW ABSOLUTE CHANGE.

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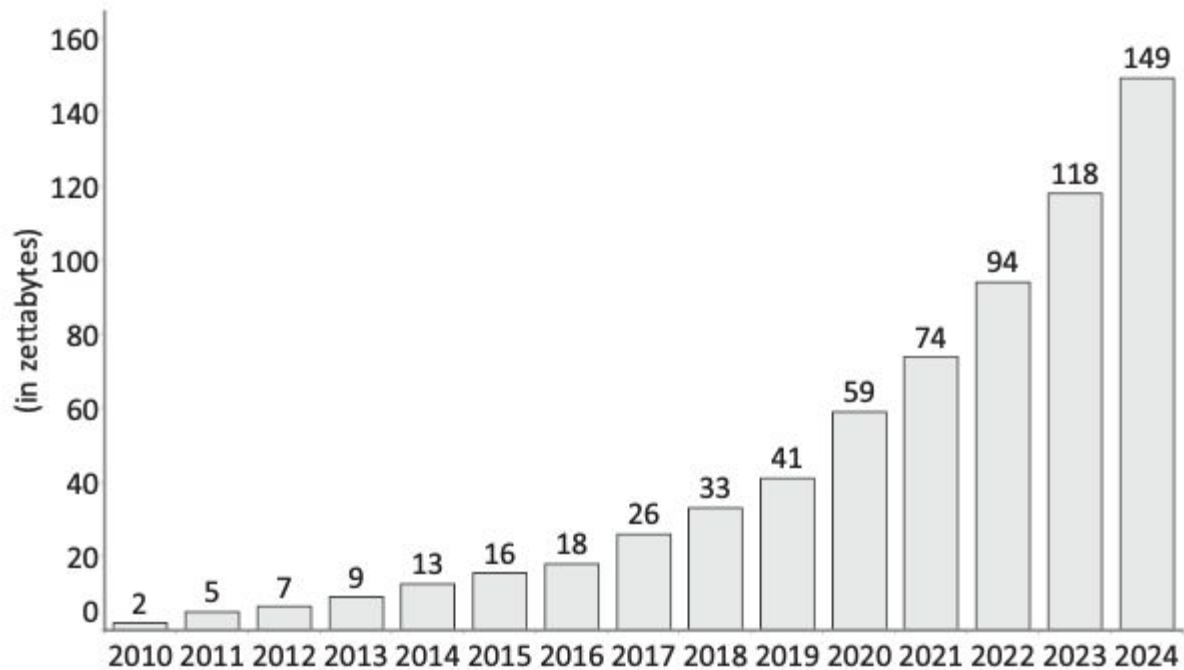


Figure 1.7 Volume of data as an effect of digitalisation (in zettabytes, 2010–2024).

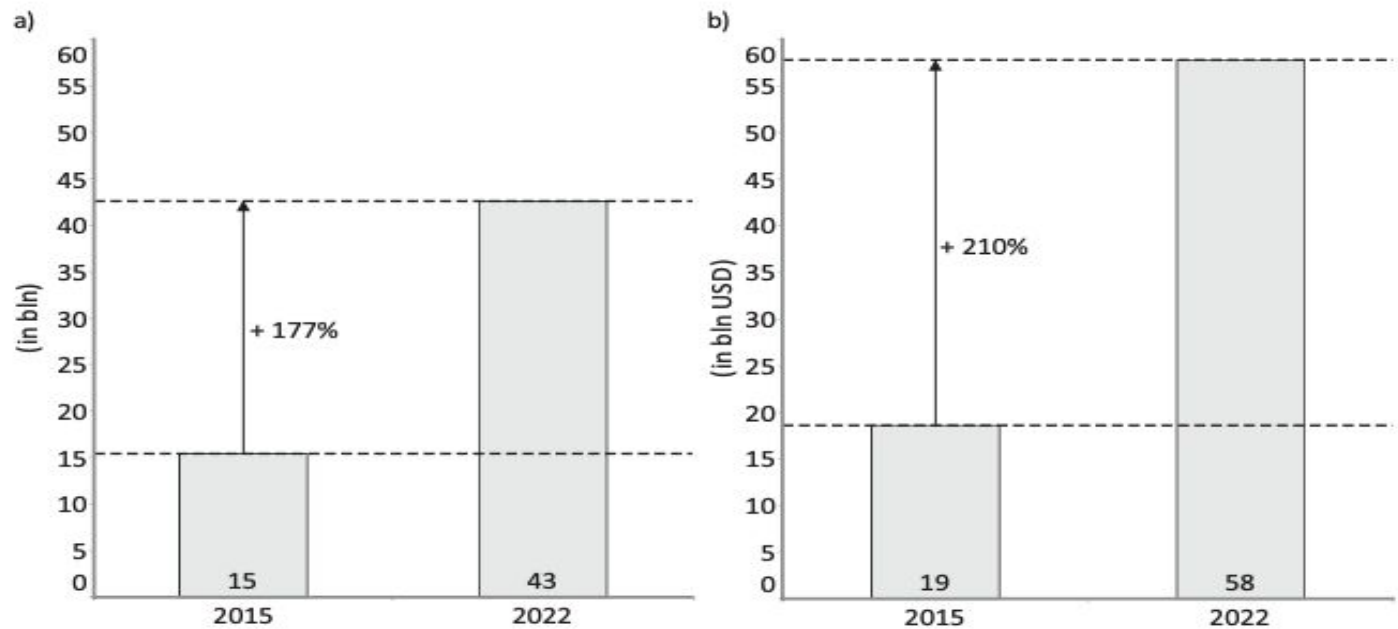


Figure 1.6 (a) Number of interconnected IoT devices (in billion units, worldwide, 2015 and 2022*); (b) global smart sensors market size (in billion USD, 2015 and 2022*).

Since the beginning of the **Covid-19 pandemic**, there has been an enormous increase in online activities, measured by the number of new users, consumers, products, and services (private and government). Major platforms have concentrated even more capital and have entered into fierce competition among themselves and less so with governments. For example, the combined market capitalization value of Apple, Microsoft, Alphabet (Google), Amazon, and Meta (Facebook) reached **8.7 trillion** dollars in January 2022. The European Union has fined Google over 8 billion dollars since 2010. Even the so-called China's "regulatory crackdown" on the tech sector has not prevented the combined market capitalization value of Tencent, Alibaba, Meituan, and China Mobile from reaching 1.1 trillion dollars in the same period (<https://companiesmarketcap.com>).

Firms and governments will dispute emerging general-purpose technologies sustaining **datafication and networks** (e.g., blockchain, cloud computing, artificial intelligence (AI), robotics, semiconductors, 3D printing, internet of things (IoT), 5G mobile, and quantum computing). Along with bio, energy, and space technologies, digital techs will profoundly impact economics, society, and security in the decades ahead (UNCTAD, 2019. Allison et al., 2021). The digital transformation of global capitalist society will continue to advance, as much as the social and international conflicts inherent to such processes. In the second part of this conversation, we shall focus on those conflicts.

2. Digital Conflicts

-
- **Inequalities**
 - **Governance**
-

Digital inequalities are part of a much more significant and persistent structural problem intrinsic to capitalism. According to Ragnedda and Gladkova (2017), we can talk about three levels of digital inequalities. The **first** level is a divide between those who have and do not have adequate access to the required devices and the Internet. The **second** level relates to how different sociodemographic groups and individuals' use digital technologies and data. The **third** level of the digital divide is related to unequal capacities to create tangible and intangible benefits and outcomes from digital technologies.

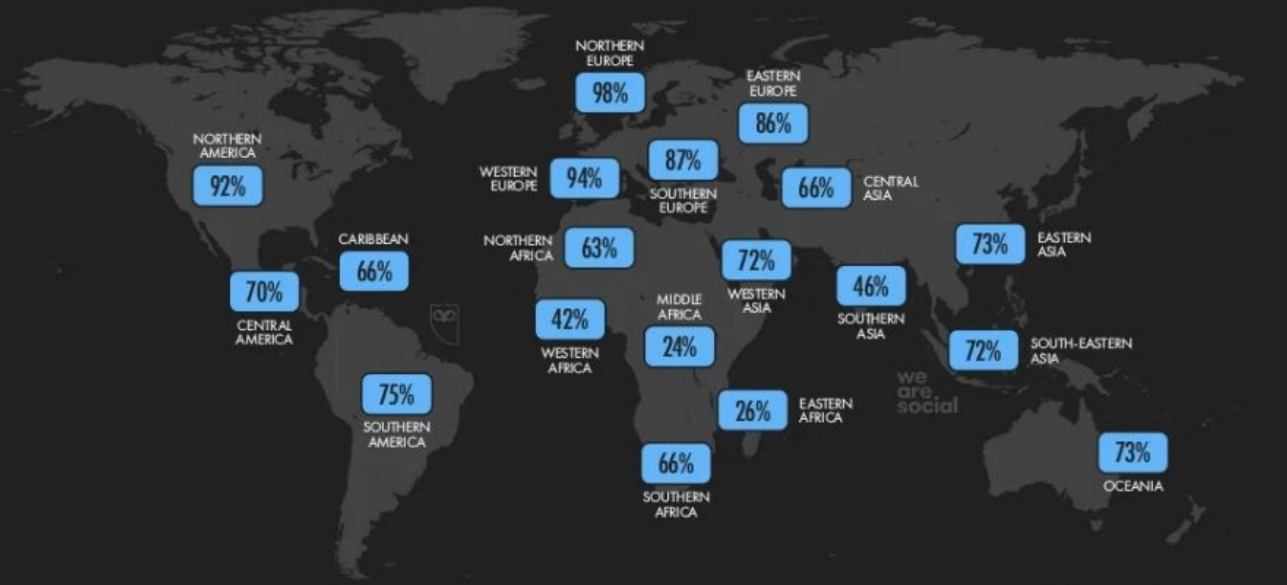
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INTERNET ADOPTION

INTERNET USERS AS A PERCENTAGE OF TOTAL POPULATION



GLOBAL OVERVIEW



22

SOURCES: KEPIOS ANALYSIS, IBL, OSMA INTELLIGENCE, EUROSTAT, GWE, CIA WORLD FACTBOOK, OHNIC, APPI, LOCAL GOVERNMENT AUTHORITIES, UNITED NATIONS. NOTE: REGIONS BASED ON THE UNITED NATIONS GEOScheme. COMPARABILITY: SOURCE AND BASE CHANGES.



