كلية محمد بن راشد للإدارة الحكومية
MOHAMMED BIN RASHID SCHOOL OF GOVERNMENT

Cybersecurity Threats in the Arab Region in the Age of Big Data and 4IR

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UN ESCWA EGM on AarbIGF Internet Governance and Cybersecurity Nexus

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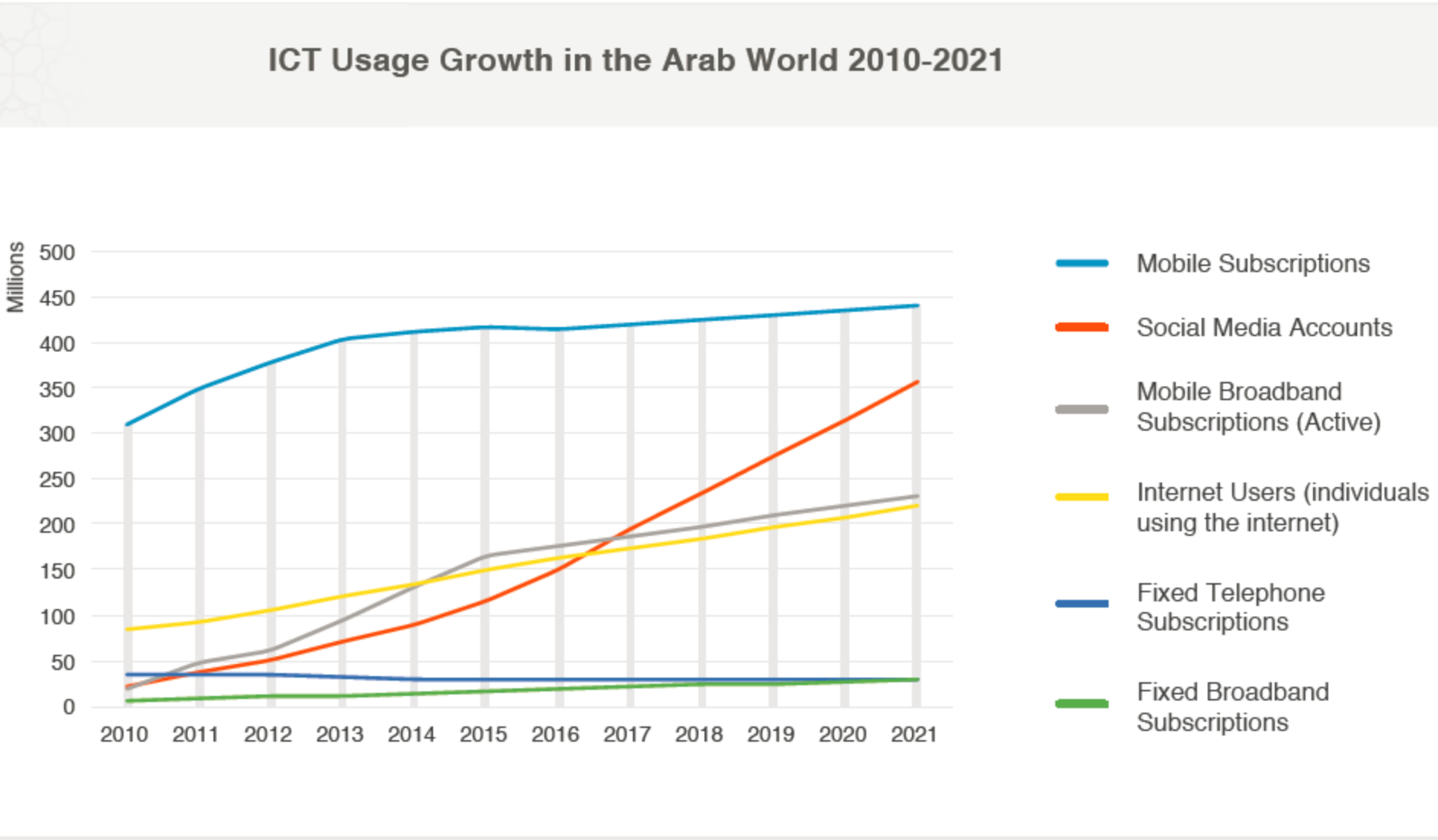
Publications and Policy Think Tank on Digital Transformation

The Decade of Digital Transformation in the Arab Region (2010-2020)



Societal Datafication

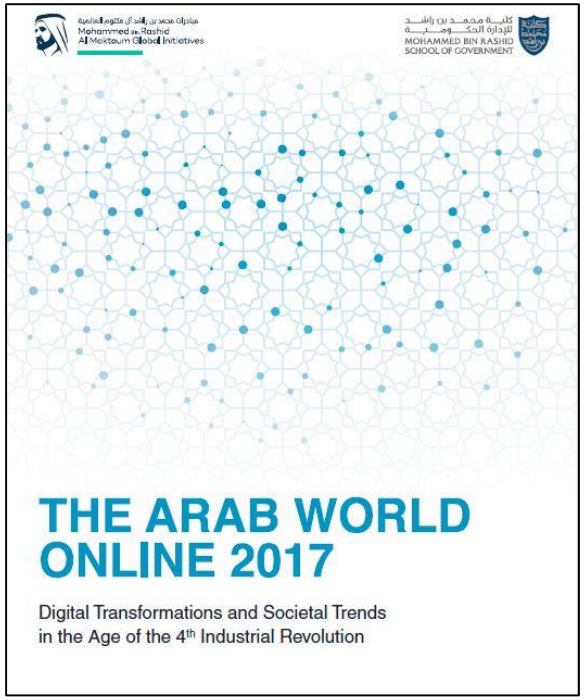
2010-2020:

The Arab World's Decade of Digital Transformation

The Arab World by 2021*:

- **1 Billion** personal "Internet of Things" (IoT) devices
- **100%** mobile penetration
- **80%** social media penetration

- **New Users:**
- **47 million** new internet users (208m)
- **45 million** new mobile broadband users (220m)
- **160 million** new social media users (314m)

