



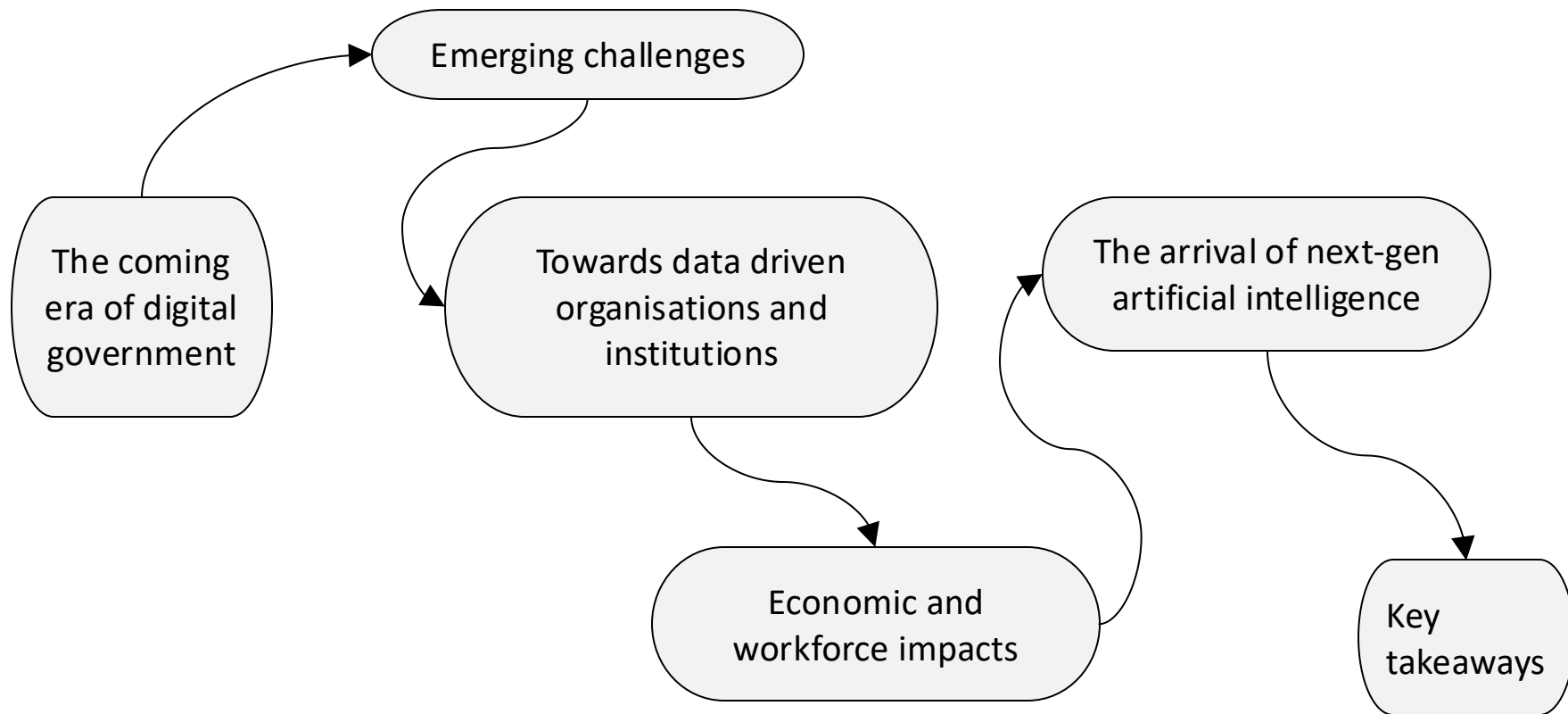
Digital transformation

How Pacific Island Nations can harness opportunities and mitigate risks associated with digital technology

Stefan Hajkowicz

Chief research consultant in strategy, policy
and foresight, CSIRO





Digital government

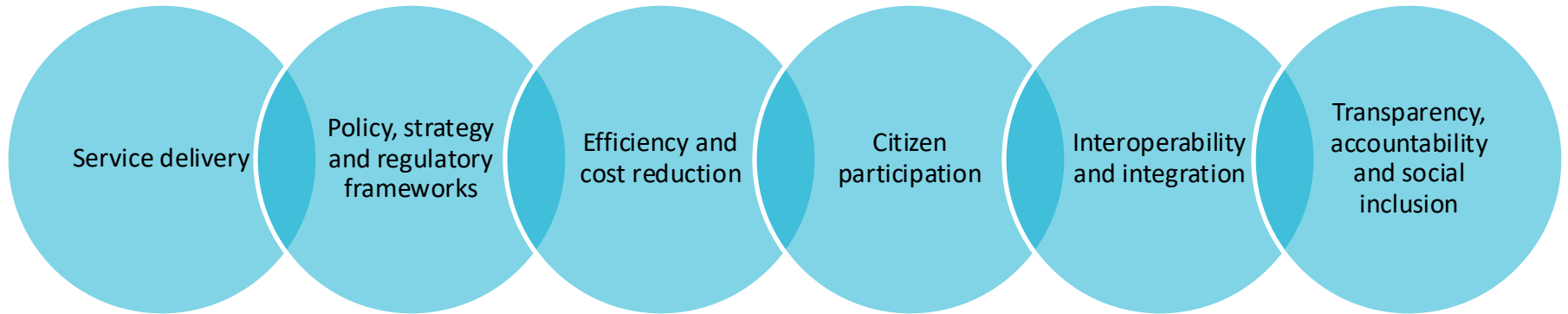
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What is digital government?

Also called e-government, it involves the use of digital technology to improve the way government does:

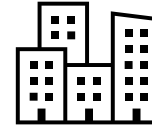




Types of e-government interactions



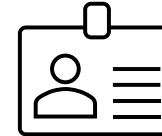
Government to
Citizen
(G2C)



Government to
Business
(G2B)



Government to
Government
(G2G)

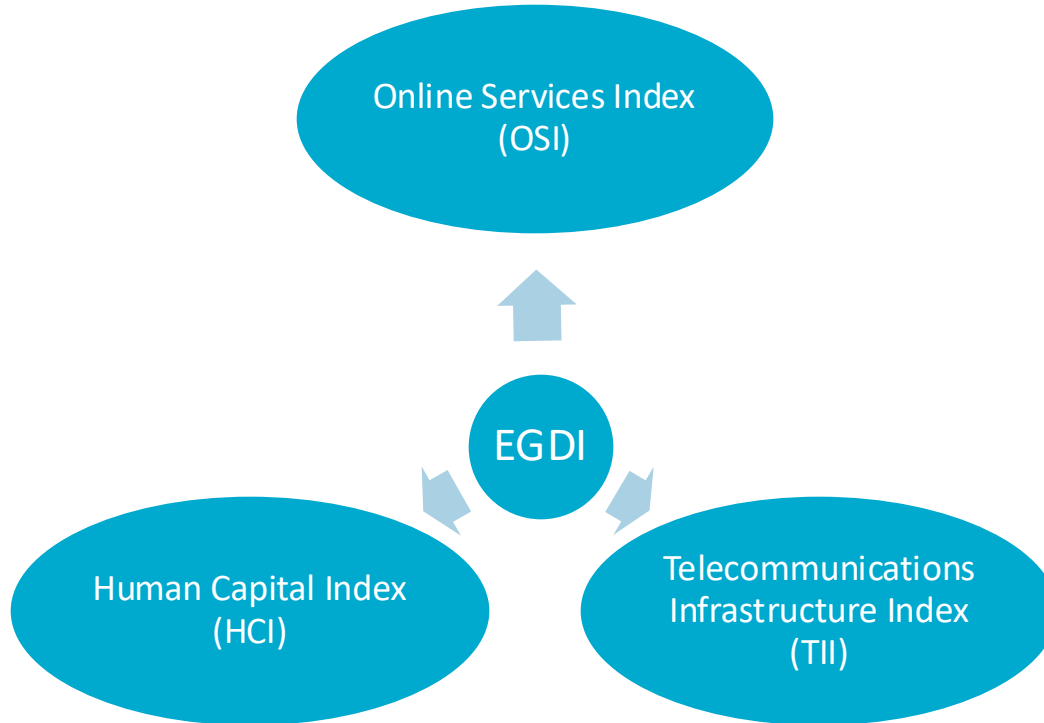


Government to
Employees
(G2E)



Measuring E-Government

The E-Government Development Index (EGDI) is a composite index that measures the development of e-government services and infrastructure across countries.