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UNCONNECTED POPULATIONS

COUNTRIES AND TERRITORIES WITH THE LARGEST UNCONNECTED POPULATIONS AND THE LOWEST LEVELS OF INTERNET ADOPTION



GLOBAL OVERVIEW

ABSOLUTE: LARGEST UNCONNECTED POPULATIONS

#	LOCATION	UNCONNECTED POPULATION	% OF POP. OFFLINE
01	INDIA	742,003,000	53.0%
02	CHINA	421,432,000	29.1%
03	PAKISTAN	144,434,000	63.5%
04	BANGLADESH	114,511,000	68.5%
05	NIGERIA	104,888,000	49.0%
06	ETHIOPIA	89,502,000	75.0%
07	DEM. REP. OF THE CONGO	77,293,000	82.4%
08	INDONESIA	73,047,000	26.3%
09	BRAZIL	49,375,000	23.0%
10	TANZANIA	46,794,000	75.0%

RELATIVE: LOWEST LEVELS OF INTERNET ADOPTION

#	LOCATION	% OF POP. OFFLINE	UNCONNECTED
232	NORTH KOREA	>99.9%	25,938,000
231	CENTRAL AFRICAN REPUBLIC	92.9%	4,613,000
230	ERITREA	92.0%	3,341,000
229	COMOROS	91.5%	822,000
228	SOUTH SUDAN	89.1%	10,248,000
227	SOMALIA	86.3%	14,333,000
226	NIGER	85.5%	21,881,000
225	KIRIBATI	85.4%	105,000
224	BURUNDI	85.4%	10,623,000
223	DEM. REP. OF THE CONGO	82.4%	77,293,000

25

SOURCES: ITIL, GSMA INTELLIGENCE, EUROSTAT, OWS, CIA WORLD FACTBOOK, CHNOC, APRI, LOCAL GOVERNMENT AUTHORITIES, UNITED NATIONS. **NOTES:** FIGURES IN THE "% OF POP. OFFLINE" COLUMN REPRESENT THE PERCENTAGE OF THE POPULATION THAT DOES NOT YET USE THE INTERNET. ABSOLUTE VALUES HAVE BEEN ROUNDED TO THE NEAREST THOUSAND. THE INTERNET (AT LEAST AS THE REST OF THE WORLD) IN COUNTRIES REMAINS BLOCKED FOR EVERYDAY CITIZENS IN NORTH KOREA. **COMPARABILITY:** SOURCE AND BASE CHANGES.

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MOBILE INTERNET CONNECTION SPEEDS

COUNTRIES AND TERRITORIES WITH THE FASTEST AND SLOWEST **MEDIAN** INTERNET DOWNLOAD SPEEDS VIA **MOBILE CONNECTIONS**



FASTEST MEDIAN MOBILE INTERNET CONNECTION SPEEDS

#	LOCATION	DL	YOY	UL	LATENCY
01	UNITED ARAB EMIRATES	136.42	+27.7%	24.84	19
02	NORWAY	116.66	+82.8%	16.21	28
03	SOUTH KOREA	104.98	+22.7%	15.94	27
04	QATAR	97.90	+7.9%	20.43	20
05	CHINA	96.84	+79.9%	24.13	24
06	NETHERLANDS	94.93	+14.6%	13.96	24
07	SAUDI ARABIA	91.06	+48.5%	18.03	29
08	CYPRUS	88.87	+126.4%	17.03	16
09	BULGARIA	84.59	+26.1%	15.61	21
10	KUWAIT	83.64	+112.4%	23.00	19

SLOWEST MEDIAN MOBILE INTERNET CONNECTION SPEEDS

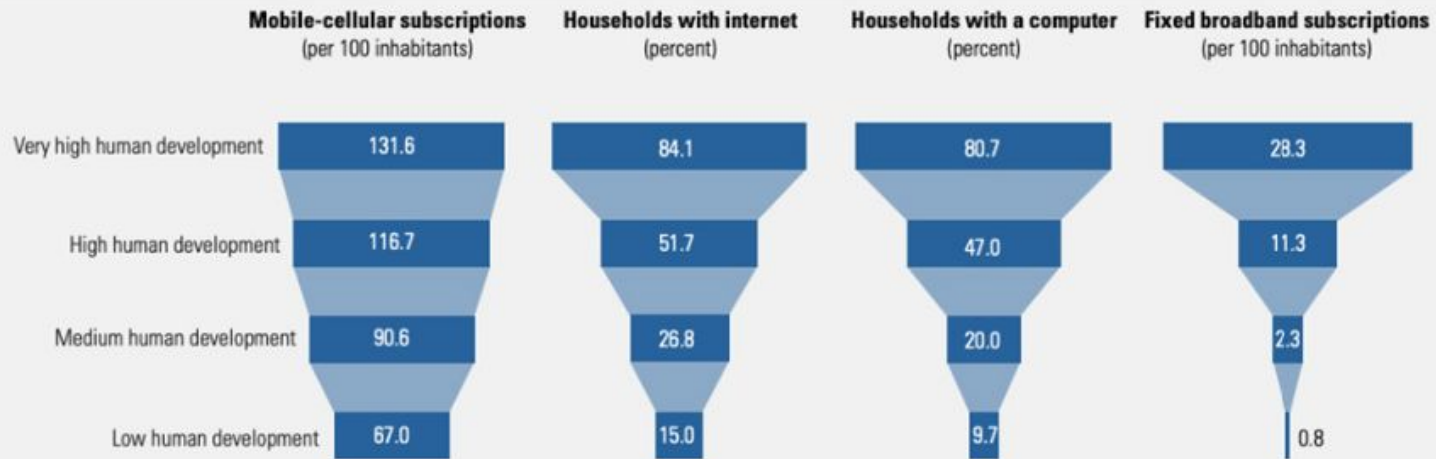
#	LOCATION	DL	YOY	UL	LATENCY
138	AFGHANISTAN	5.24	+32.3%	1.84	35
137	PALESTINE	5.68	-5.0%	2.20	31
136	VENEZUELA	5.76	+5.9%	3.17	37
135	TAJIKISTAN	7.57	+21.5%	4.07	25
134	GHANA	8.09	-5.0%	6.86	31
133	SUDAN	8.74	+47.4%	6.83	26
132	CÔTE D'IVOIRE	9.37	+12.5%	6.07	26
131	BELARUS	10.33	+15.8%	4.83	29
130	BANGLADESH	10.42	+44.1%	7.85	27
129	HAITI	10.66	-4.1%	6.38	22

36

SOURCE: OOKLA **NOTES:** FIGURES REPRESENT **MEDIAN** VALUES FOR NOVEMBER 2021. DATA ARE NOT AVAILABLE FOR ALL LOCATIONS. "DL" COLUMN SHOWS DOWNLOAD SPEEDS (IN MEGABITS PER SECOND). "YOY" COLUMN SHOWS YEAR-ON-YEAR CHANGE IN DOWNLOAD SPEEDS. "UL" COLUMN SHOWS UPLOAD SPEEDS (IN MEGABITS PER SECOND). LATENCY VALUES ARE IN MILLISECONDS. **COMPARABILITY:** PREVIOUS REPORTS FEATURED **MEAN** VALUES (NOT **MEDIAN** VALUES), SO VALUES SHOWN HERE ARE **NOT** COMPARABLE WITH PREVIOUS REPORTS.

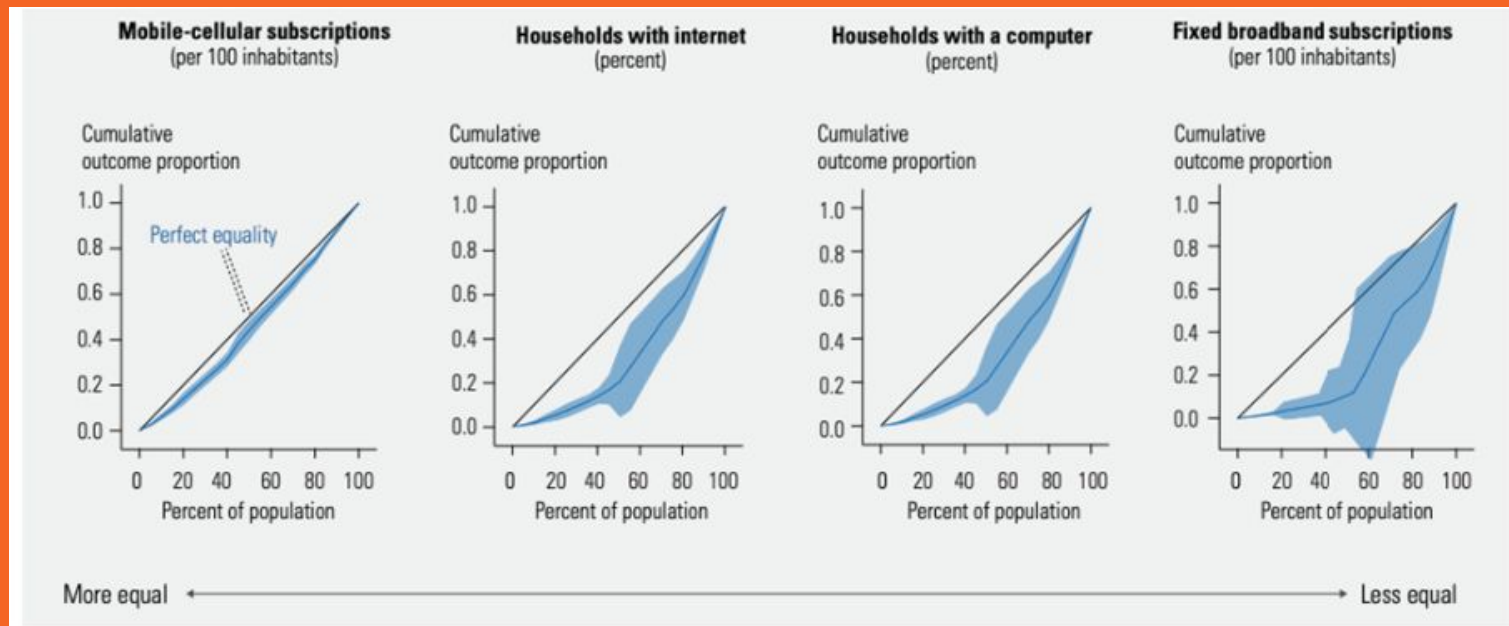
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Note: Data are simple averages across human development groups.

Note that for advanced technologies and more intensives ICTs, inequalities are much greater. See Figure 25.



Note: Shaded areas are 95% confidence intervals.

At the **second level** of Digital inequalities, various barriers (economic, age, gender, linguistic, educational, cultural, and geographic) prevent or hinder individuals and groups from accessing relevant content and technologies. This second level of digital exclusion is a significant problem in the Global South, particularly in the Covid-19 pandemic, where many services and activities have become available only online.