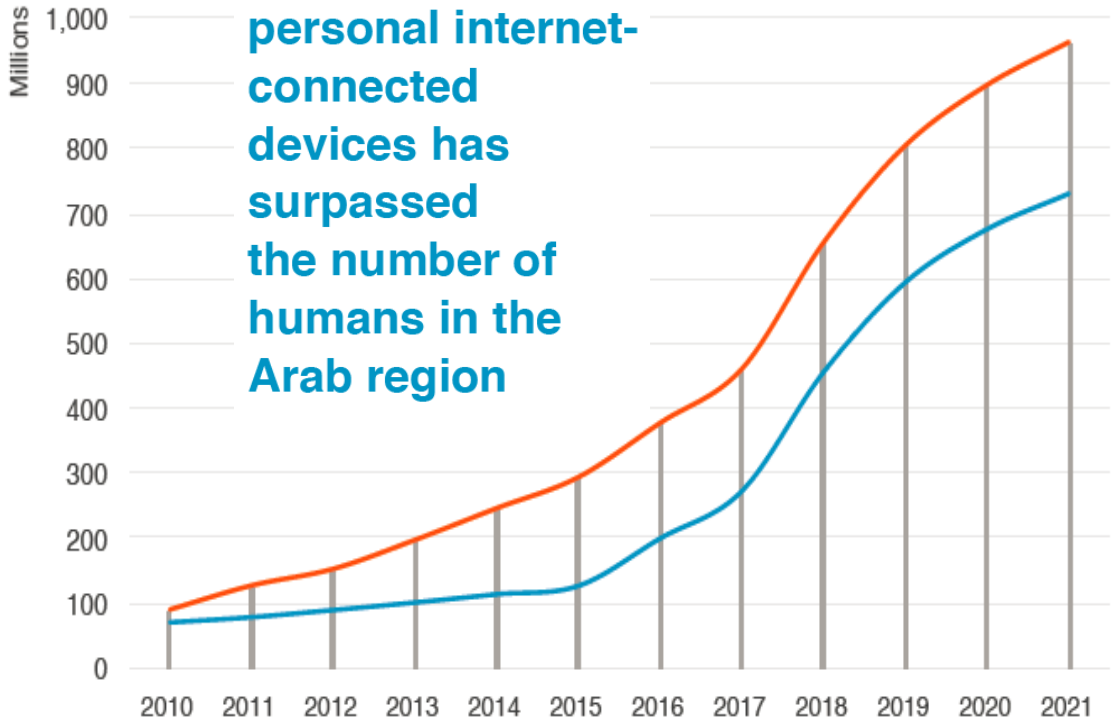


*The Arab World Online 2017 Digital Transformations and Societal Trends in the Age of the 4th Industrial Revolution: https://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2911832

Regional State of Societal IoT

Personal Internet of Things (IoT) Growth in the Arab World 2010-2021

By 2017, the number of personal internet-connected devices has surpassed the number of humans in the Arab region



1.2 Internet devices for each person living in the Arab world today.

The number of personal IoT devices per internet user, in the Arab region is 4.6 devices

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Hybrid Societal Big Data Ecosystems: Social Media and IoT as an Example

Datafied Behaviors (People)

AI/ML

IoT (factual)

Social Media data (subjective)

Fueling Machine Learning : Data generated by the interaction of social networks of people (physical and virtual) and social networks of IoT devices

Arab Social Media Report

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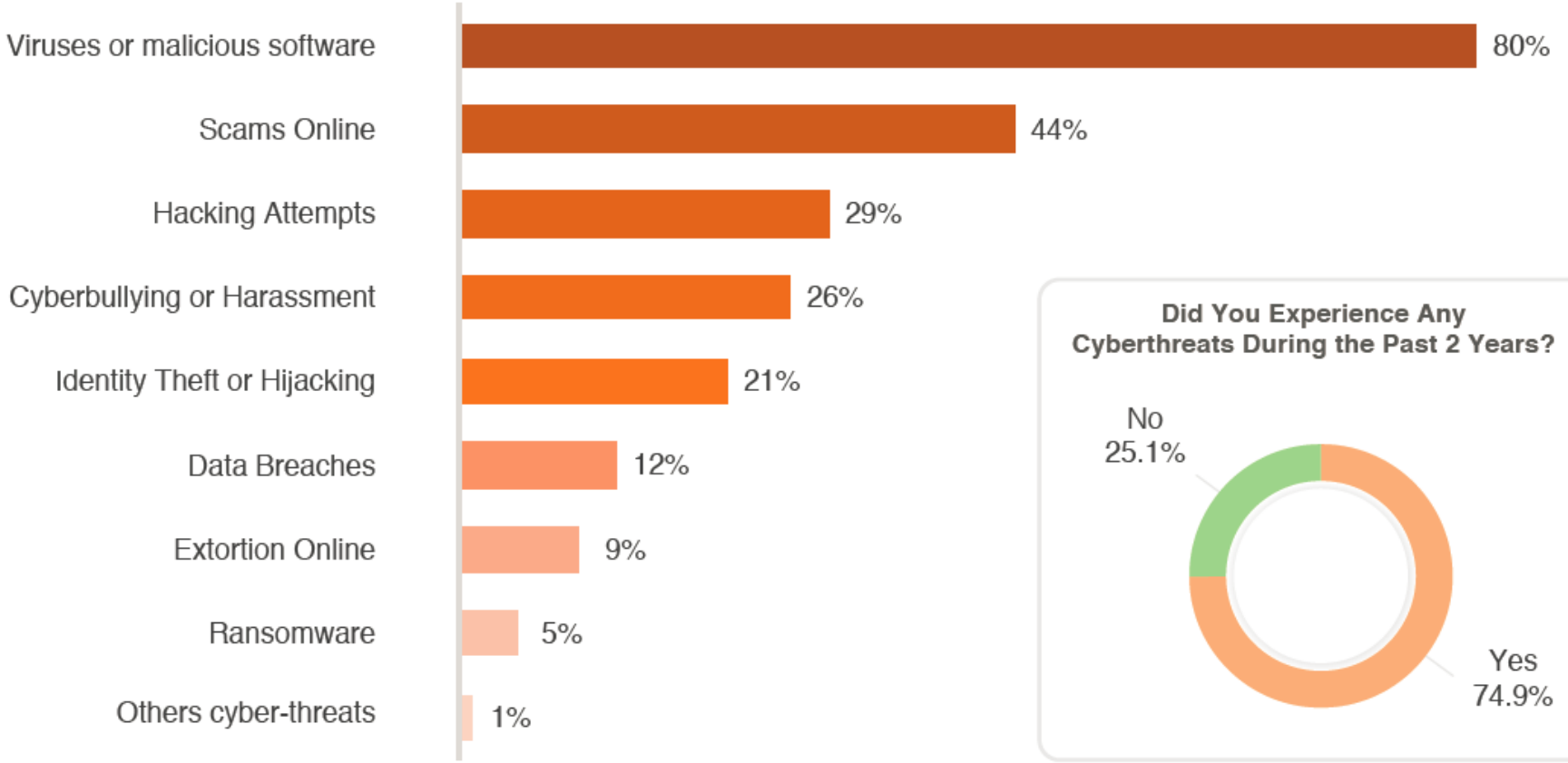
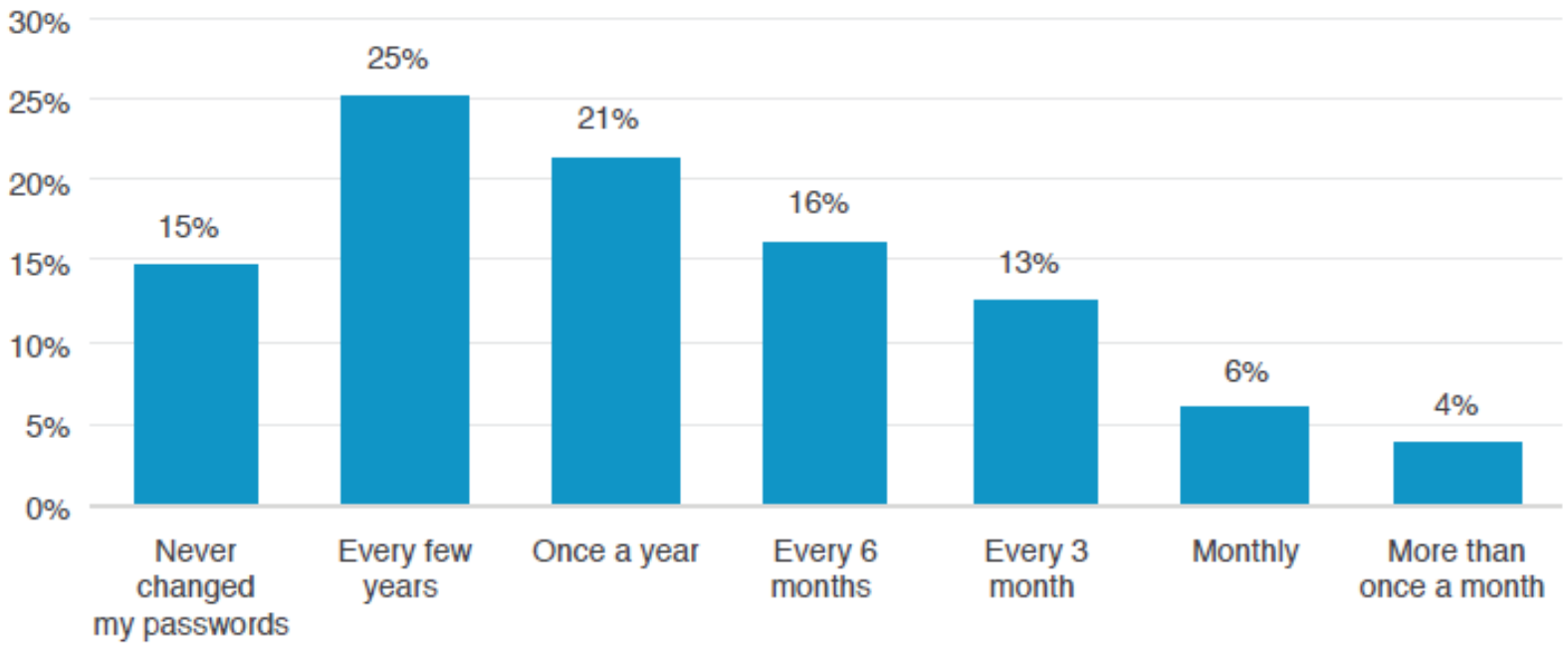
Public Concerns on Big Data & Artificial Intelligence