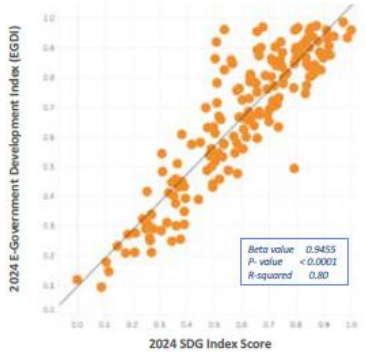




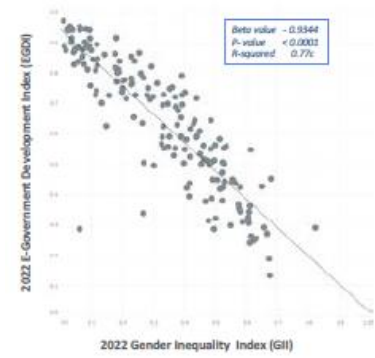
Good things happen with good E-government

The E-Government Development Index (EGDI) has a ...

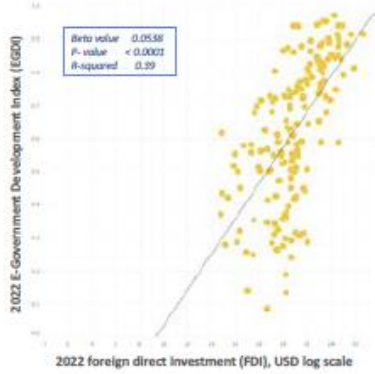
Strong correlation with the sustainable development goals index (SDGI)



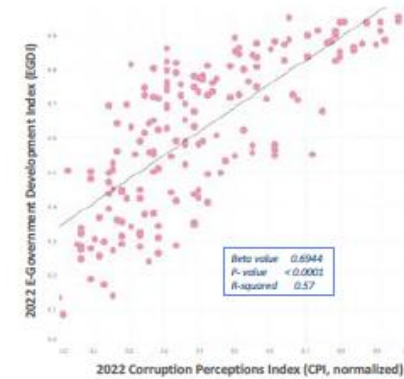
Strong correlation with gender equality (SDG 5)



Strong correlation with foreign direct investment inflows

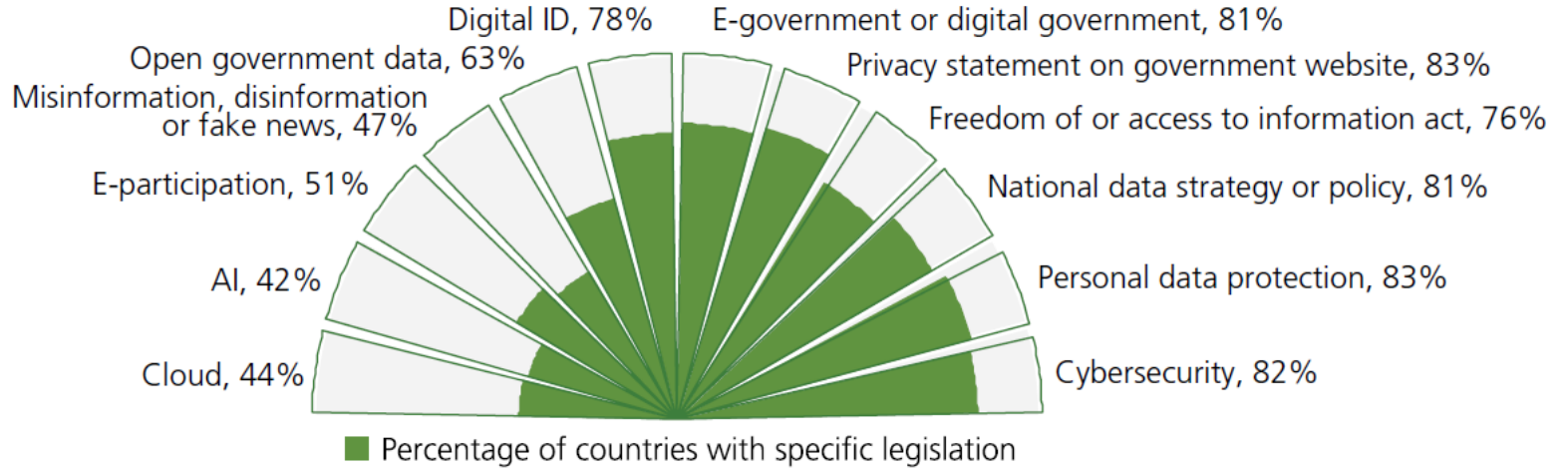


Strong correlation with reduced corruption





193 UN Countries



Africa (54 countries)

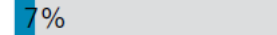
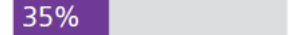
Americas (35 countries)

Asia (47 countries)

Europe (43 countries)

Oceania (14 countries)

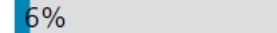
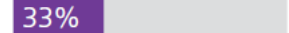
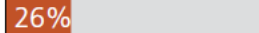
Open government data



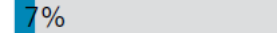
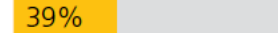
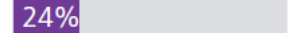
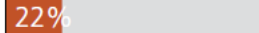
Misinformation, disinformation or fake news



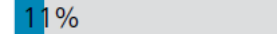
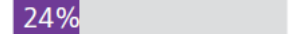
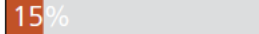
E-participation



AI



Cloud





What is a digital government plan?

According to the 2022 UN E-Government Survey, 155 countries, or about 80% of the surveyed United Nations Member States, have a formal national e-government or digital government strategy. Here's Australia's one...