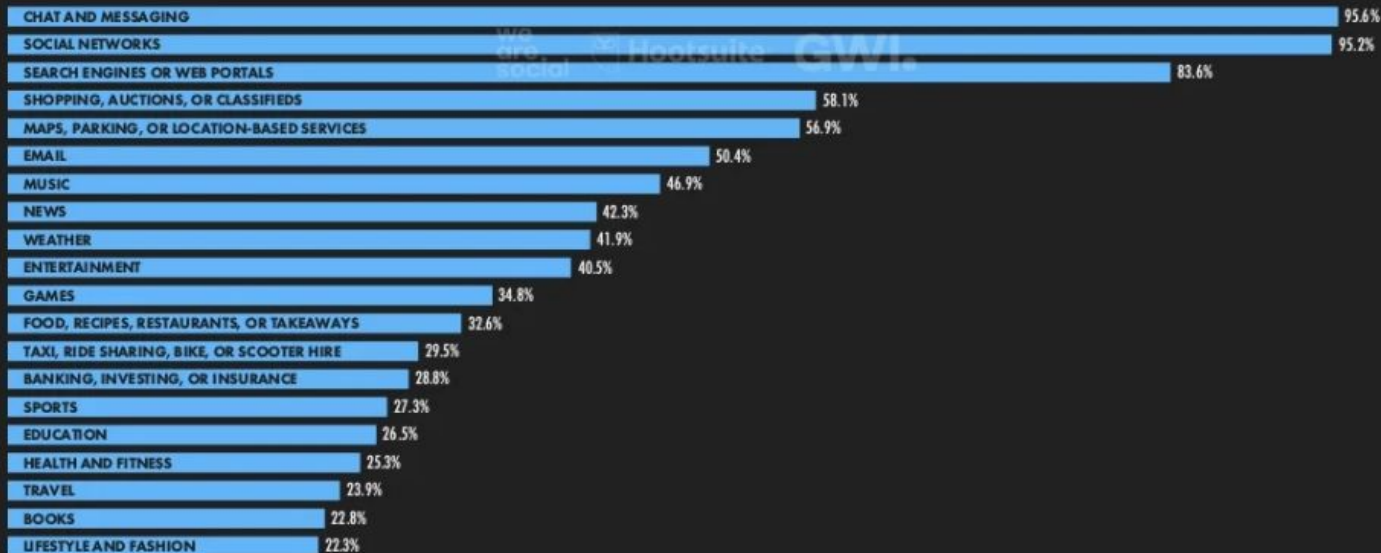
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TOP TYPES OF WEBSITES VISITED AND APPS USED

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO HAVE VISITED OR USED EACH KIND OF DIGITAL PROPERTY IN THE PAST MONTH



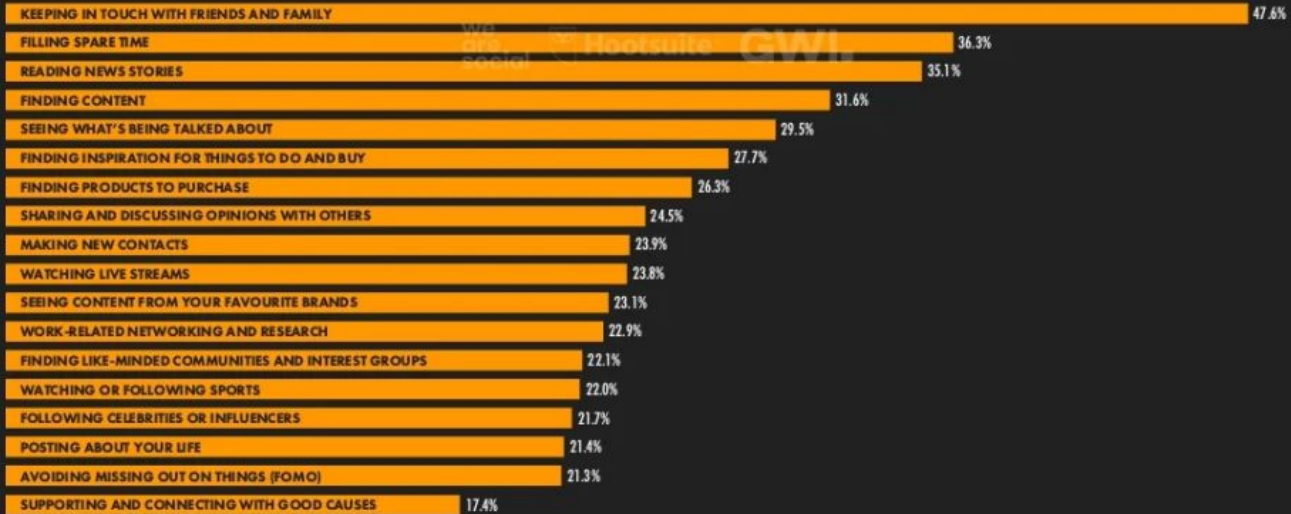
GLOBAL OVERVIEW



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MAIN REASONS FOR USING SOCIAL MEDIA

PRIMARY REASONS WHY INTERNET USERS AGED 16 TO 64 USE SOCIAL MEDIA PLATFORMS



98

SOURCE: GWI (Q3 2021). FIGURES REPRESENT THE FINDINGS OF A BROAD GLOBAL SURVEY OF INTERNET USERS AGED 16 TO 64. SEE [GWI.COM](https://www.gwi.com) FOR FULL DETAILS.

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MOST POPULAR VIDEO GAME FORMATS

PERCENTAGE OF INTERNET USERS WHO PLAY EACH GENRE OF VIDEO GAME ON ANY DEVICE



16 TO 24 YEARS OLD		25 TO 34 YEARS OLD		35 TO 44 YEARS OLD		45 TO 54 YEARS OLD		55 TO 64 YEARS OLD	
SHOOTER	60%	SHOOTER	57%	SHOOTER	48%	SHOOTER	35%	PUZZLE PLATFORM	23%
ACTION ADVENTURE	56%	ACTION ADVENTURE	54%	ACTION ADVENTURE	46%	ACTION ADVENTURE	35%	ACTION ADVENTURE	21%
SIMULATION	39%	RACING	40%	RACING	35%	PUZZLE PLATFORM	27%	SHOOTER	21%
RACING	38%	SIMULATION	38%	PUZZLE PLATFORM	34%	RACING	26%	RACING	15%
BATTLE ROYALE	36%	SPORTS	38%	SPORTS	33%	SIMULATION	24%	SPORTS	15%
M.O.B.A.	36%	M.O.B.A.	36%	SIMULATION	32%	SPORTS	23%	SIMULATION	15%
STRATEGY	34%	PUZZLE PLATFORM	36%	STRATEGY	31%	STRATEGY	22%	STRATEGY	15%
SPORTS	34%	STRATEGY	36%	ACTION PLATFORM	28%	ACTION PLATFORM	20%	ONLINE BOARD GAMES	14%
PUZZLE PLATFORM	33%	FIGHTING	34%	FIGHTING	28%	M.O.B.A.	20%	ACTION PLATFORM	13%
ACTION PLATFORM	31%	ACTION PLATFORM	33%	M.O.B.A.	28%	FIGHTING	19%	FREE-TO-PLAY CASINO	13%

70

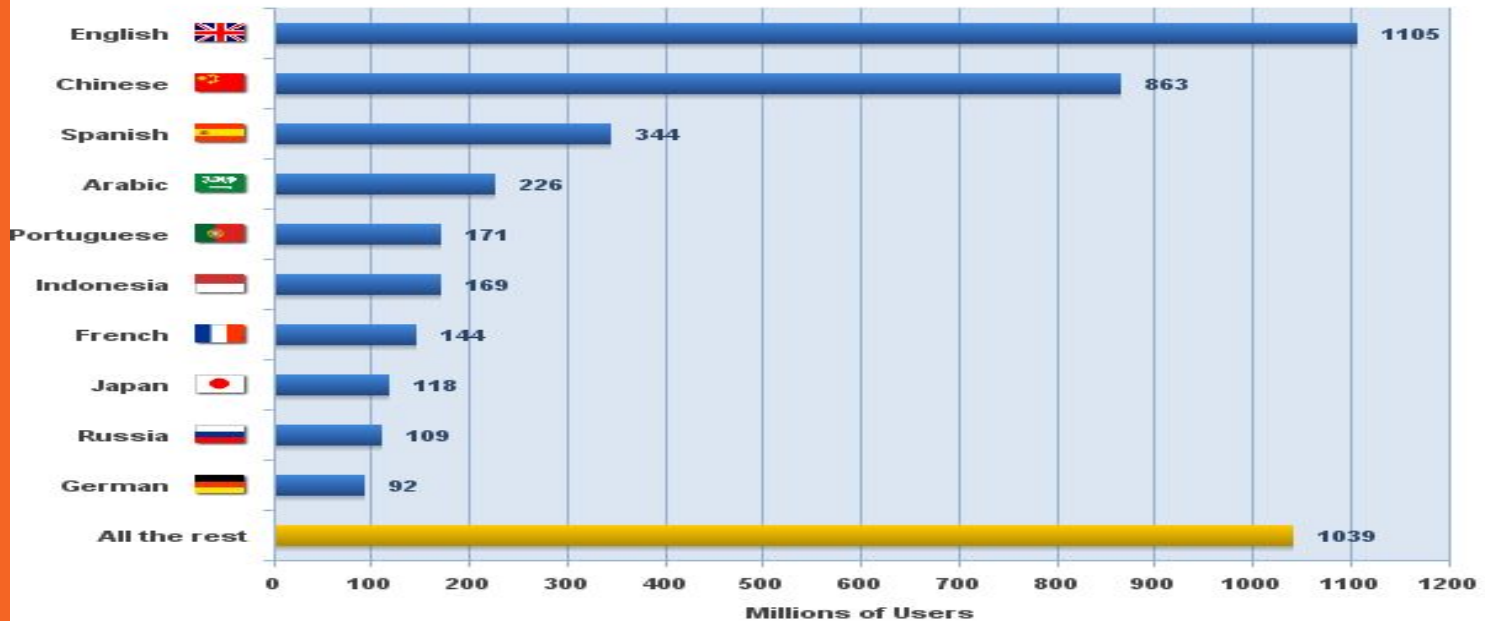
SOURCE: GWI (Q3 2021). FIGURES REPRESENT THE FINDINGS OF A BROAD, GLOBAL SURVEY OF INTERNET USERS AGED 16 TO 64. SEE [GWI.COM](https://www.gwi.com) FOR FULL DETAILS.
NOTE: PERCENTAGES REPRESENT SHARE OF ALL INTERNET USERS IN EACH AGE GROUP, INCLUDING THOSE WHO DO NOT PLAY VIDEO GAMES.