Cyberthreats Experienced During the Past 2 Years (by type)



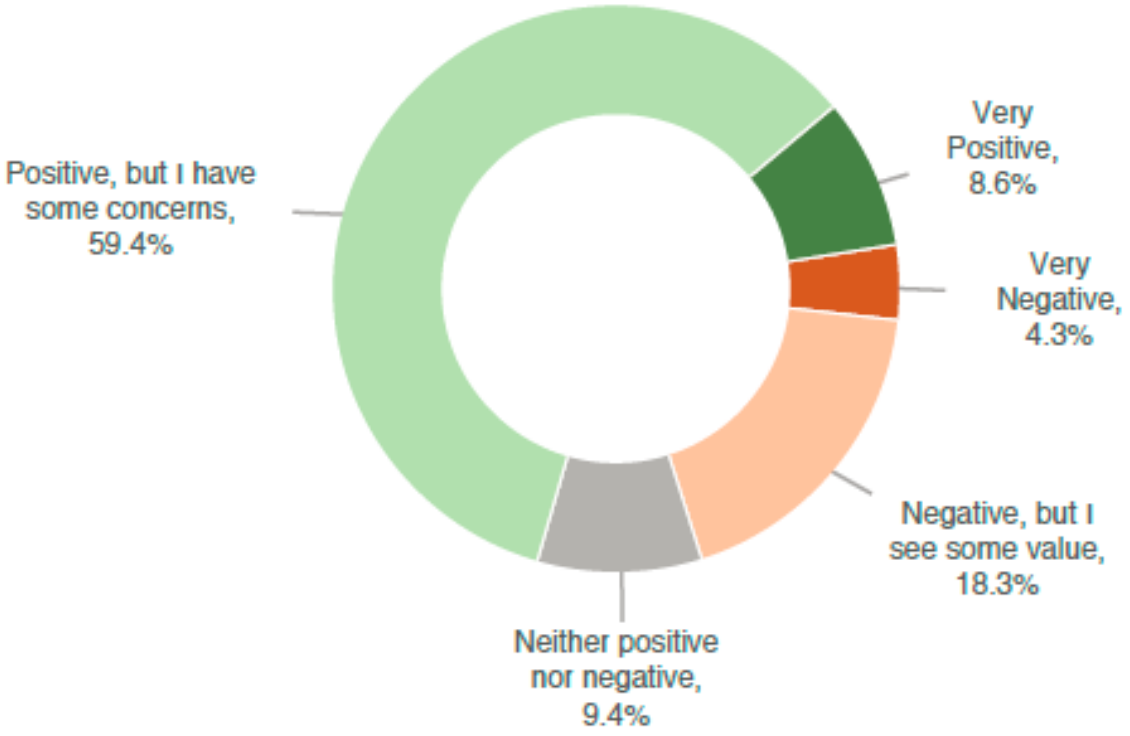
Did You Experience Any Cyberthreats During the Past 2 Years?

On average, How Often Do You Change Your Internet Accounts Passwords?



83% of People in MENA Have Concerns about Digitization

How do you feel about a future where almost everything around you would be connected to the Internet and interacting with other devices?



Cybersecurity in the Age of Artificial Intelligence and Big Data-Driven Governance

- Unrestricted Mass surveillance (No Safeguards)
- Wide-scale Privacy infringement

- Misuse of data (Governments & Businesses)
- Misinterpretation of digital behaviors
- Weaponizing data (IO and cyberwarfare)
- Faulty analysis
- Ethical dilemmas
- “Automation bias”
- “Algorithmic bias”

AI/Big Data-Driven Government Practices

1. Mass Public Data Scraping and Retention
2. Trend Analysis
3. Profiling
4. Social Network Analysis
5. Sentiment Analysis
6. Frequency Tracking
7. Geo-tracking
8. Behavior Analysis
9. Inter-linking Data sources
10. Social Bots and “Influencers”
11. Predictive analytics in Policymaking