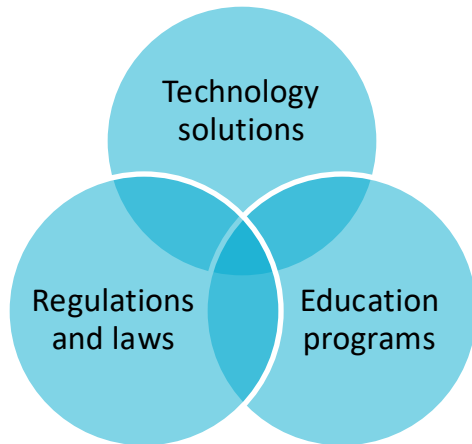




Emerging challenges for digital government

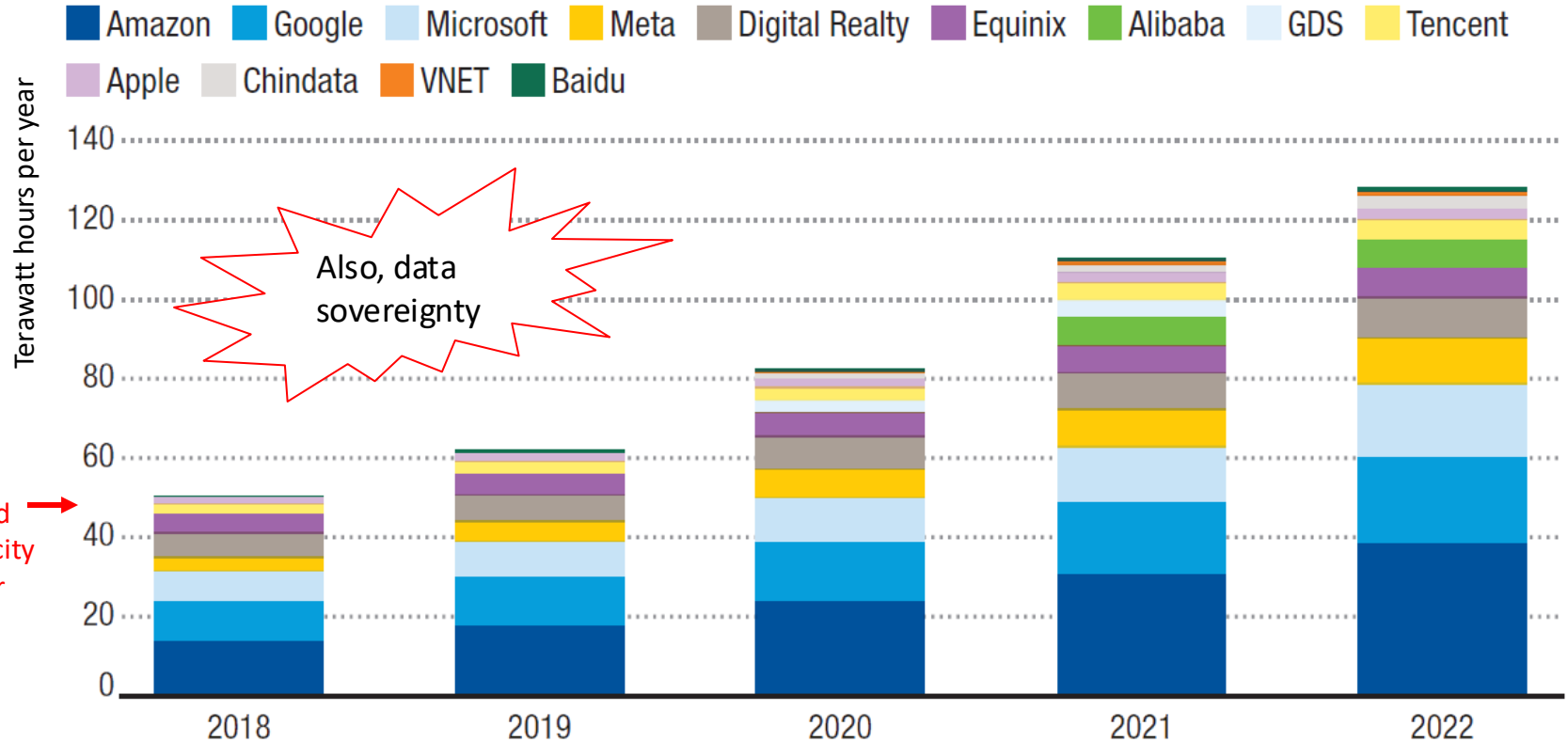


Social media, fake news, misinformation and malinformation



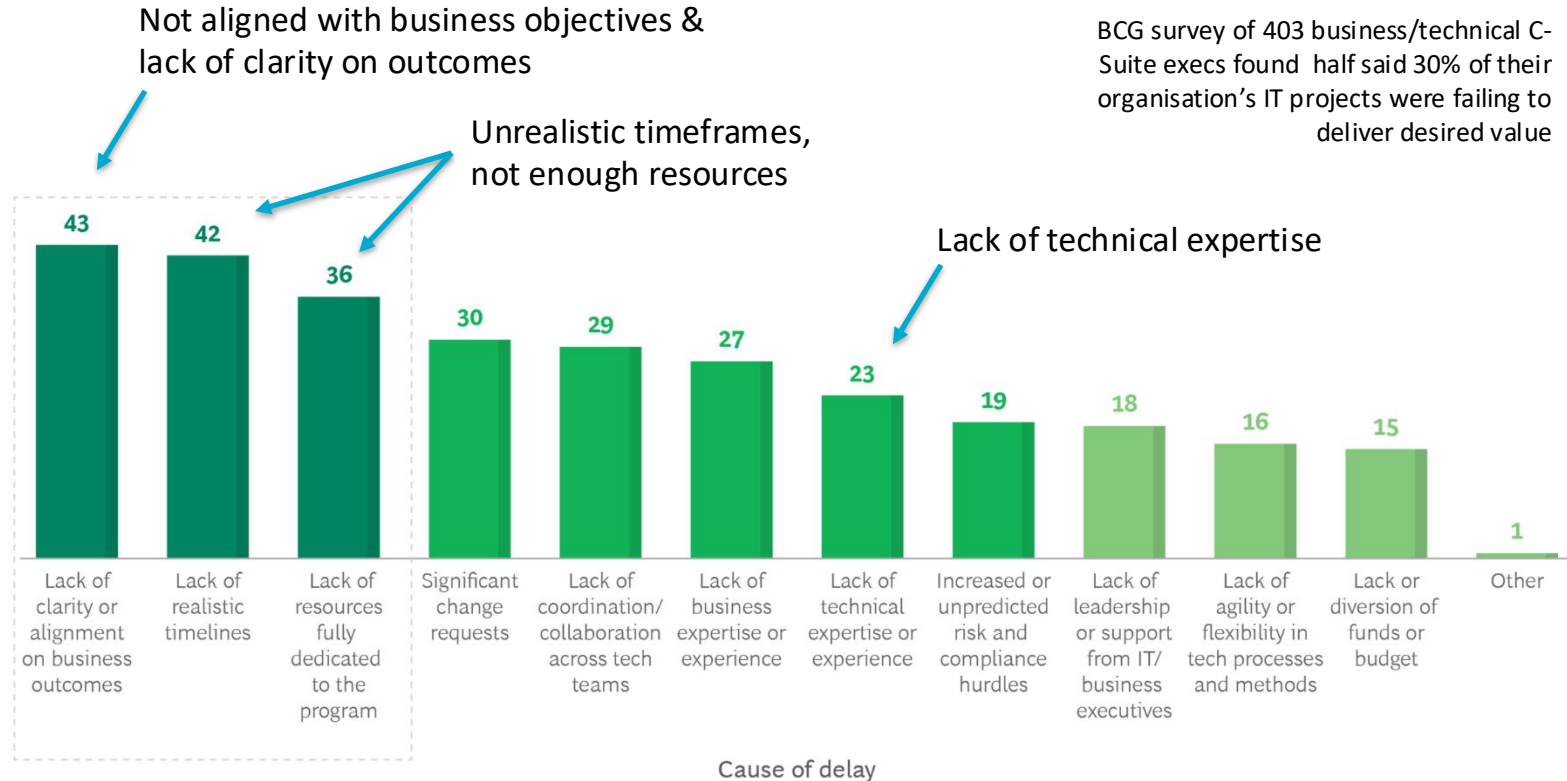


Data centres, digital infrastructure and data sovereignty



The challenge of investing in IT – high project failure rates

BCG survey of 403 business/technical C-Suite execs found half said 30% of their organisation's IT projects were failing to deliver desired value



Source: BCG survey of 403 global business and technical-side C-suite executives across 25 industries.

Note: Respondents were asked to rank the top three reasons why projects were delayed.



Cost of data breaches expected to top \$5 trillion by 2024

- United Nations, Department of Economic and Social Affairs



Towards data driven organisations and cultures

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What's a Data Driven Organisation ?