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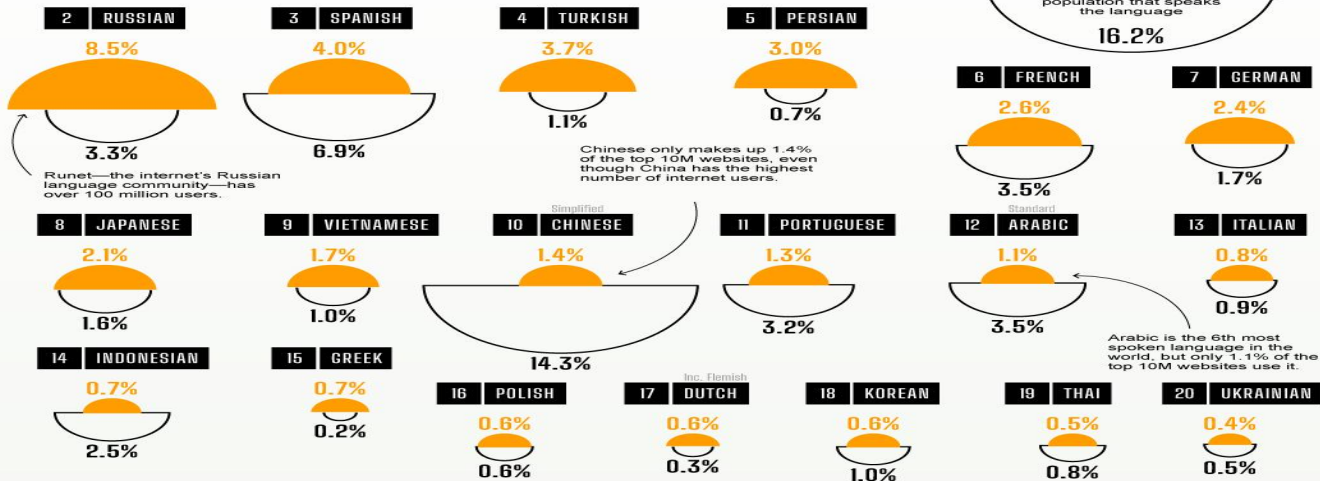
Top Ten Languages in the Internet in Millions of users - April 2019



Source: Internet World Stats - www.internetworldstats.com/stats7.htm
Estimated total Internet users are 4,386,485,541 in April 30, 2019
Copyright © 2019, Miniwatts Marketing Group

Most Commonly Used Languages ON THE INTERNET

Here's a look at the most commonly used languages on the web, and how they compare to the world's population of speakers.



Based on the top 10 million websites by traffic rankings from Alexa.com
Source: W3Techs, Ethnologue, and the United Nations via Hootsuite

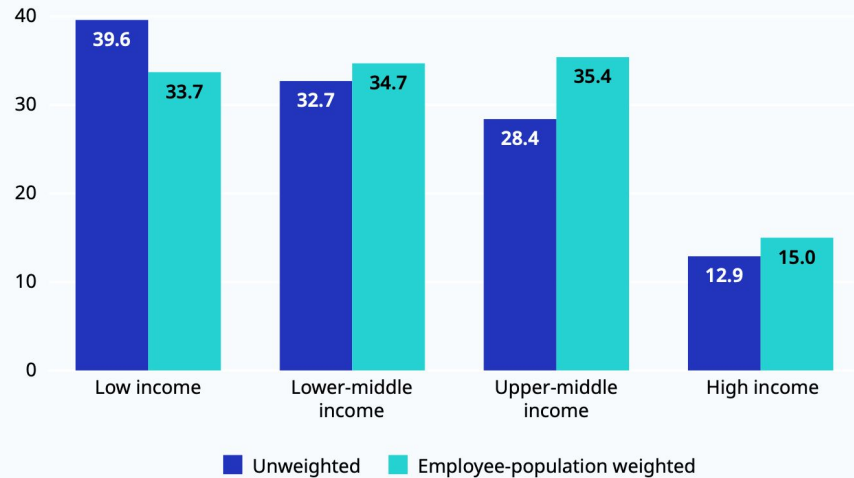


At the **third level** of Digital inequalities, women, young, non-white people, and older people are exposed to different levels of risk regarding unemployment, exploitation at work, school exclusion, and the violation of online rights (from privacy to moral and physical integrity).

Impact of COVID-19

- More than 470 million cases and 6 million deaths
 - Rich countries response: US\$ 14.9 trillion
 - Emerging countries response: US\$ 2.7 trillion
-

► **Figure 3.3 Temporary employees as a proportion of all employees, by country income group (percentages)**



Note: Latest year of available data within the period 2011–19 for countries with available annual data. See note to figure 3.2.

Source: ILOSTAT database.

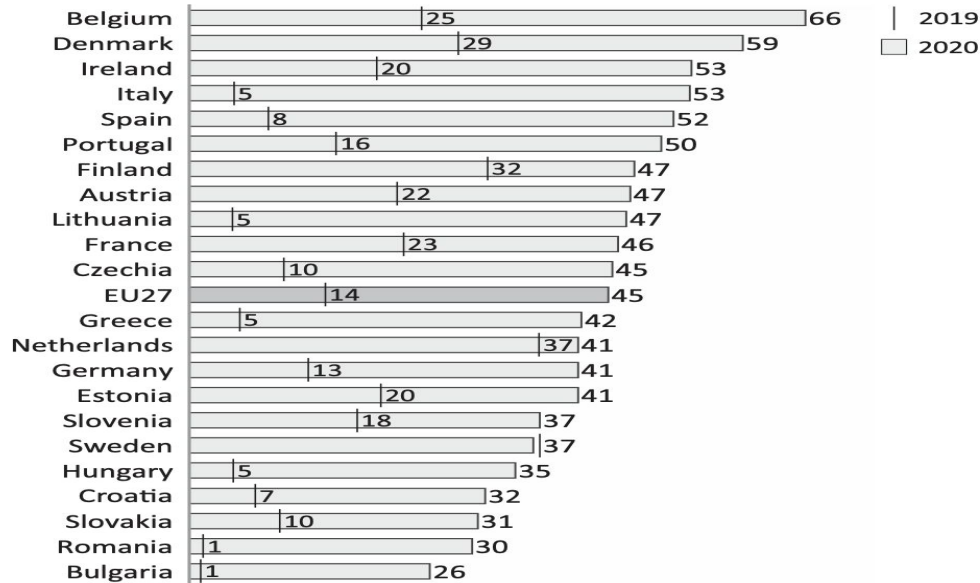
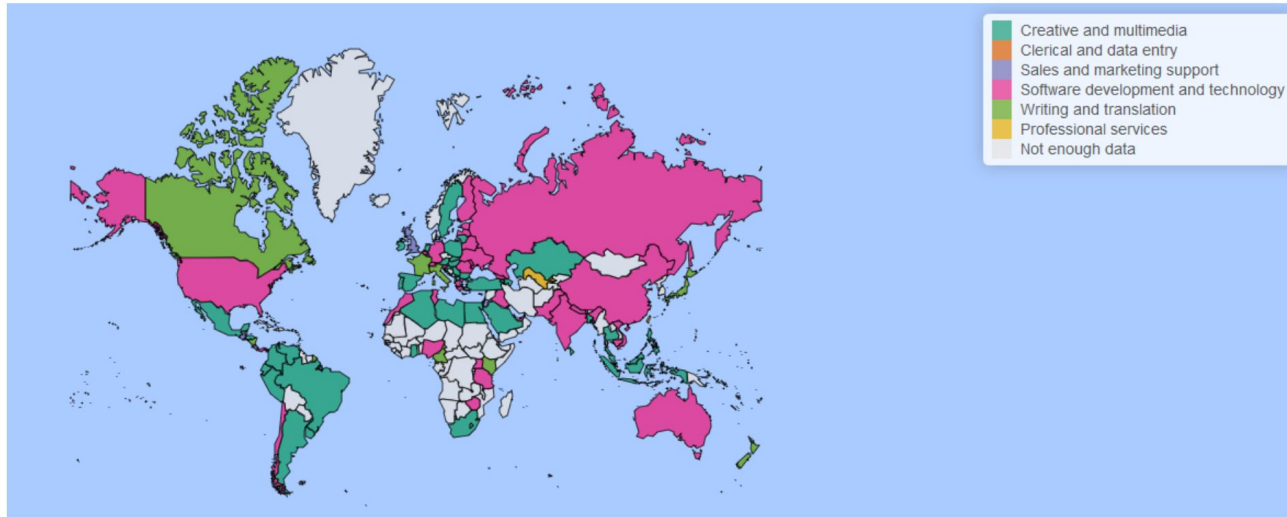


Figure 7.9 Percentage of employed individuals working remotely before (2019) and during (2020) Covid-19 pandemics (in %, EU countries with available data, 2019 and 2020).

Source: Own work based on Eurofound data (2020) [% of ‘Yes’ answers for: During the Covid-19 pandemic, where did you work? – At home] and Eurostat data (2019) [Employed persons working from home – Usually and Sometimes, [lfsa_ehomp]].

Figure 3. Top occupations by country of origin



Source: Online Labour Index

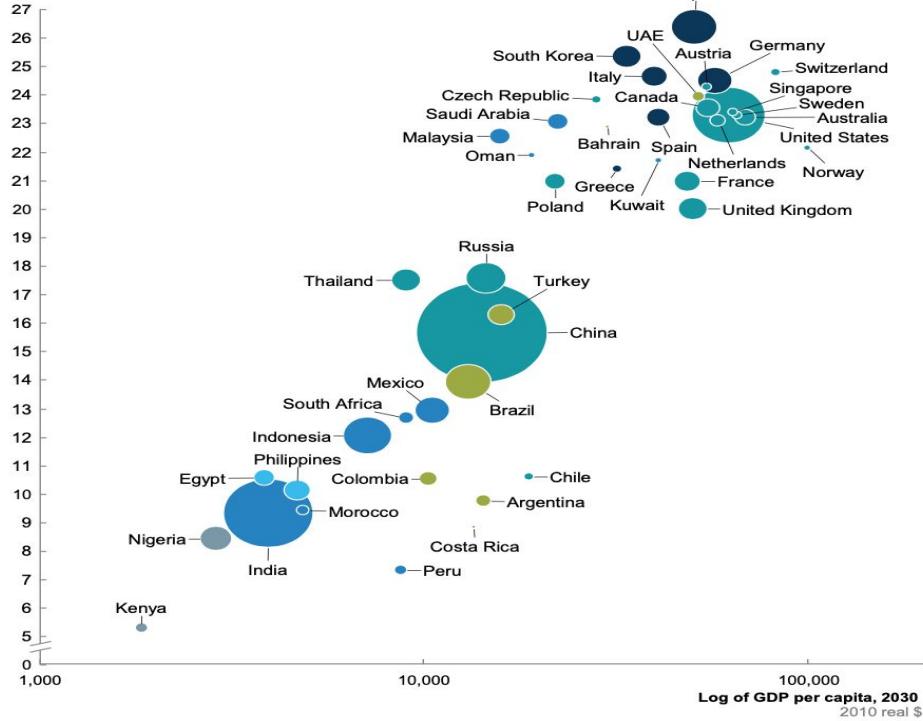
Impact of automation varies by a country's income level, demographics, and industry structure