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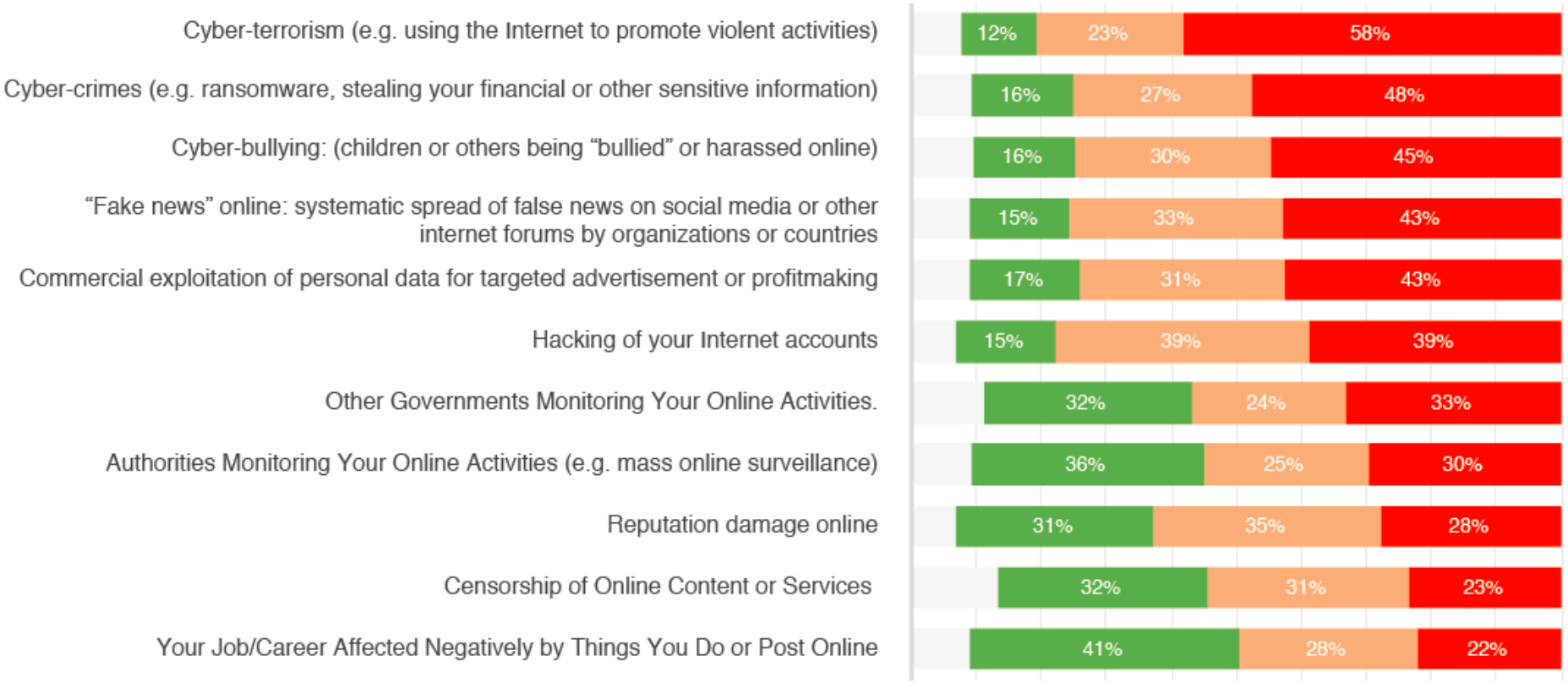
Concerns about the Internet in the Arab World in 2017

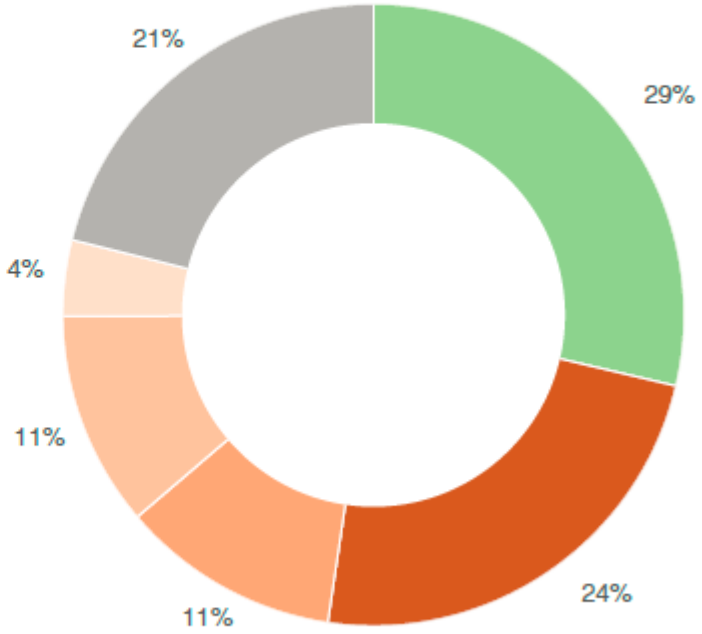
(How concerned are you today about the following when using the Internet?)



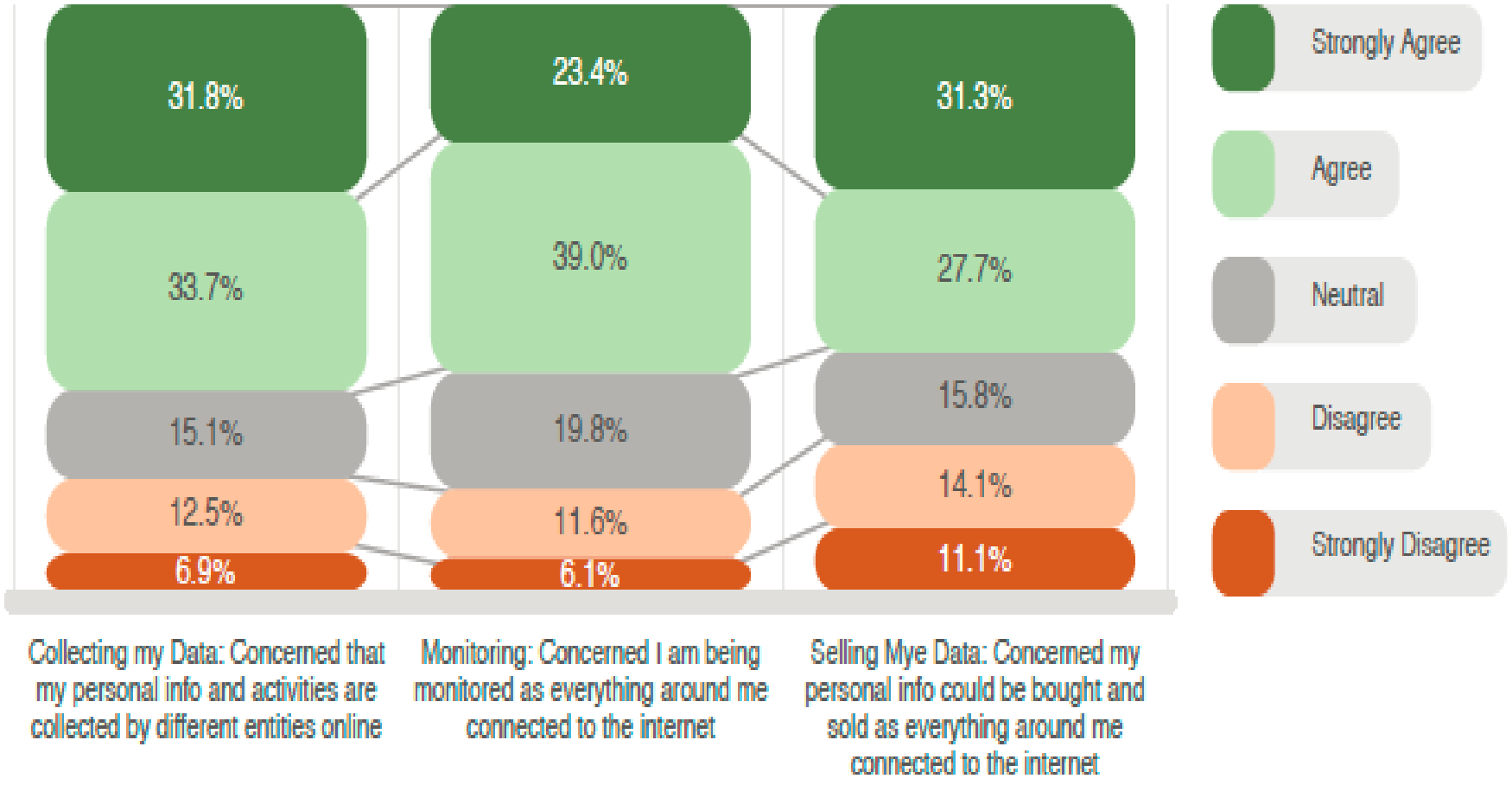
Four out of 5 internet users are concerned about cyberterrorism in the Arab region

How Open Are People with Government Online?