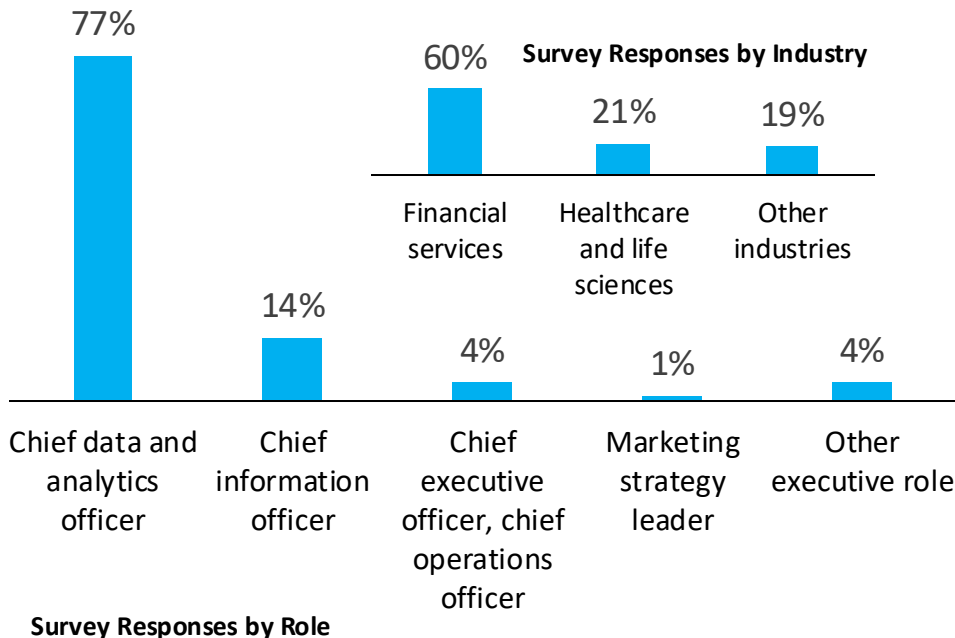
- Acquires data and knows its data assets
- Records metadata (catalogues data)
- Validates, stores and protects data
- Analyses, shares and communicates data
- Is ethical with data
- Uses data to make decisions (but decisions drive data analysis not vice versa)
- Has a data-driven culture

What's not a Data Driven Organisation ?



How are Organisations Going?

Survey responses from 94 Fortune 1000 firms in 2022 about data and AI activities by NewVantage Partners (Boston) published in the Harvard Business Review and MIT Sloan Management Review.



FINANCIAL SERVICES | INSURANCE

AIG	Credit Suisse	Marsh	Silicon Valley Bank
Ally Financial	Deutsche Bank	Mastercard	State Street
American Express	Discover	Mass Mutual	Sumitomo Mitsui Bank
Bank of America	Equitable	Met Life	Sun Life Financial
Bank of China	Fannie Mae	Morgan Stanley	S&P Global
Bank of Montreal	Fidelity Investments	Morningstar	TD Bank
Berkshire Hathaway	Freddie Mac	MFS Investments	TIAA
Blackrock	Hanover Insurance	M&T Bank	Truist
Bloomberg	Huntington Bank	Nationwide	UBS
BNY Mellon	Invesco	New York Life	VISA
Cerberus Capital	JP Morgan Chase	Nuveen	Voya Financial
Charles Schwab	Lincoln Financial	PNC Bank	Wells Fargo
Citigroup	Liberty Mutual	Santander Bank	
Citizens Bank	LPL Financial	Scotia Bank	

HEALTHCARE | LIFE SCIENCES

AbbVie	Cerevel	Mercy Health
Akron Children's Hospital	Cigna	Optum United Health
Alexion	CVS Health	Parexel
Astra Zeneca	Eli Lilly	Partners Healthcare
Blue Cross Massachusetts	GlaxoSmithKline (GSK)	Pfizer
Bristol-Meyers Squibb	Humana	Zoetis
Cellarity	Mayo Clinic	

RETAIL | MANUFACTURING | TECH | GOVERNMENT | SPORTS | EDUCATION

Albertsons	John Deere	Stanley Black & Decker
Alliance Data Services	Levi Strauss	Starbucks
Catalina Marketing	McDonalds	US Department of Defense
Exxon Mobil	McGraw Hill	US Office of Personnel
Facebook	Neustar	Virgin Pulse
Global Energy	NFL	William & Mary College
Inspire Brands	Schnucks Markets	

Long road ahead, cultural issues are key

74%

Have appointed a chief data and analytics officer (CDAO).

27%

Think they've succeeded in becoming a "data driven organisation".

19%

Think they've established a data culture

92%

Think that cultural issues are the main impediment

Productivity through organisational design and staff culture

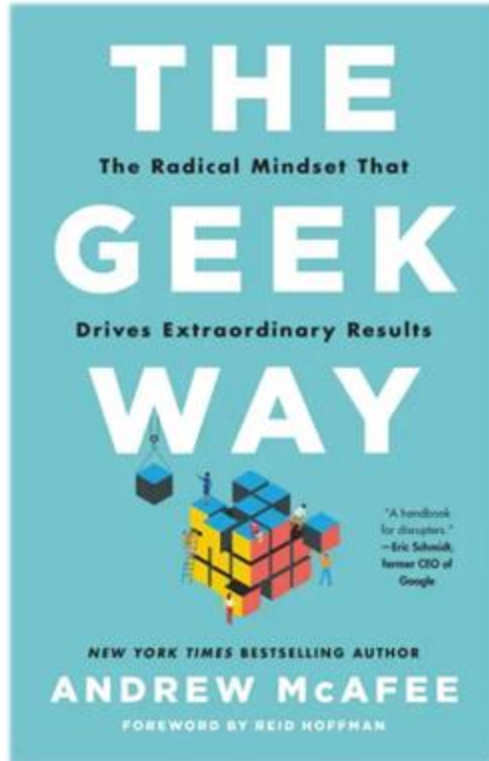


Image credit: Amazon



Image credit: MIT Institute for Digital Economy

Andrew McAfee explores the science behind the world's most successful companies

NETFLIX

247 million subscribers

Founded 1997 (streaming 2007)



150 million subscribers

Founded 1923

Data driven and evidence based – also for government



Australian
Centre for
Evaluation

ace

Housed in the Australian Treasury, started 1 Dec 2021

Implements the Commonwealth Evaluation Policy. Aims to embed a culture of evaluation and learning from experience to underpin evidence-based policy and delivery.

Applies to all Commonwealth entities and companies subject to the Public Governance, Performance and Accountability Act 2013 (PGPA Act).

United States Bi-Partisan Commission on Evidence Based Policymaking



Foundations for Evidence-Based Policymaking Act of 2018

Introduced into the house
31 Oct 2017 and signed into
law by President Donald
Trump on 14 Jan 2019



Paul Ryan, Speaker of the House (2015-2019)



Senator Patty Murray

On 7 April 2022 the Biden-Harris administration launched the “year of evidence for action to fortify and expand evidence-based policymaking”



2018 Act

1

Evidence building activities

Agencies must create an evidence-building plan, evaluate existing data, and identifying methods to collect and analyse data to support policymaking

2

Open data is default

Agencies must make their data open by default by creating a data inventory, making data machine readable, searchable and accessible

3

Strengthening confidential data protection

The legislation strengthens the protection of confidential information whilst creating clarity on data sharing

Workforce and economic impacts



At first we thought

Frey and Osbourne (2013)

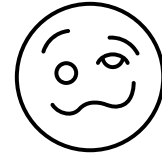
47%



Then we thought

Nedelkoska and Quintini (2018)

9% - 14%



Then we did 102
studies and found

Filippi et al. (2023)

5% - 70%



Workforce Change?

Global Tech sector laid-off 248,000 staff in 2023. In 2024 it was 124,000 by August.

But not AI – investment & certain jobs in AI are booming.

Data from Layoffs.fyi and TechCrunch (4 May 2025)

What uber did to taxis ...