Size = FTEs potentially displaced, 2030 (million)

Color = Average age (projected), 2030

- <25
- 30-35
- 40-45
- 25-30
- 35-40
- 45-50

Percentage of current work activities displaced by automation, 2016-30, midpoint adoption scenario



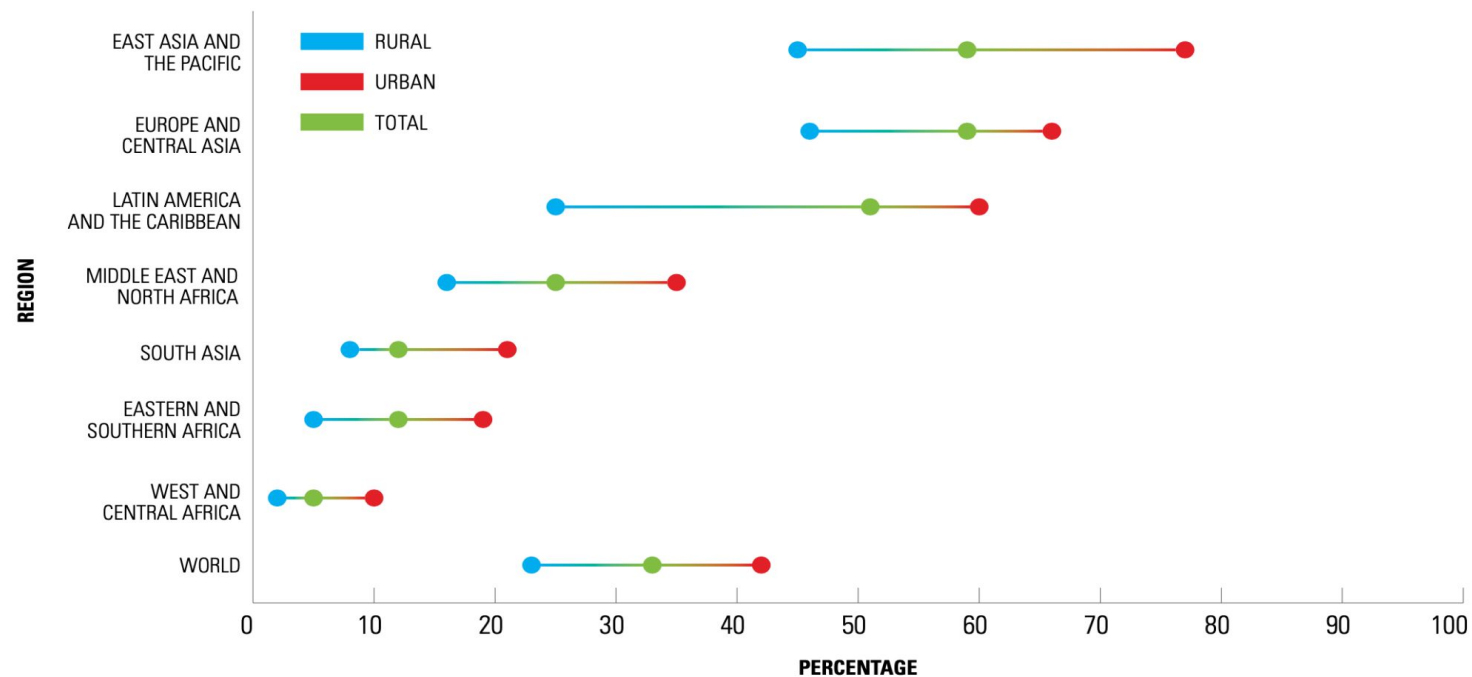
Alianza del Pacífico: Indicadores de capital humano especializado, último año disponible

Indicador	Chile	Colombia	México	Perú
Porcentaje de graduados en educación terciaria en programas de Tecnologías de Información y Comunicación	2,92%	4,99%	5,38%	5,79%
Porcentaje de graduados en educación terciaria en programas de Ciencia, Tecnología, Ingeniería y Matemáticas (STEM)	20,47%	23,66%	25,24%	29,64%
Cantidad de graduados en STEM (por 1,000,000 habitantes)	2 619	2 237	1 602	2 246
Desarrolladores de Software (% población)*	0,23%	0,10%	0,11%	0,09%

Fuente: United Nations Educational, Scientific and Cultural Organization (UNESCO) (2020), "UNESCO statistics" [en línea], <http://data.uis.unesco.org/>.

Nota: * El dato de desarrolladores de Software (% población) data de 2016.

FIGURE 9: Share of school-age children with internet access at home, by region and by area



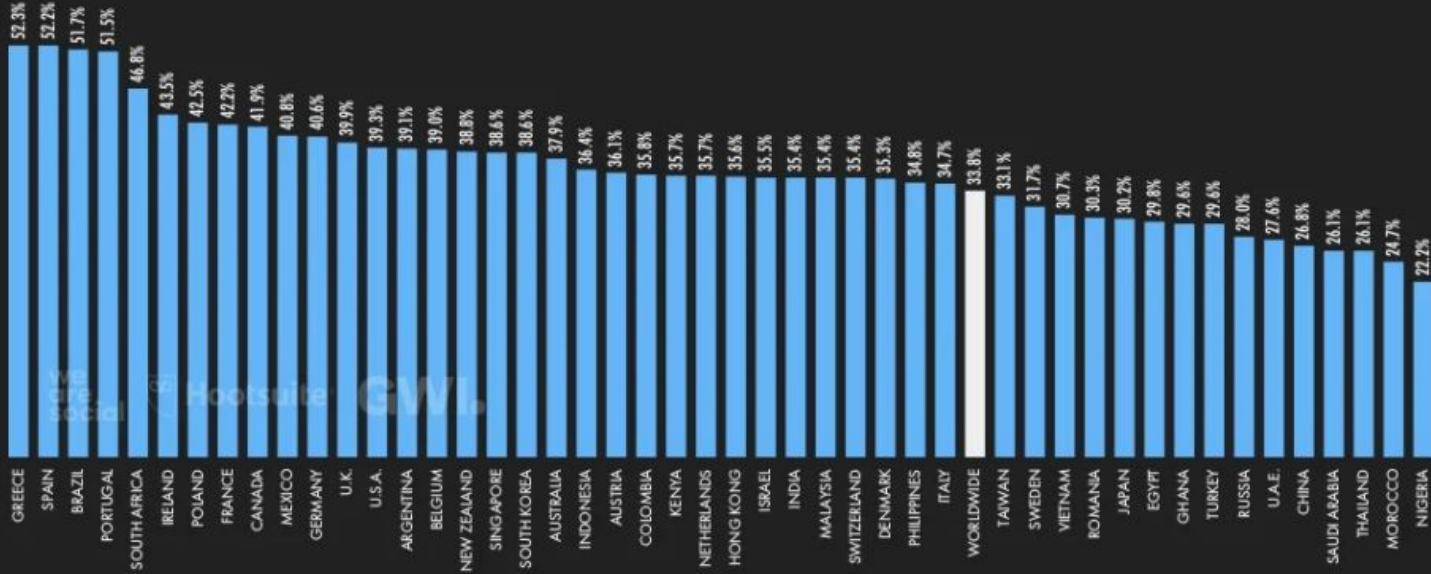
Note: Elaborated based on available Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) data, 2010-2020. (source: Wang et al.2021). Data are aggregated by UNICEF Regional Offices.

Source: UNICEF. 2021. Reopening with resilience: Lessons from remote learning during COVID-19.

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CONCERNS ABOUT MISUSE OF PERSONAL DATA

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO ARE WORRIED ABOUT HOW COMPANIES USE THEIR PERSONAL DATA ONLINE



The **governance** challenges of the Digital Age are local, national and international. For example, at the **local** level, social movements compete for digital resources, such as access to the internet and online public services. In different **countries**, laws and policies on internet governance, access to information, privacy, cybersecurity, and data location are examples of disputes that demand organization and energy. **Internationally**, states and oligopolistic platforms compete and exercise gatekeeping powers in areas critical to a global digital regime, such as taxation, e-commerce, AI development, data flows, and internet protocols.

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OVERVIEW OF CONSUMER GOODS ECOMMERCE

HEADLINES FOR THE ADOPTION AND USE OF CONSUMER GOODS ECOMMERCE (B2C ONLY)



NUMBER OF PEOPLE
PURCHASING CONSUMER
GOODS VIA THE INTERNET



3.78
BILLION

YEAR-ON-YEAR CHANGE
+10% (+344 MILLION)

TOTAL ANNUAL SPEND
ON ONLINE CONSUMER
GOODS PURCHASES (USD)



\$3.85
TRILLION

YEAR-ON-YEAR CHANGE
+18% (+\$591 BILLION)

AVERAGE ANNUAL REVENUE
PER CONSUMER GOODS
ECOMMERCE USER (USD)



\$1,017

YEAR-ON-YEAR CHANGE
+7.4% (+\$69.92)

SHARE OF CONSUMER GOODS
ECOMMERCE SPEND ATTRIBUTABLE TO
PURCHASES MADE VIA MOBILE PHONES



60.1%

YEAR-ON-YEAR CHANGE
+1.0% (+62 BPS)

244

SOURCE: STATISTA DIGITAL MARKET OUTLOOK. SEE [STATISTA.COM](https://www.statista.com) FOR MORE DETAILS. NOTES: "CONSUMER GOODS" INCLUDE ELECTRONICS, FASHION, FURNITURE, TOYS, HOBBY, DIY, BEAUTY, CONSUMER HEALTHCARE, PERSONAL CARE, HOUSEHOLD CARE, FOOD, BEVERAGES, AND PHYSICAL MEDIA. FIGURES REPRESENT ESTIMATES FOR FULL-YEAR 2021, AND COMPARISONS WITH EQUIVALENT VALUES FOR THE PREVIOUS CALENDAR YEAR. FINANCIAL VALUES ARE IN U.S. DOLLARS. PERCENTAGE CHANGE VALUES ARE RELATIVE (I.E. AN INCREASE OF 20% FROM A STARTING VALUE OF 50% WOULD EQUAL 60%, NOT 70%). "BPS" VALUES REPRESENT BASIS POINTS, AND INDICATE ABSOLUTE CHANGE. **COMPARABILITY:** BASE AND CATEGORY DEFINITION CHANGES. FIGURES ARE **NOT COMPARABLE** WITH PREVIOUS REPORTS.