When Unhappy or Unsatisfied with a Government Policy, How do You Usually Express Your Views on Social Media?

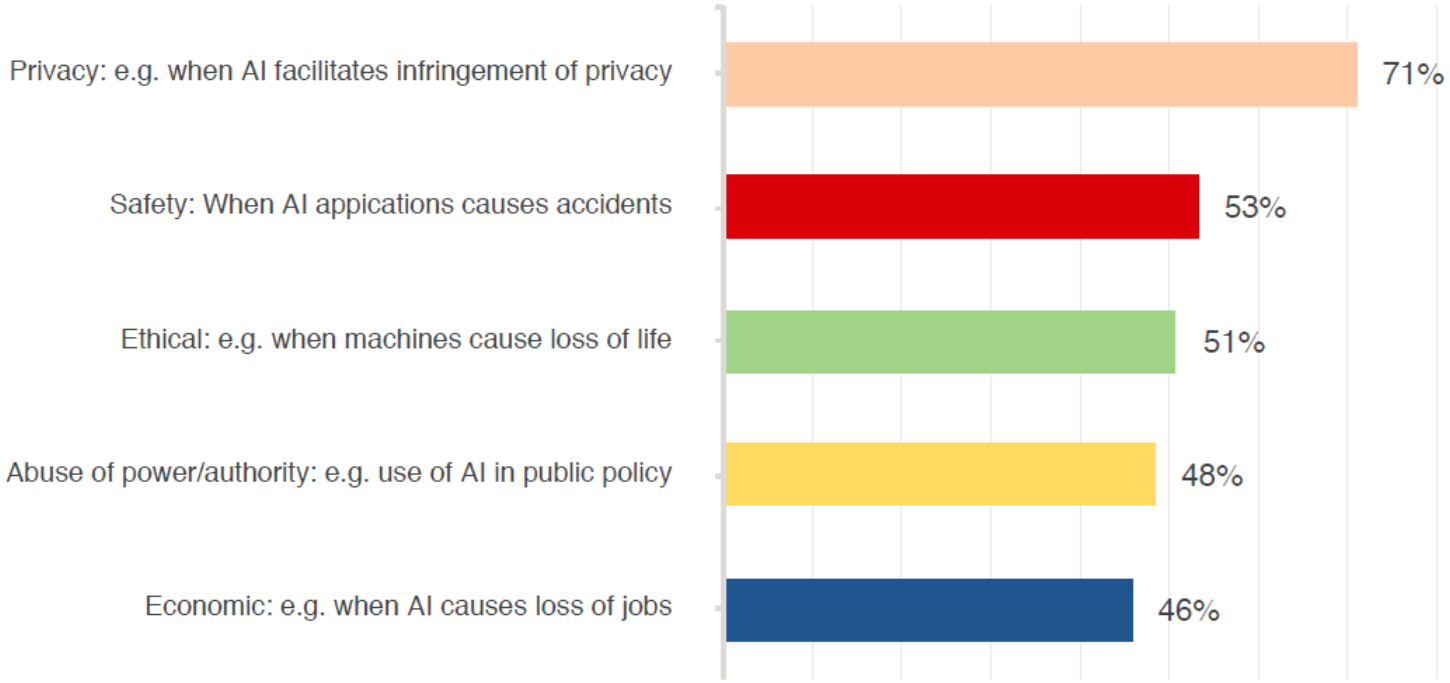


Public Concerns about IoT



Public Concerns about Artificial Intelligence in MENA

59% of internet users in the Arab region are concerned about AI applications in general



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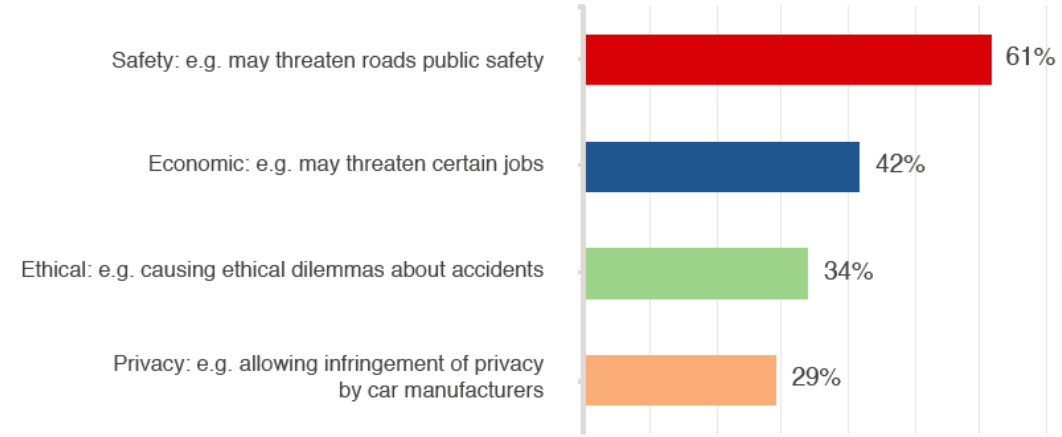
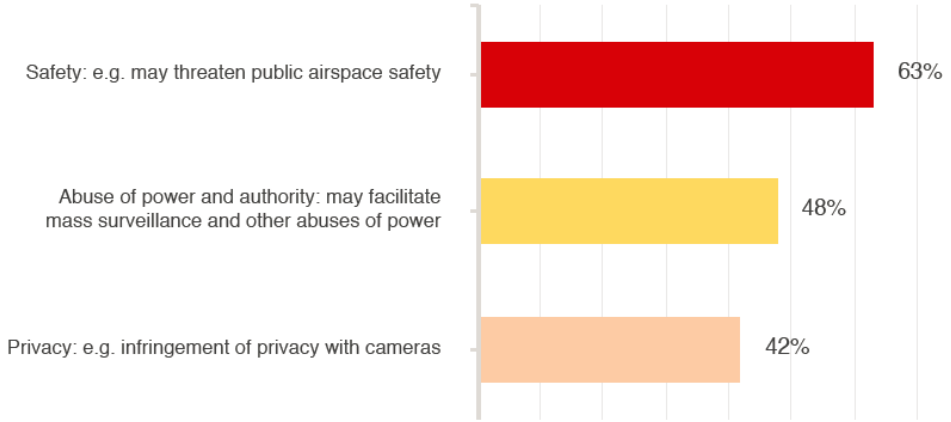
Driverless Cars Concerns