On 18 March 2024 Uber agreed to a \$271.8 million payout to taxi/hire car drivers. Lead plaintiff Nick Andrianakis (ABC News)





“disruptive new entrants capitalized on the growth in ecommerce”



62%
IN 2019



29%
IN 2023

New Albert Jackson processing centre opened 2023 in northeast Toronto

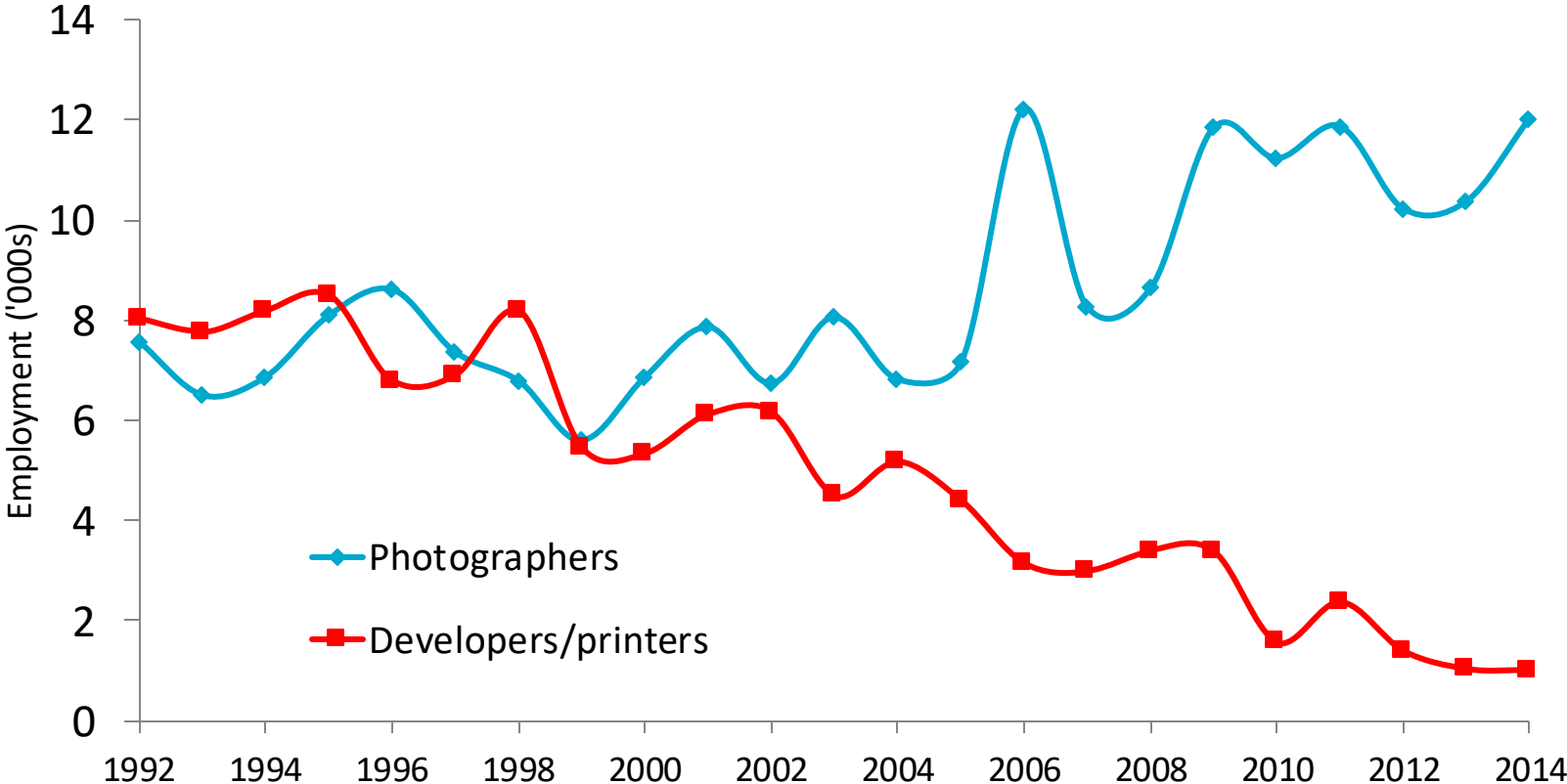


Data source: Canada Post 2023 Annual Report.

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The Bifurcation of Labour Markets

Learning From History – The Australian Photographic Industry



Data source: ABS (2015). 6291.0.55.001 - Labour Force, Australia, Detailed. Canberra, Australian Bureau of Statistics.
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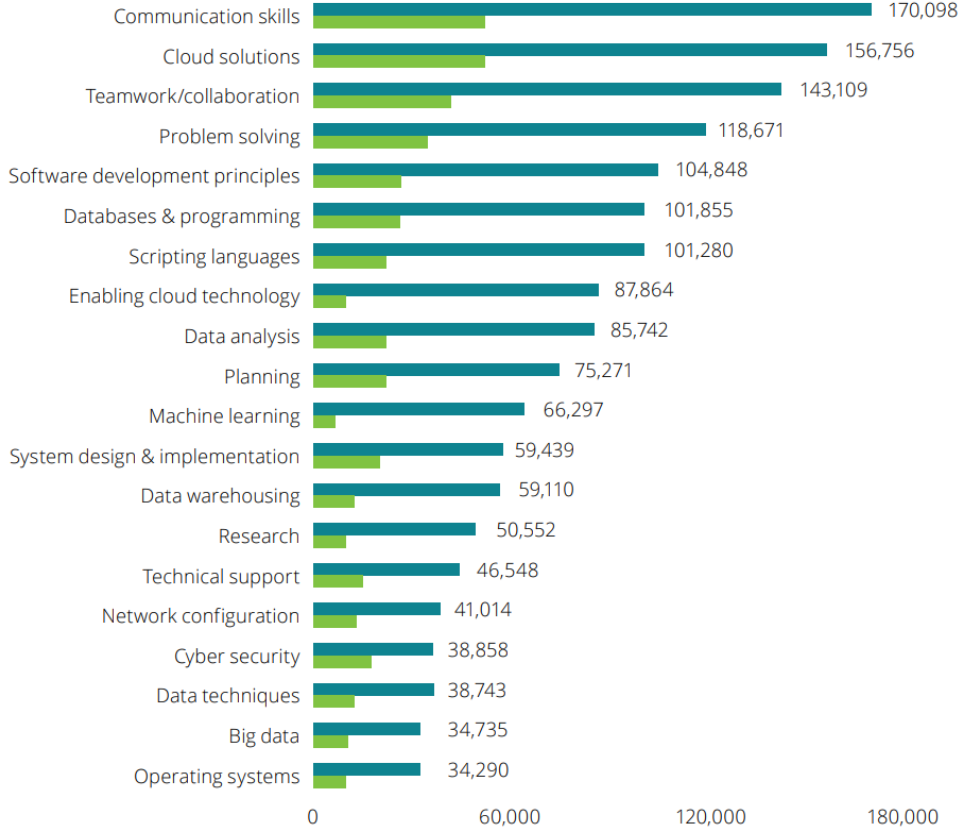


The great re-skilling. In Australia, 95% of workers will see at least 20% of their work time replaced, augmented or otherwise impacted by digital technologies.

- Australian Computer Society, Digital Pulse Report, 2023



But what are the digital skills tech professionals need? It's changing.



Source: Deloitte Access Economics (2023)