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OVERVIEW OF CONSUMER DIGITAL PAYMENTS

HEADLINES FOR THE ADOPTION AND USE OF DIGITALLY ENABLED PAYMENT SERVICES BY END CONSUMERS



NUMBER OF
PEOPLE MAKING
DIGITAL PAYMENTS



statista

3.82
BILLION

YEAR-ON-YEAR CHANGE
IN THE NUMBER OF PEOPLE
MAKING DIGITAL PAYMENTS



+10.0%
+348 MILLION

TOTAL ANNUAL VALUE
OF DIGITAL PAYMENT
TRANSACTIONS (USD)



statista

\$6.75
TRILLION

YEAR-ON-YEAR CHANGE
IN THE VALUE OF DIGITAL
PAYMENT TRANSACTIONS



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+24.5%
+\$1.3 TRILLION

AVERAGE ANNUAL VALUE
OF DIGITAL PAYMENTS
PER USER (USD)



\$1,766
YOY: **+13%**

256

SOURCE: STATISTA DIGITAL MARKET OUTLOOK. SEE [STATISTA.COM](https://www.statista.com) FOR MORE DETAILS. **NOTES:** "DIGITAL PAYMENTS" INCLUDE MOBILE P.O.S. PAYMENTS (E.G. PAYMENTS VIA APPLE PAY OR SAMSUNG PAY), B2C DIGITAL COMMERCE, AND B2C DIGITAL REMITTANCES. VALUES DO NOT INCLUDE B2B TRANSACTIONS. FIGURES REPRESENT ESTIMATES FOR FULL-YEAR FOR 2021, AND COMPARISONS WITH EQUIVALENT VALUES FOR THE PREVIOUS CALENDAR YEAR. FINANCIAL VALUES ARE IN U.S. DOLLARS. PERCENTAGE CHANGE VALUES ARE RELATIVE (I.E. AN INCREASE OF 20% FROM A STARTING VALUE OF 50% WOULD EQUAL 60%, NOT 70%). "BPS" VALUES REPRESENT BASIS POINTS, AND INDICATE ABSOLUTE CHANGE. **COMPARABILITY:** BASE CHANGES. FIGURES ARE **NOT COMPARABLE** WITH PREVIOUS REPORTS.

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SHARE OF THE DIGITAL ADVERTISING MARKET

SHARE OF WORLDWIDE DIGITAL AD SPEND ATTRIBUTABLE TO THE INDUSTRY'S LARGEST PLAYERS



GLOBAL SPEND ON
DIGITAL ADVERTISING



\$466 BILLION

YEAR-ON-YEAR CHANGE
+17% (+\$67 BILLION)

GLOBAL DIGITAL AD SPEND
vs. TOTAL GLOBAL AD SPEND



66.9%

YEAR-ON-YEAR CHANGE
+4.7% (+299 BPS)

GOOGLE'S SHARE OF
GLOBAL DIGITAL AD SPEND



28.6%

YEAR-ON-YEAR CHANGE
+4.0% (+110 BPS)

META'S SHARE OF
GLOBAL DIGITAL AD SPEND



23.7%

YEAR-ON-YEAR CHANGE
+6.3% (+140 BPS)

ALIBABA'S SHARE OF
GLOBAL DIGITAL AD SPEND



8.7%

YEAR-ON-YEAR CHANGE
+1.2% (+10 BPS)

AMAZON'S SHARE OF
GLOBAL DIGITAL AD SPEND



5.8%

YEAR-ON-YEAR CHANGE
+11.5% (+60 BPS)

TENCENT'S SHARE OF
GLOBAL DIGITAL AD SPEND



2.9%

YEAR-ON-YEAR CHANGE
[UNCHANGED]

OTHER PLATFORMS' SHARE OF
GLOBAL DIGITAL AD SPEND



30.3%

YEAR-ON-YEAR CHANGE
-9.6% (-320 BPS)

282

SOURCES: STATISTA DIGITAL MARKET OUTLOOK (SEE [STATISTA.COM](https://www.statista.com) FOR MORE DETAILS); BHARKETER. **NOTES:** AD SPEND FIGURES REPRESENT ESTIMATES FOR FULL-YEAR SPEND IN 2021 IN U.S. DOLLARS, AND COMPARISONS WITH 2020 SPEND, NOT INCLUDING REVENUES ASSOCIATED WITH EMAIL MARKETING, AUDIO ADS, INFLUENCER MARKETING, SPONSORSHIPS, PRODUCT PLACEMENT, OR COMMISSION-BASED AFFILIATE SYSTEMS. FIGURES FOR COMPANIES' SHARE OF DIGITAL SPEND INCLUDE ADVERTISING ACROSS ALL INTERNET-CONNECTED DEVICES, NET OF TRAFFIC ACQUISITION COSTS. ALIBABA INCLUDES YOUKU TU DOU; META INCLUDES FACEBOOK AND INSTAGRAM; GOOGLE INCLUDES YOUTUBE. ALL PERCENTAGE CHANGE VALUES ARE RELATIVE. "BPS" VALUES IDENTIFY ABSOLUTE SHARE CHANGE.

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SEARCH ENGINE MARKET SHARE

PERCENTAGE OF TOTAL WEB TRAFFIC REFERRED BY SEARCH ENGINES THAT ORIGINATED FROM EACH SEARCH SERVICE



46

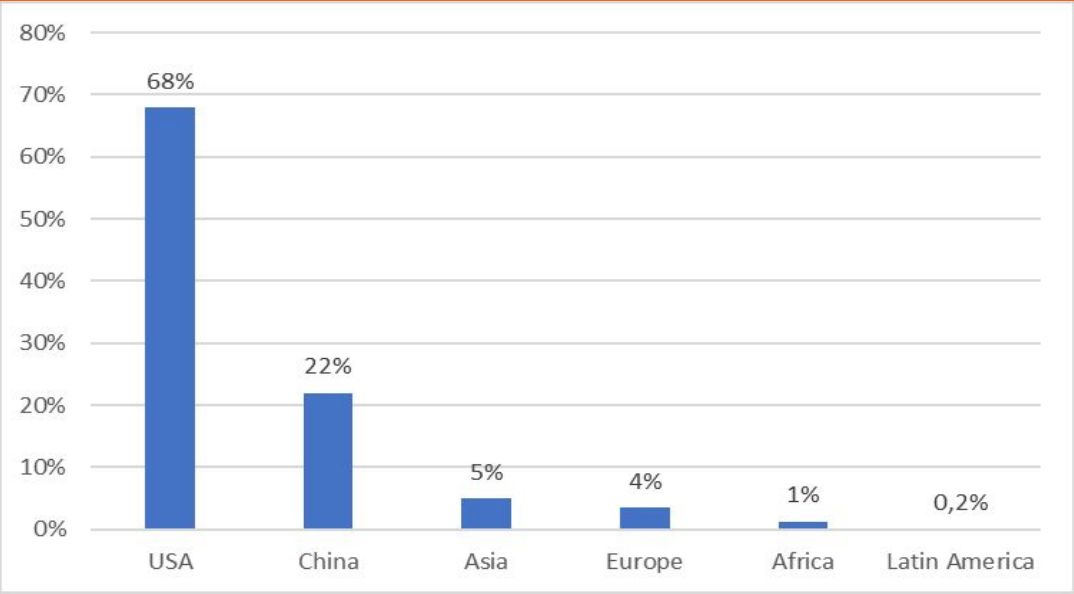
SOURCE: STATCOUNTER. **NOTES:** FIGURES REPRESENT THE NUMBER OF PAGE VIEW REFERRALS ORIGINATING FROM EACH SERVICE AS A PERCENTAGE OF TOTAL PAGE VIEW REFERRALS ORIGINATING FROM SEARCH ENGINES IN NOVEMBER 2021. PERCENTAGE CHANGE VALUES REPRESENT RELATIVE YEAR-ON-YEAR CHANGE (I.E. AN INCREASE OF 20% FROM A STARTING VALUE OF 50% WOULD EQUAL 60%, NOT 70%). "BPS" VALUES REPRESENT BASIS POINTS, AND INDICATE THE ABSOLUTE CHANGE. FIGURES MAY NOT SUM TO 100% DUE TO ROUNDING.

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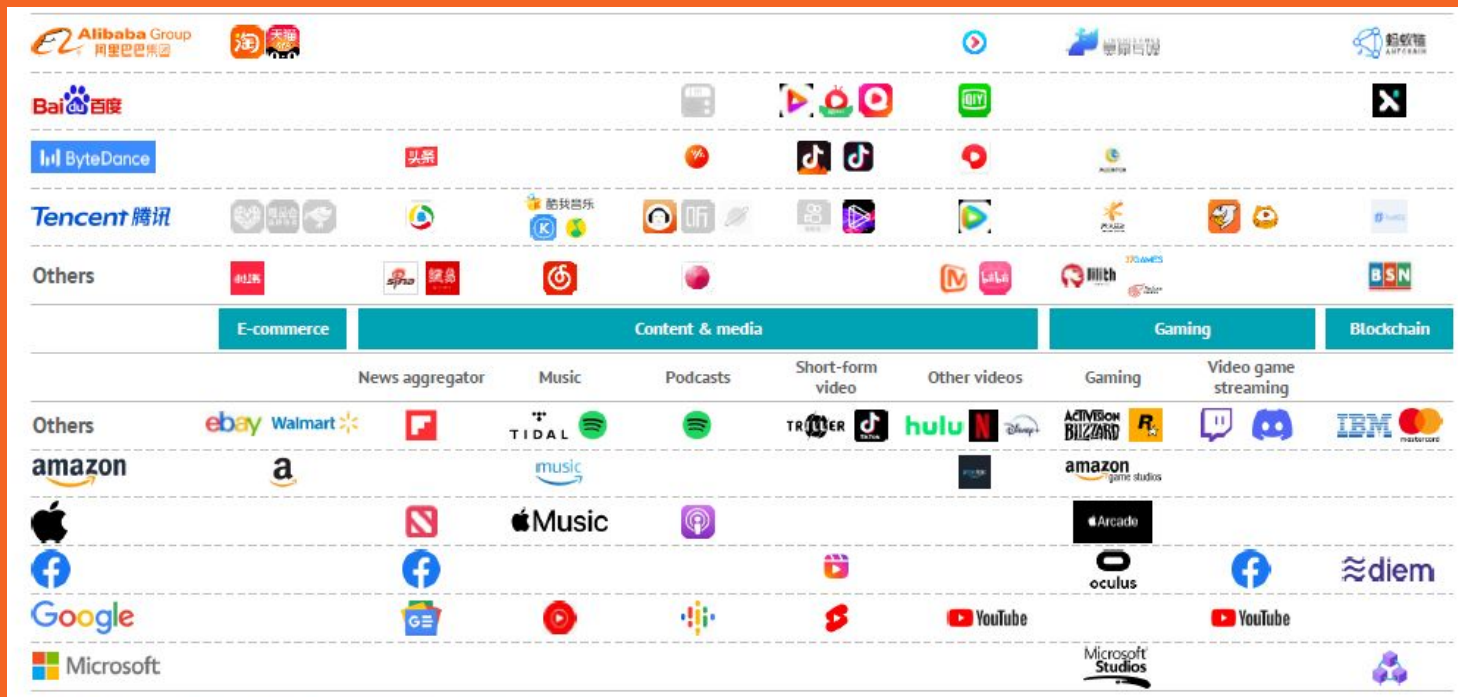
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Market capitalization of 70 largest digital platforms by region (2019)