UAVs and Drones Concerns



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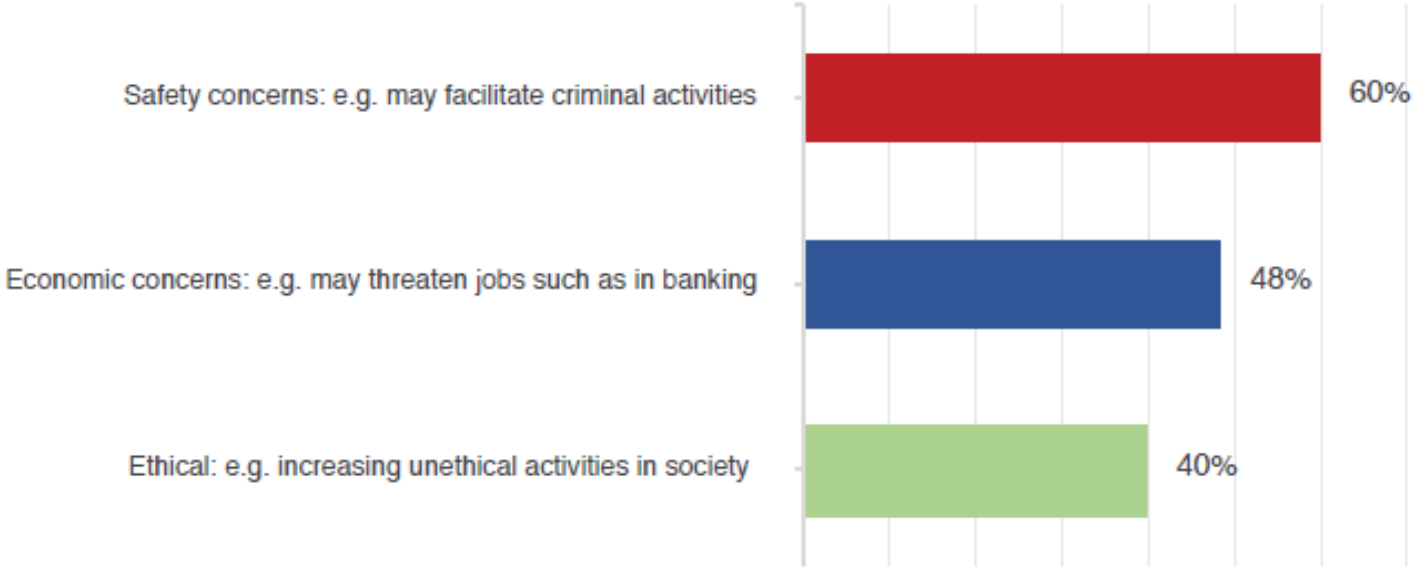
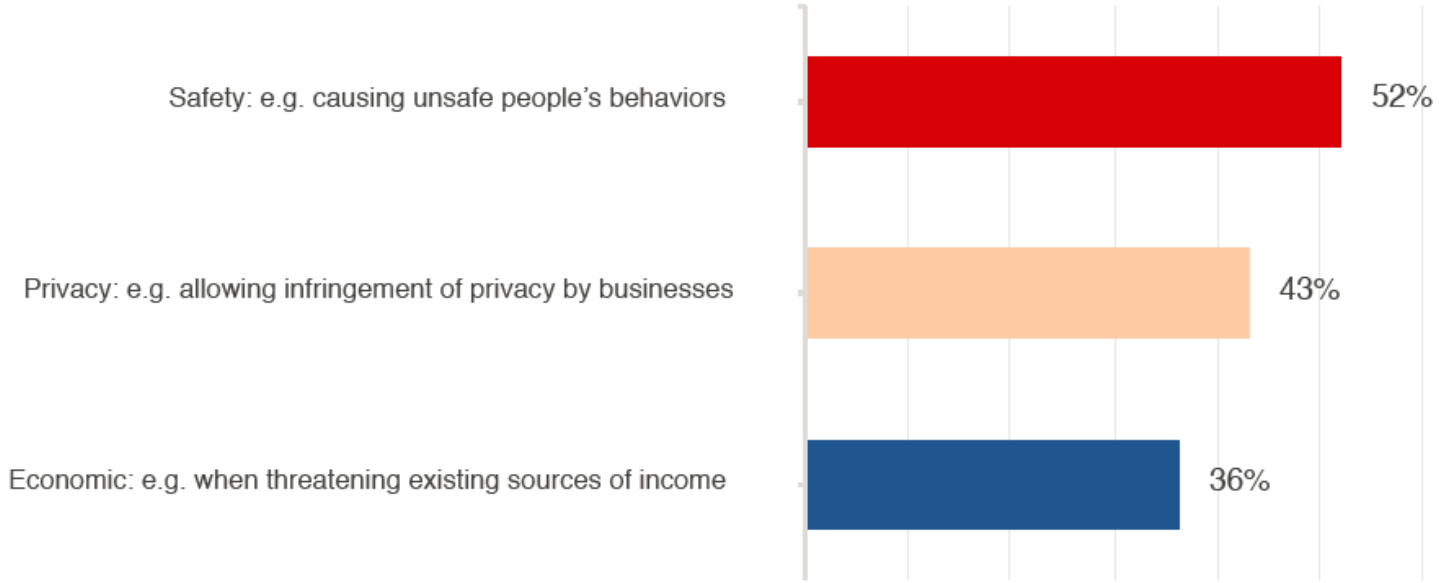
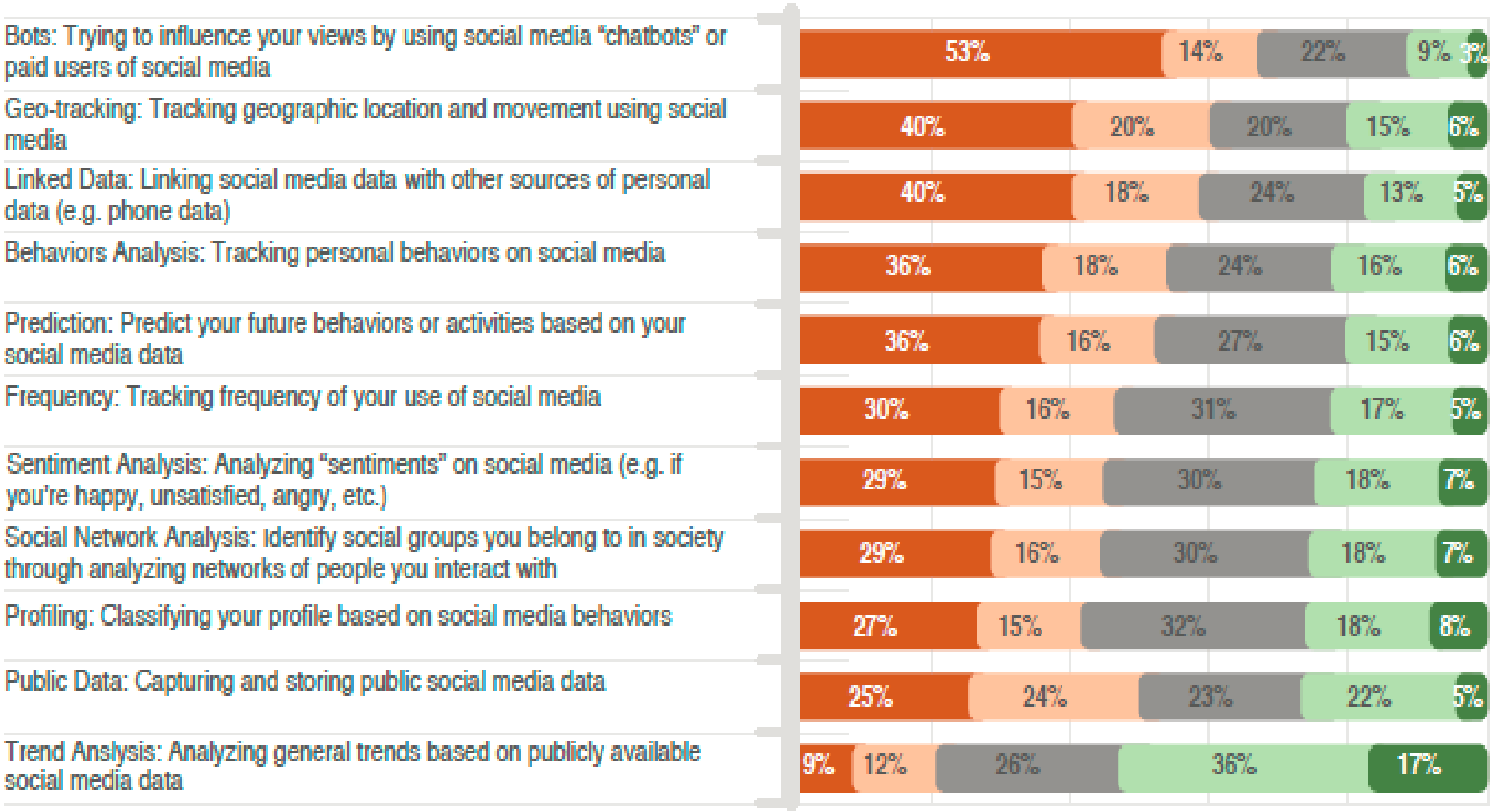
Crypto-currencies Concerns