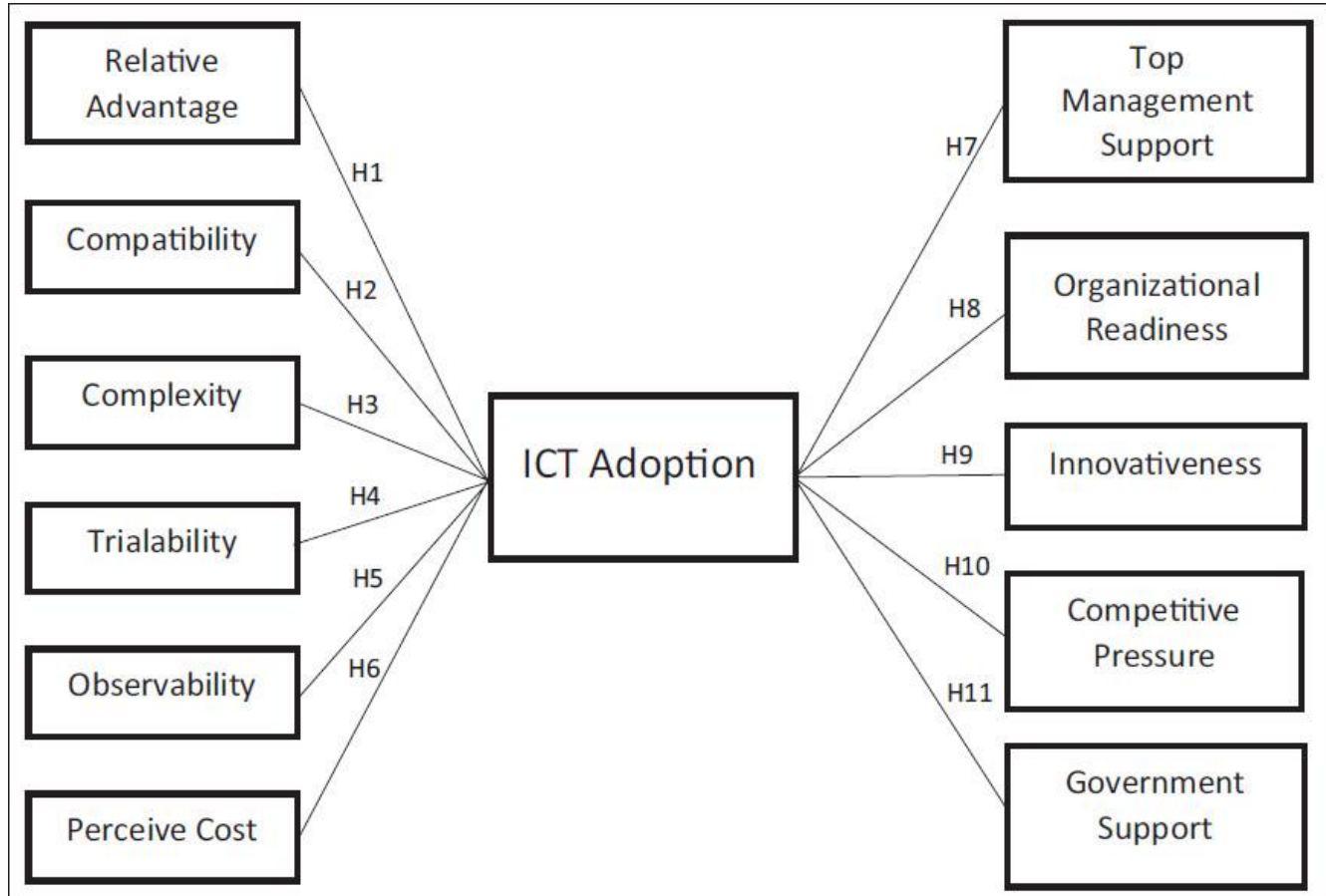
■ 2020 ■ 2023



Why do companies adopt ICT?

Study of ICT adoption by 535 SMEs in Bangladesh

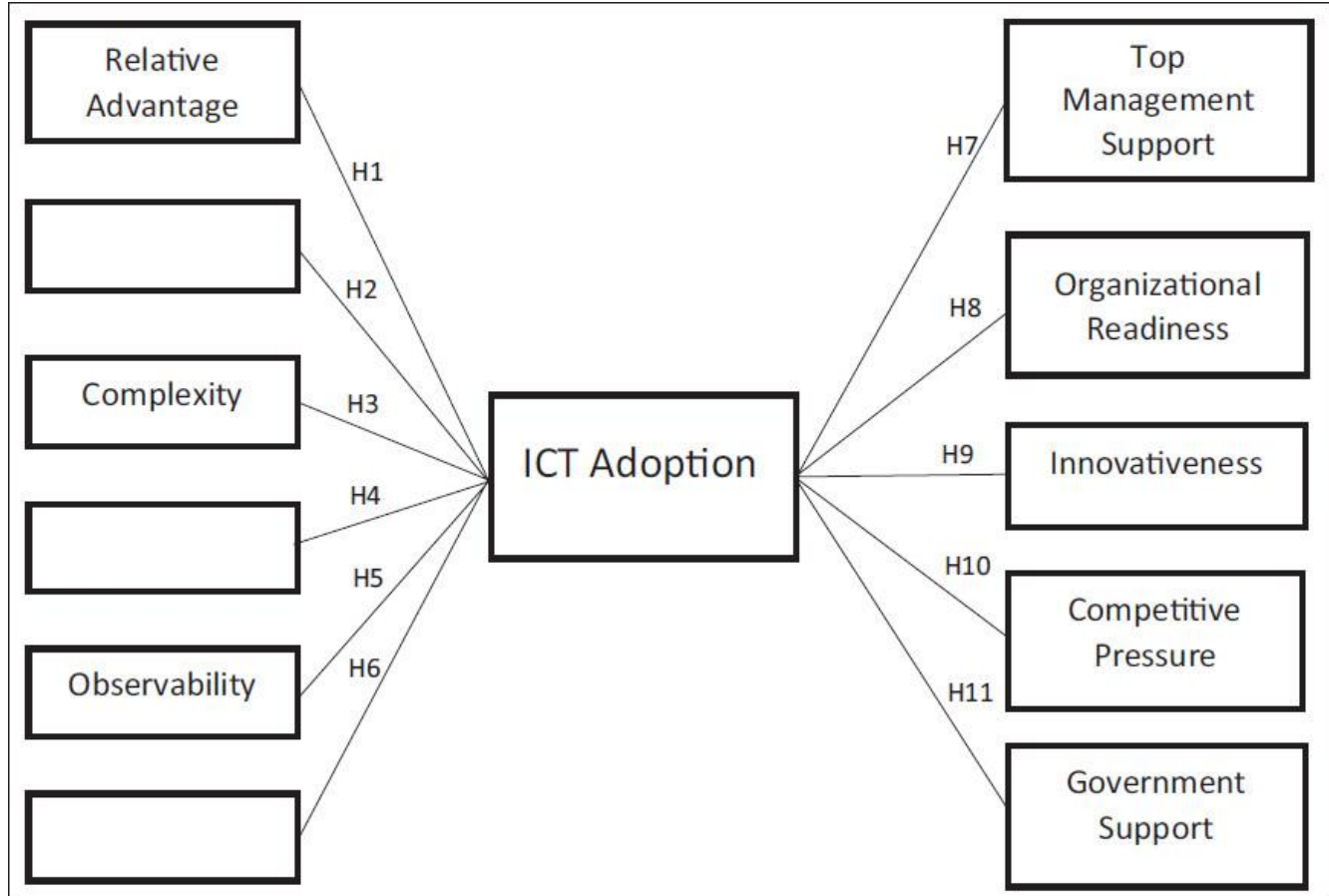
Shahadat et al. (2023)
Global Business Review. International management institute New Delhi



Why do companies adopt ICT?


Study of ICT adoption by 535 SMEs in Bangladesh

Shahadat et al. (2023)
Global Business Review. International management institute
New Delhi



nature

A ten-year review analysis of the impact of digitization on tourism development (2012–2022)

[Chunyu Jiang](#) & [Seuk Wai Phoong](#) 

A meta study of 91 articles found digitisation of the tourist industry creates benefits: more tourists, better tourism products, more tourism revenue, social development and cultural awareness.