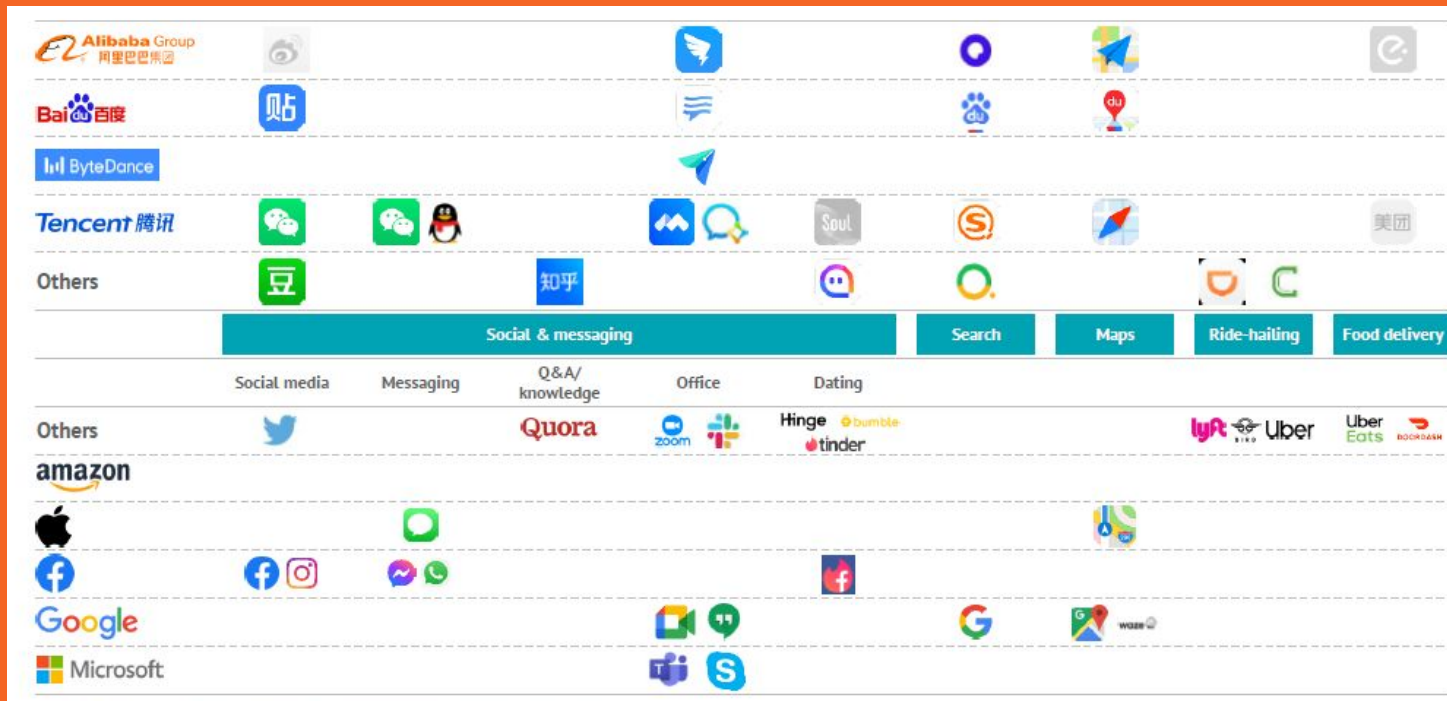
Source: UNCTAD, 2019

Digital Players: China and USA



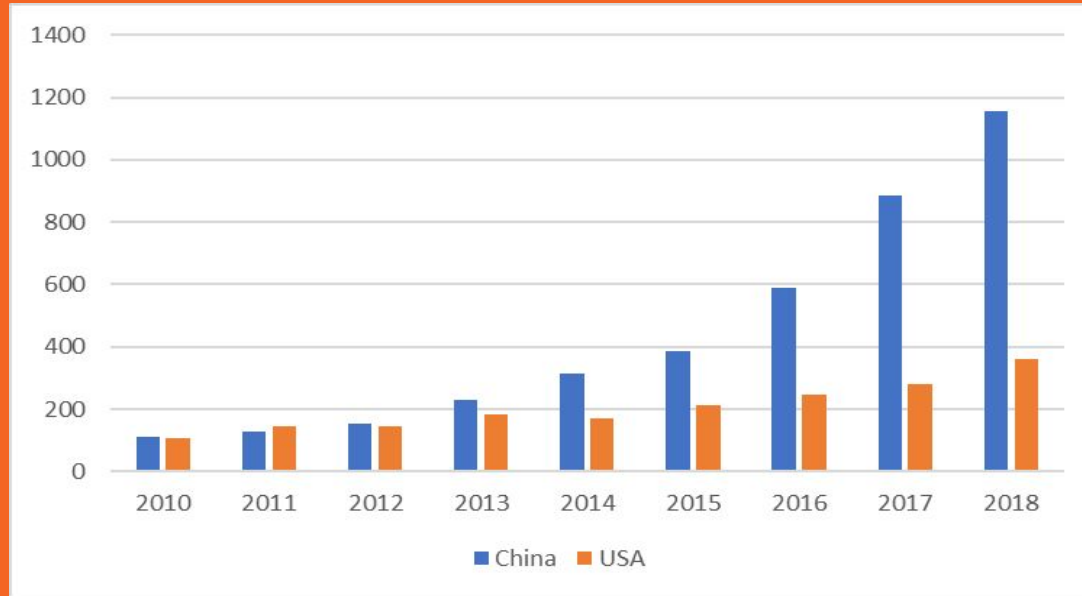
Alibaba Group 阿里巴巴集团	支	花呗	余额宝	蚂蚁保	阿里健康	X P E N G	auton-	METRO 优视	优视
Baidu 百度	爱奇艺	百信银行 AIBANK	度小满理财	100	3D	WELTAPSTER 威立士	小鹏汽车	Baidu 百度	Baidu 百度
ByteDance				大力	h		GCRAFT	ByteDance AI Lab	ByteDance AI Lab
Tencent 腾讯	QQ钱包	微信支付	微众银行	FUTU 富途	水滴	水滴保			Tencent AI Lab
Others		陆金所 Lufax.com	众安保险	高途 Gaotu	当当 Dangdang	理想	滴滴 Didi	ZTE 中兴	中兴
	Fintech			Online education	Healthtech	Smart cars		5G	AI
	Payment	Digital-only banking	Wealthtech	Insurtech		Electric cars	Autonomous cars		
Others	Pay	Varo only	Public	Lincoln NEXT	Khan Academy	amazon pharmacy	ZOOX Aurora	Qualcomm	NVIDIA
amazon	Pay							amazon project kuiper	a
Apple	Apple Pay								Apple
Facebook							WAYMO		FACEBOOK AI
Google	Google Pay								DeepMind Google AI
Microsoft					in LEARNING				Microsoft

Source: SCMP, 2021



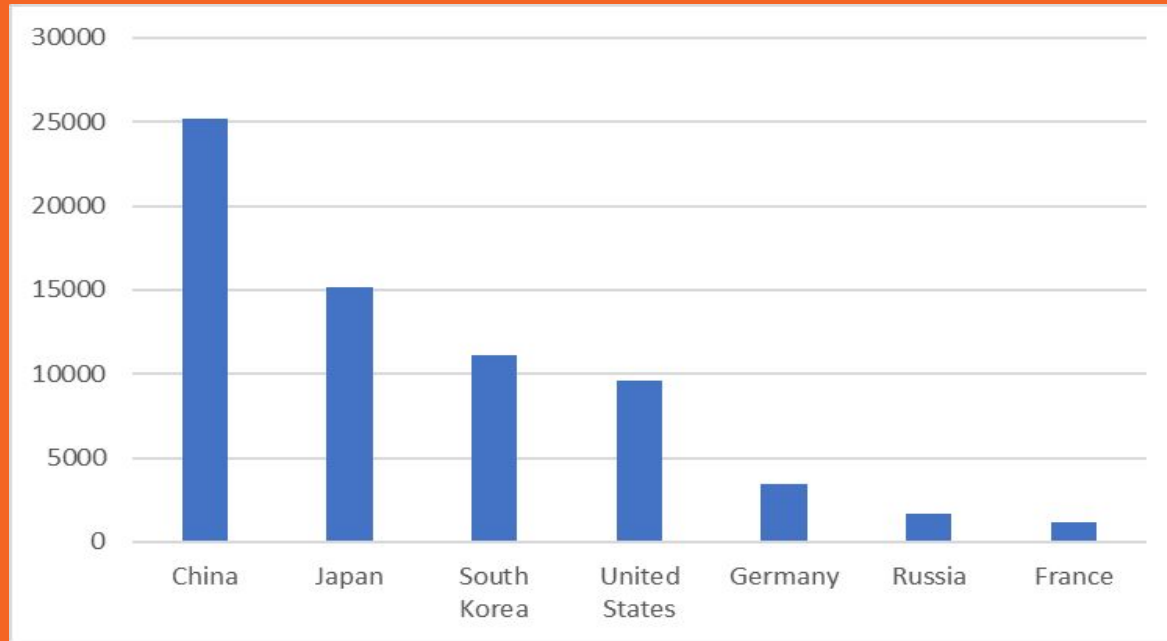
Source: SCMP, 2021

USA and China: quantum patents per year (2010-2018)



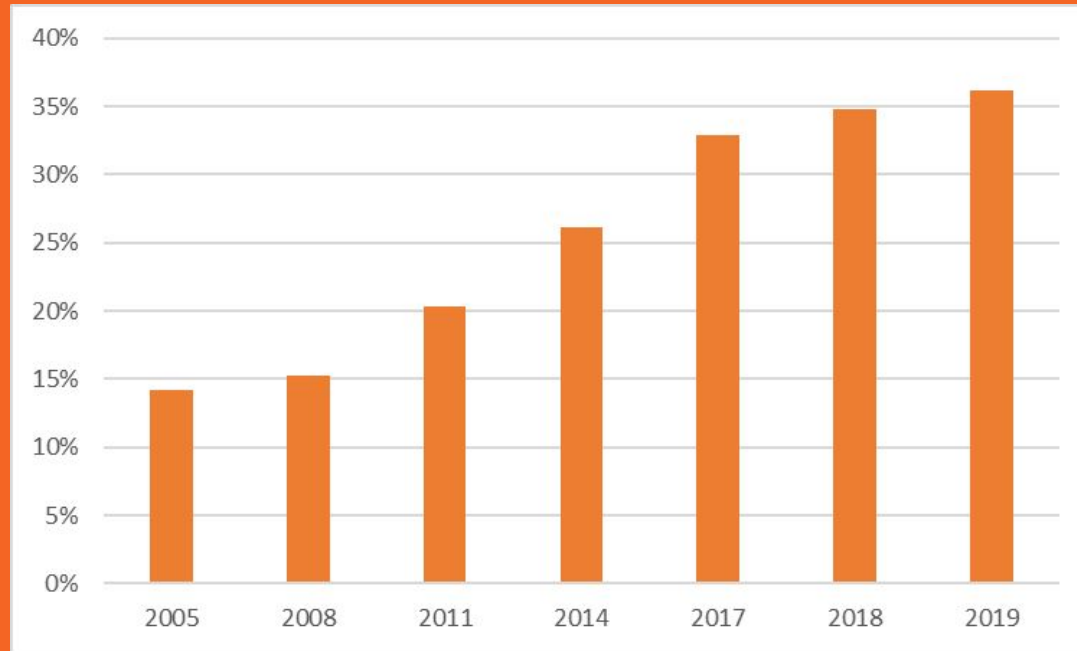
Source: ALLISON et al, 2021

Top 10 countries by granted robotics patents (2005-2019)