Sharing Economy Concerns



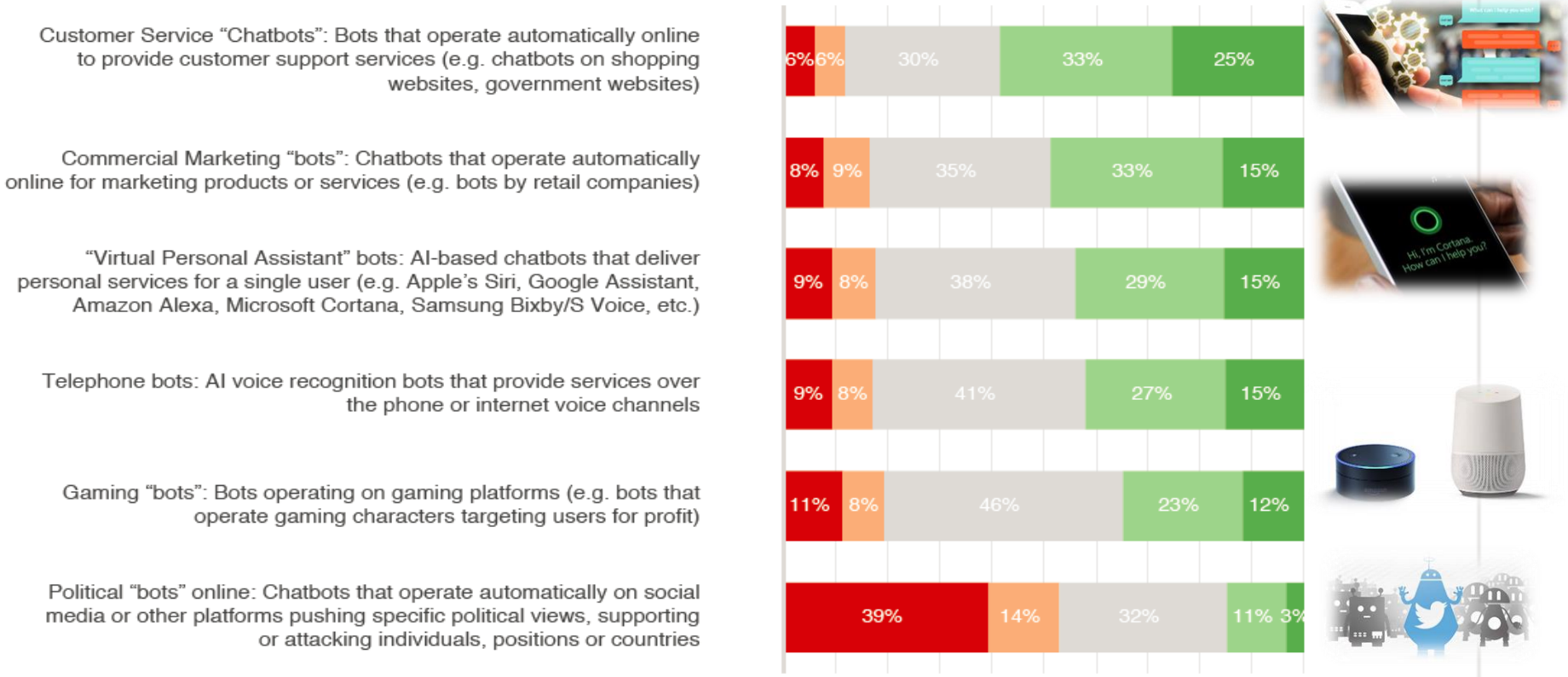
Public Concerns on Existing Government Practices on Social Media



Arab Social Media Report

Artificial Intelligence-based “Bots”, “chatbots” or “social bots”

(What is your opinion about the following practices and uses of “chatbots” by businesses, governments or other entities?)



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Policy Responses

Dealing with Data/AI Concerns

Actions by Businesses and Governments

Which of the following would provide you with enough assurances or make you feel less concerned?

I - Transparency:

a. Knowing What Data: right to know exactly what data is collected and retained about them through social media and IoT devices.

b. Knowing Who Can Access the Data: know the entities (companies or government agencies) that may have access to personal data.

c. Getting the Data: get a complete copy or download all personal data.

d. Mapping IoT: public maps about locations of sensors and cameras are available.

Dealing with Data/AI Concerns

Actions by Businesses and Governments

Which of the following would provide you with enough assurances or make you feel less concerned?

II – Personal Control:

a. Ability to Remove Data: remove personal data from government or commercial repositories.

b. Consent: explicit user consent on what may be done with the personal data collected. More supported for IoT data than for social media data.

c. Approving Who Uses the Data: ability to approve and control which sectors can use their personal data = more likely for people to share data (e.g. only educational uses, research, public health, NGOs, government, etc.)

Dealing with Data/AI Concerns

Actions by Government!

Which of the following would provide you with enough assurances or make you feel less concerned?

III - Regulations:

a. Data Laws: regulatory frameworks and appropriate data laws that protect the personal data of individuals.