Overall finding: ICT Adoption = Better Tourism Industry



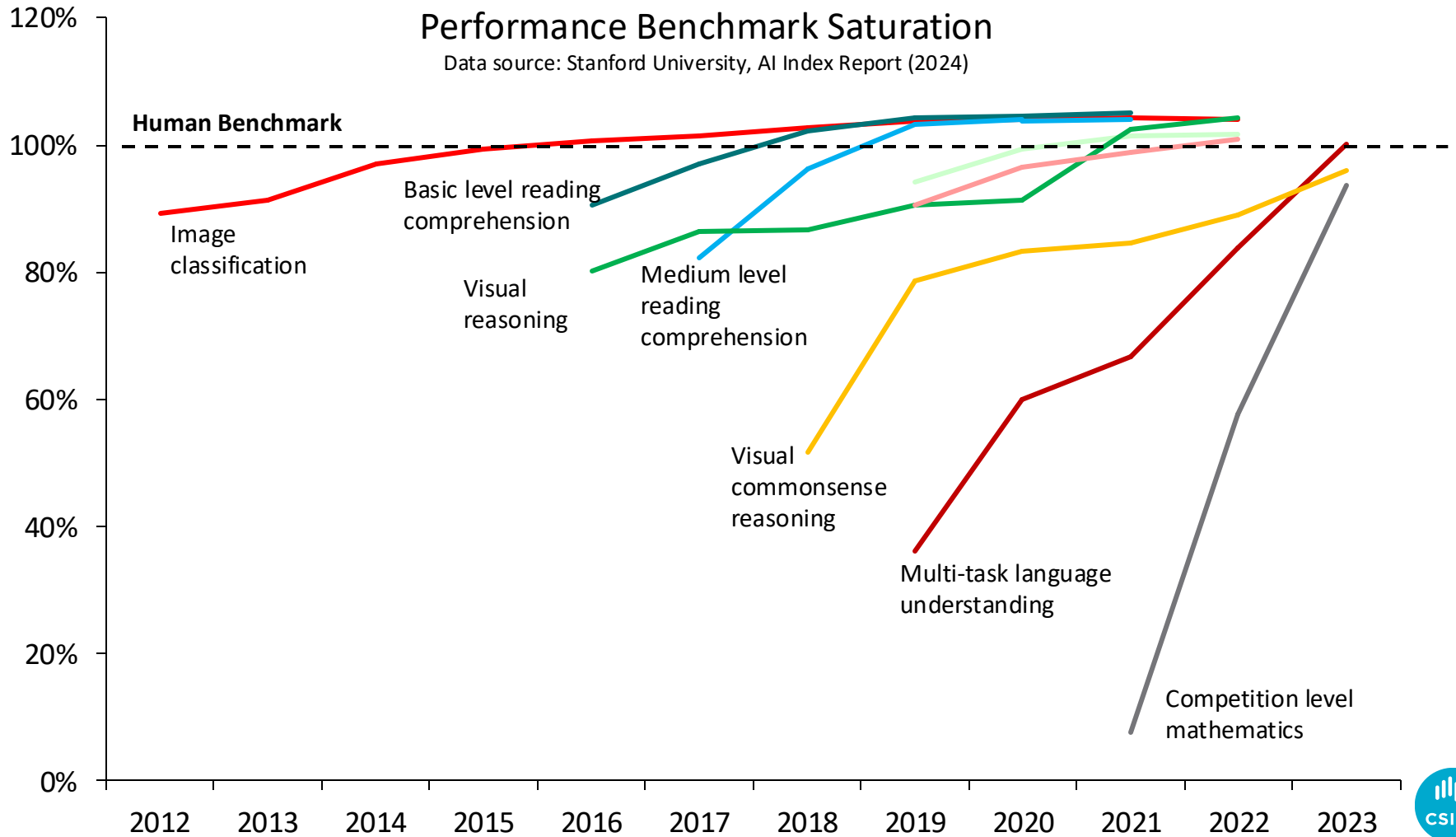
Artificial Intelligence

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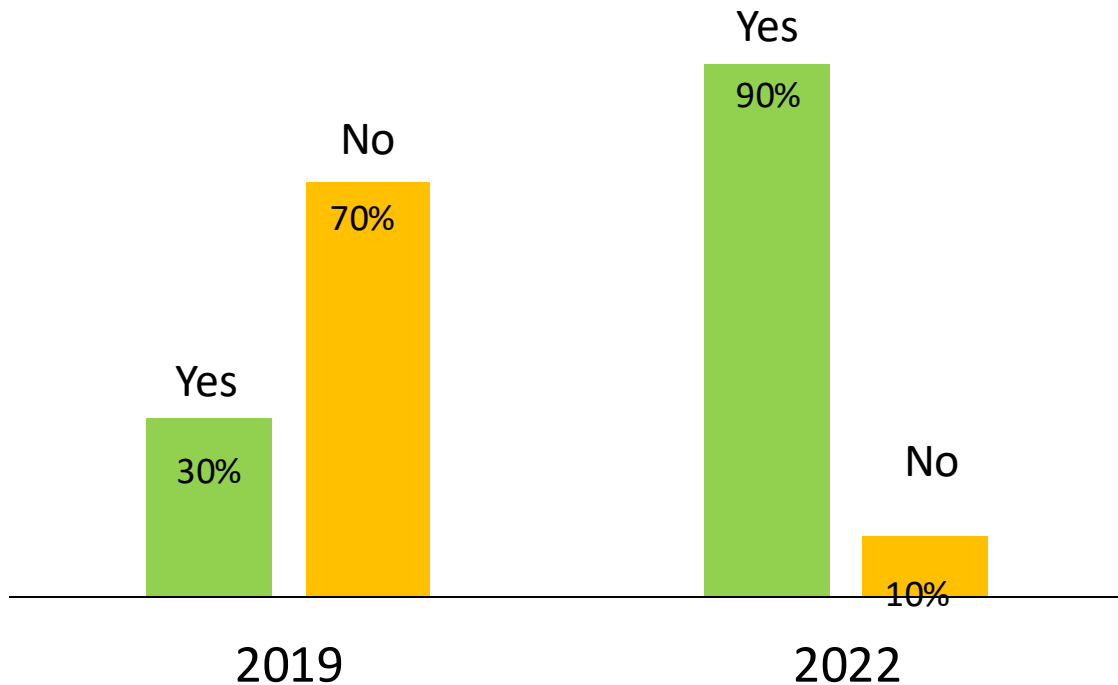
Performance Benchmark Saturation

Data source: Stanford University, AI Index Report (2024)





Is your company getting value from AI investments?



97% of leaders feel urgent need to adopt AI, >50% anticipating negative impacts if fail to act.

The Cisco AI Readiness Index from a survey involving 8,000 business leaders from companies >500 staff across 30 markets.