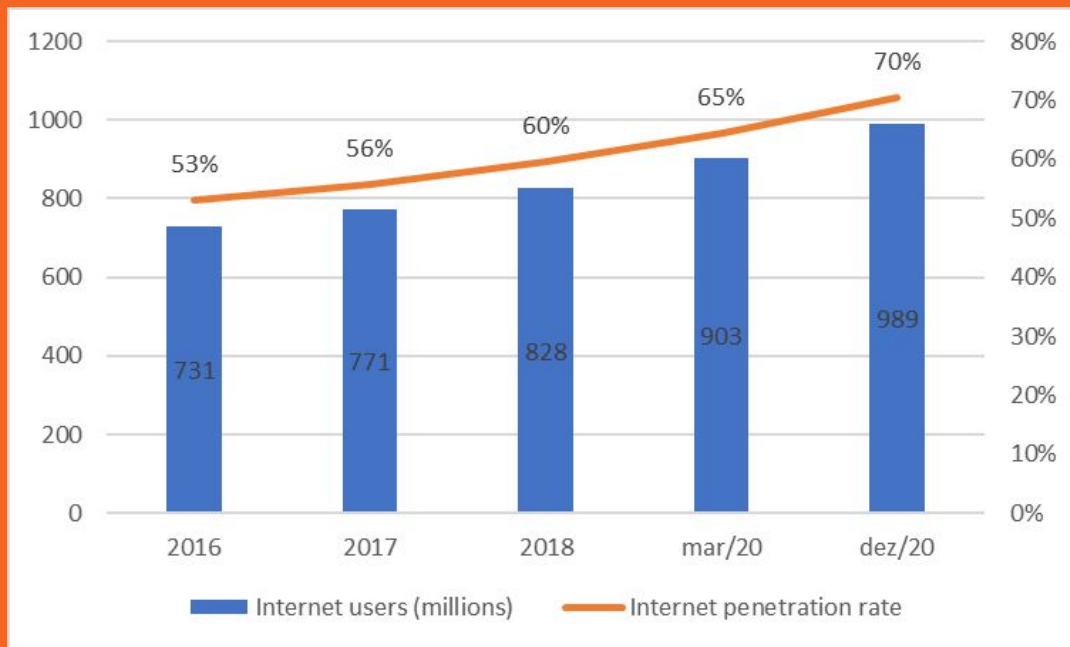
Source: CSET, 2021

Proportion of digital economy in China's GDP



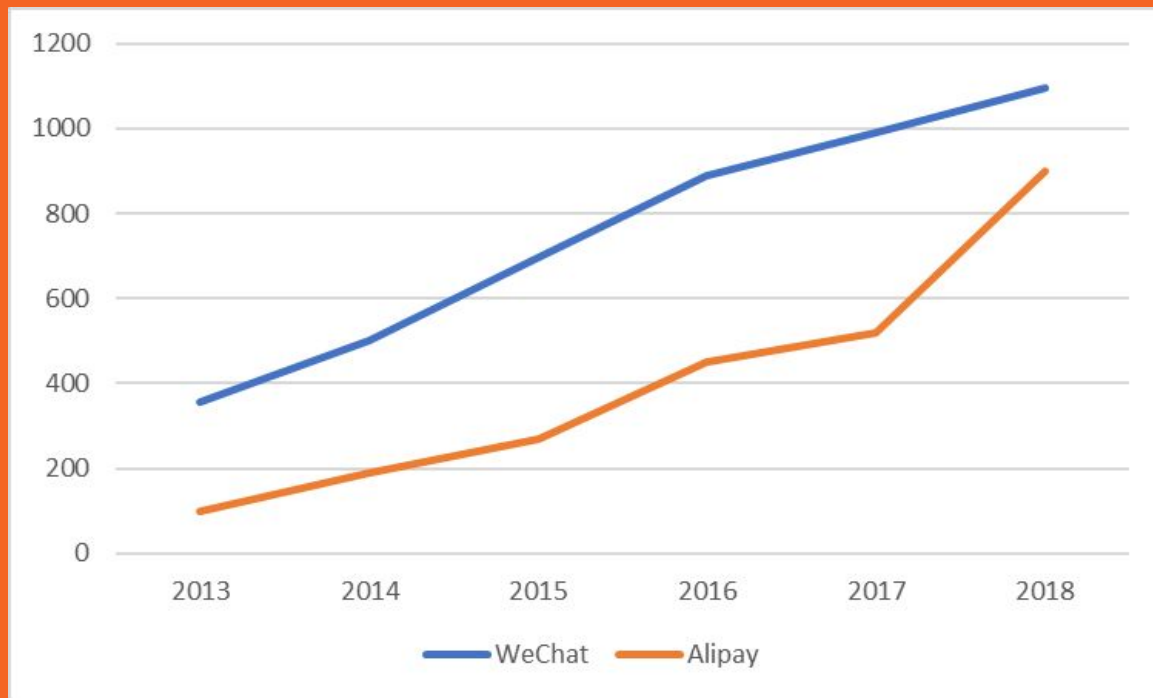
Source: CAICT, 2020

Internet users and penetration rate in China (2016-2020)



Source: CNNIC, 2021

Number of active users of Alipay and WeChat



Source: HUANG et al, 2021



Main Features / Examples

- Land and submarine cables (China Unicom - Global Center HKSAR)
 - 5G cellular and smart cities (Huawei in South Africa and Kenya)
 - Internet Infrastructure (Guangxi "China-ASEAN Information Harbor")
 - Cloud and Big Data (DSR Industrial Alliance with Alibaba and +40)
 - BeiDou Navigation Satellite System (北斗卫星导航系统)
-

Digital Competitiveness Index (2021)

Country	Global rank	Knowledge	Technology	Future Readiness
China	15	6	20	17
Brazil	51	51	55	45
Mexico	56	54	57	51
Chile	39	49	35	36
Argentina	61	55	62	52

Source: Institute for Management Development, 2021

Global Innovation Index (2021)

Country	Overall Ranking	Institutions	Human capital and research	Infra structure	Market sophistication	Business sophistication	Knowledge and technology outputs	Creative outputs
China	12	61	21	24	16	13	4	14
Brazil	57	78	48	69	75	34	51	66
Mexico	55	77	56	67	55	56	53	52
Chile	53	40	51	47	66	48	58	60
Argentina	79	102	50	64	110	57	73	73

Source: World Intellectual Property Organization , 2021

Mobile Connectivity Index (2019)

Country	Index Score	Infrastructure	Affordability	Consumer Readiness	Content and Service
China	76	76.5	68.9	78.2	81
Brazil	63.5	69.8	41.6	77.3	72.5
Mexico	67.6	65.9	58.3	72.4	74.9
Chile	73.2	74	60	86.2	74.5
Argentina	67.2	70.5	46.9	85.0	72.3

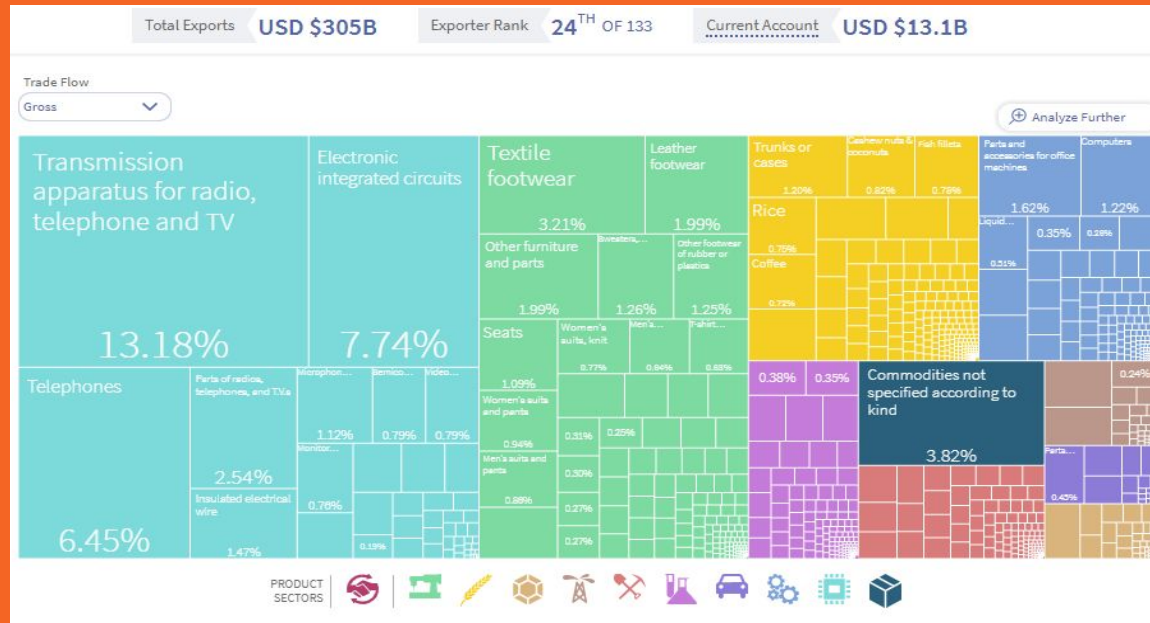
Source: Global System for Mobile Communications Association, 2020

Expenditure on R&D (in billions of current PPP dollars)



Source: UNESCO, 2022

Profile of Vietnamese exports in 2019



Source: Atlas of Economic Complexity, 2022

3. Conclusions

-
- 1. AI driven Digital Transformation will be even more disruptive**
 - 2. Conflicts about wealth and power distribution demand strategy**
 - 3. Investments in digital infrastructure and social value creation**
 - 4. Social protection and education are crucial in the Global South**
 - 5. Global governance for e-commerce, internet, and AI**
-

4. References

Thank You

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