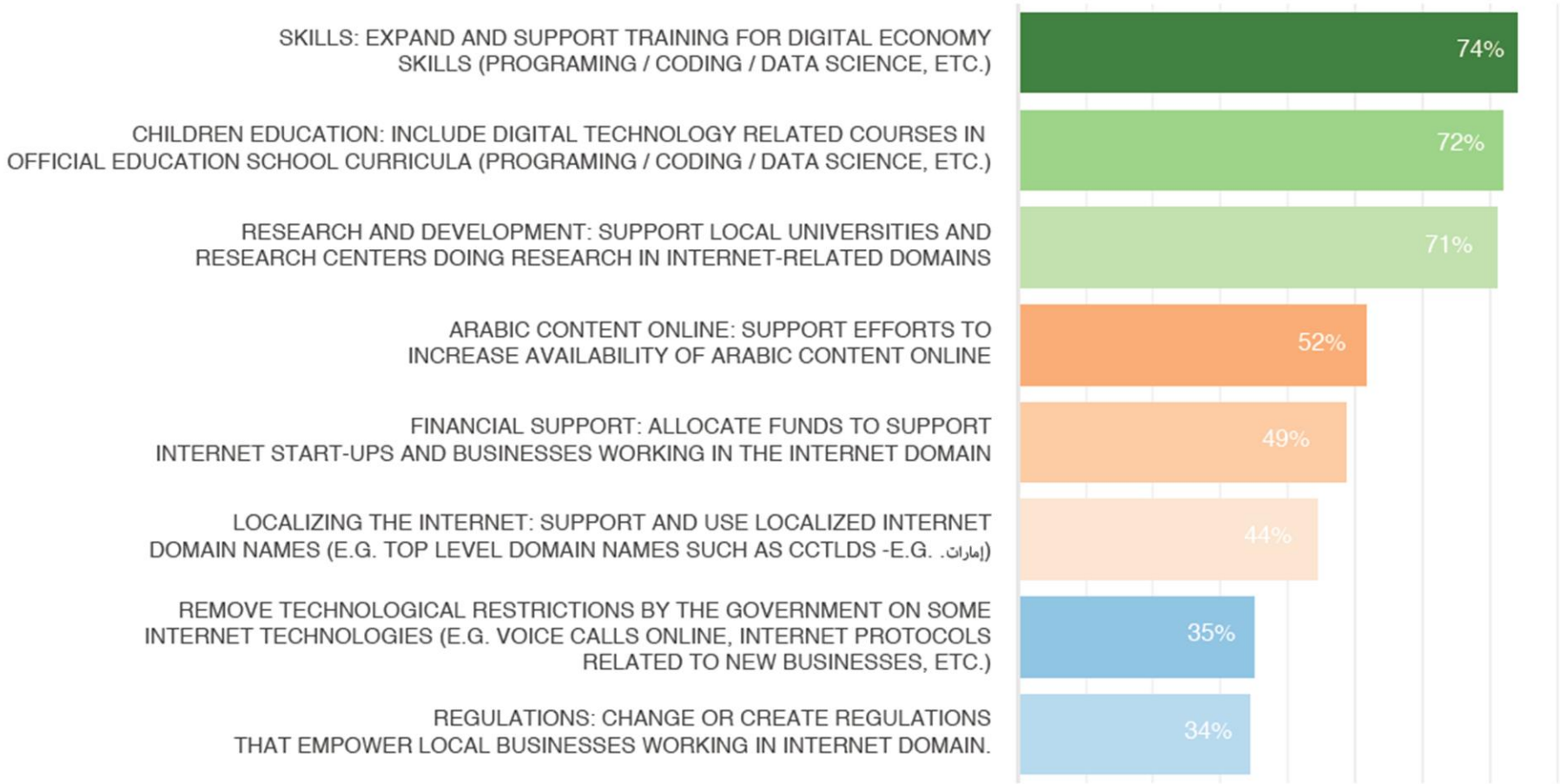
b. Code of Conduct: clear "*fair use*" policy, "*ethical framework*" or other *acceptable use policy (AUP)*.

c. Certified privacy policies: privacy and data policies applied approved or certified by independent standards body (e.g. academic boards, non-government expert committee, etc.)

d. Anonymization: regulations forcing entities to "anonymize" personal data or delete any data that identify individuals.

Creating an Enabling Environment

What Governments Should do to Support the "knowledge economy"?



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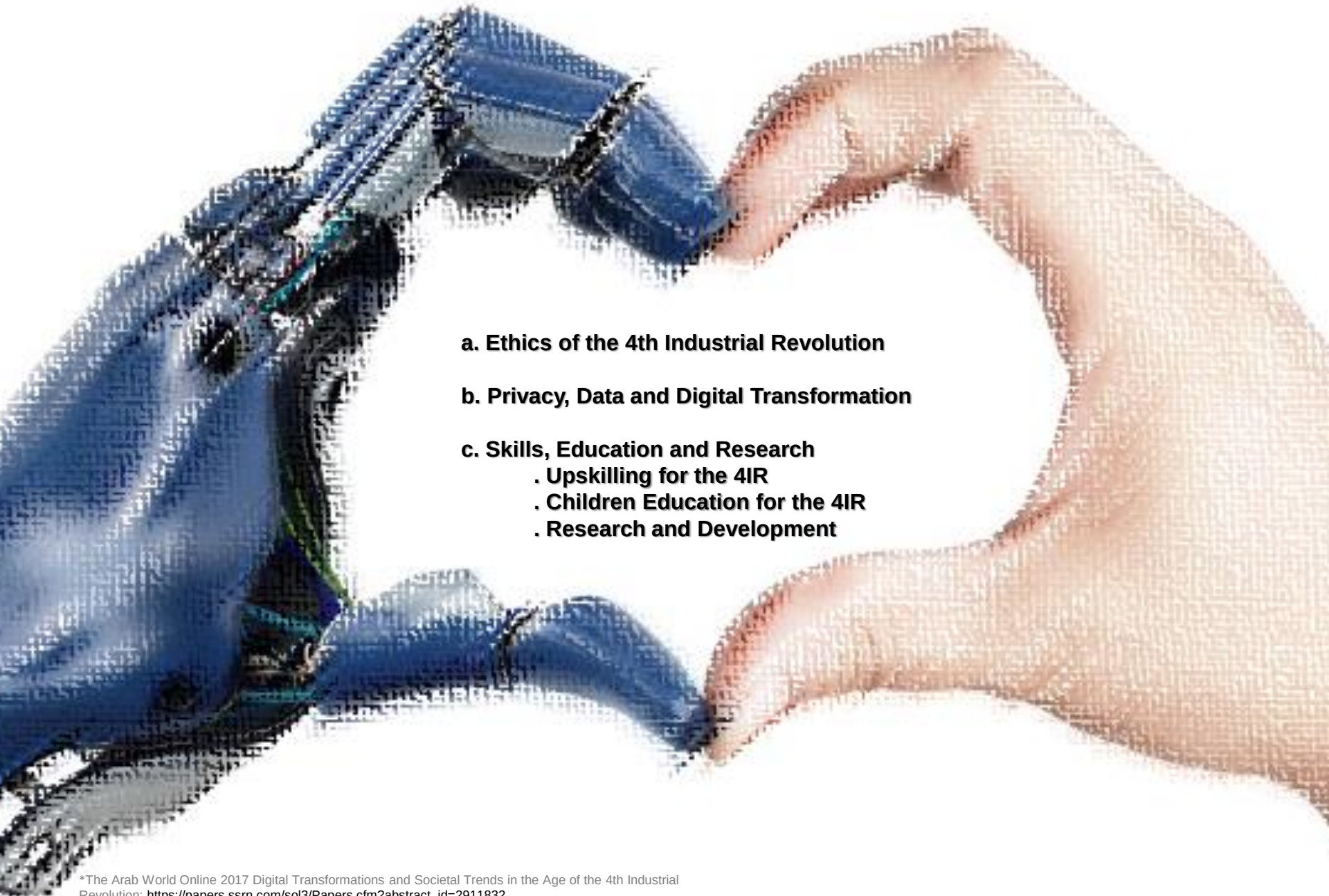
Big Data and “Good” Governance



a. Ethics of the 4th Industrial Revolution

b. Privacy, Data and Digital Transformation

c. Skills, Education and Research

- **. Upskilling for the 4IR**
- **. Children Education for the 4IR**
- **. Research and Development**

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