Data source: Surveys of AI-using companies published in Sloan

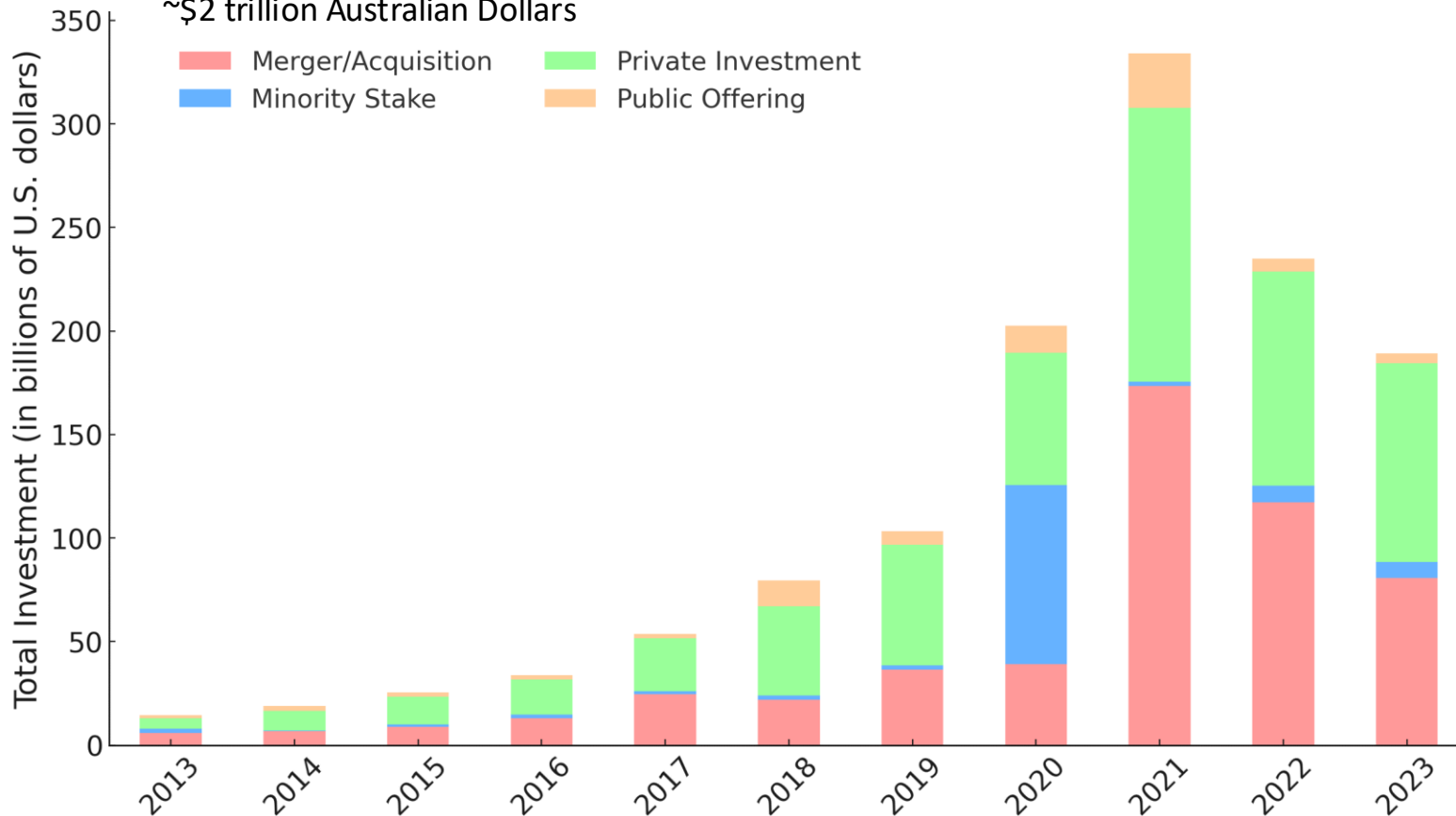
Management Review by MIT, BCG and NVP

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Global Private AI Investment

~\$2 trillion Australian Dollars



Data source: Stanford University HAI Index Report, 2024

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Generative Pre-trained Transformer

Vaswani *et al* (NIPS 2017)
129,753 citations and counting

OpenAI
ChatGPT
GPT4o



OpenAI suite of
foundation models
(GPT4, Dall-E2, Sora...)

Anthropic



Claude 3



IBM



IBM

Google

Gemini

Google suite of
foundation models

Baidu's Ernie



文心一言



Midjourney



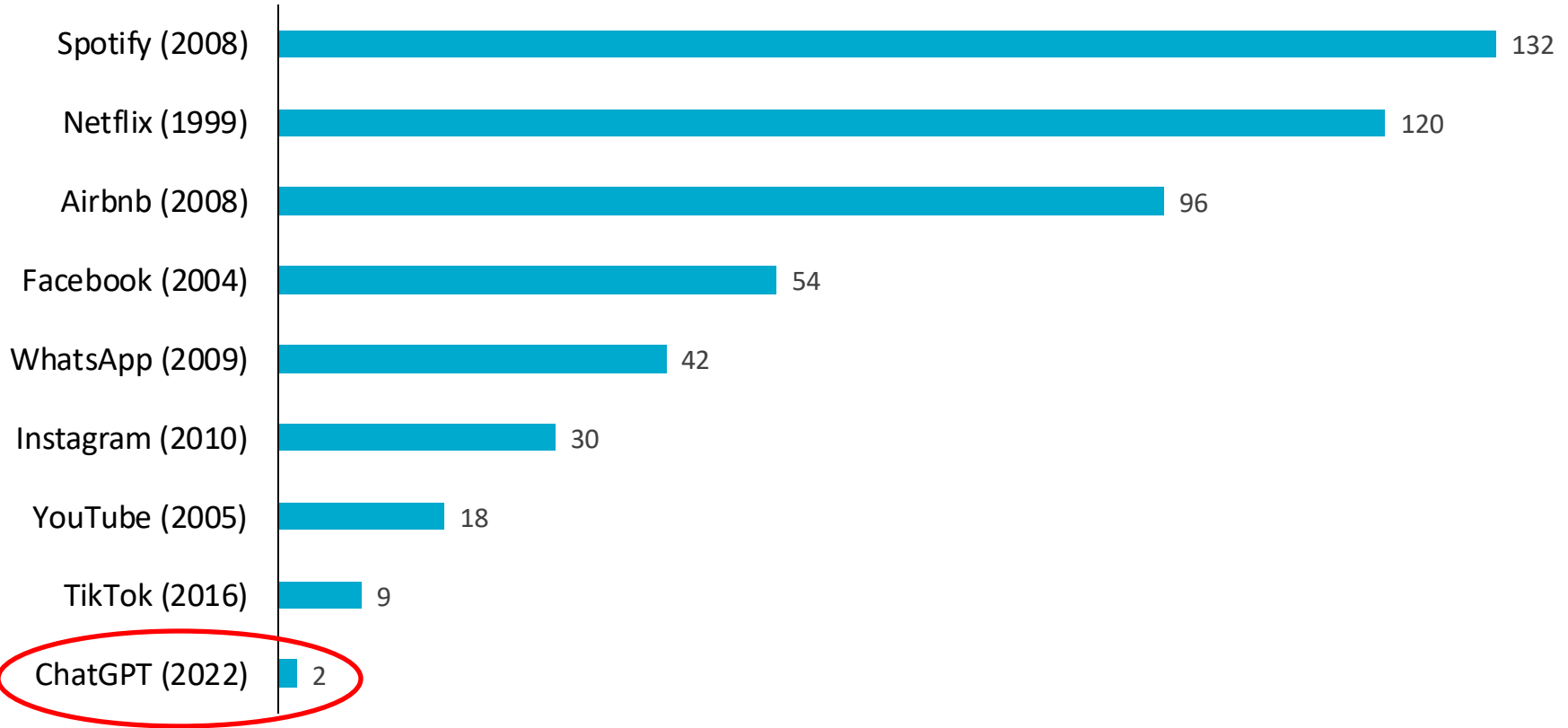
MISTRAL
AI_

Chat RTX



NVIDIA

How many months to reach 100 million users ?



Computer programmers using GitHub copilot successfully completed tasks 56% quicker. That's 117,000 workers in Australia

Data source: MIT, GitHub, Microsoft, ABS





Management consultants using performed tasks 25% faster and 40% better using GPT-4. Lower skilled consultants had a greater productivity boost.

Data source: BCG and Harvard Business School

AI at Work Is Here. Now Comes the Hard Part

Employees want AI, leaders are
looking for a path forward.

May 8, 2024



Microsoft

Generative AI
products are being
used by 75% of
knowledge workers.

Australia's AI Ethics Principles

Towards best practice for ethical design and application of artificial intelligence

1. Human, social and environmental wellbeing
2. Human-centred values
3. Fairness
4. Privacy protection and security
5. Reliability and safety
6. Transparency and explainability
7. Contestability
8. Accountability



National framework for the assurance of artificial intelligence in government

A joint approach to safe and responsible AI
by the Australian, state and territory governments.

21 June 2024

5 September 2024

Proposal for mandatory
guardrails for AI in high-
risk settings

Option 1 – Domain specific approach – adapting
existing regulatory frameworks to include the
proposed mandatory guardrails

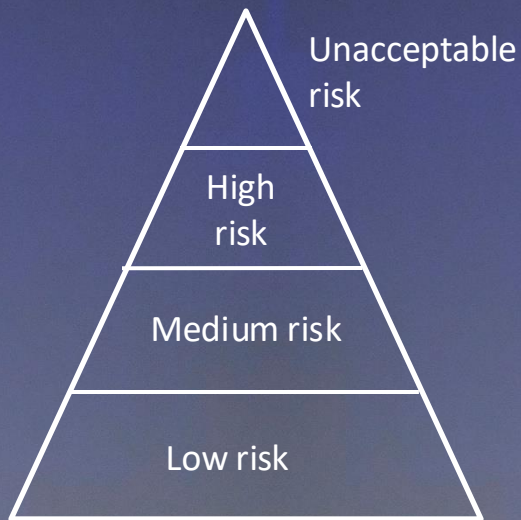
Option 2 – Framework approach – introducing
framework legislation, with associated
amendments to existing legislation

Option 3 – Whole of economy approach – introducing
a new cross-economy AI Act.



EU AI Act – First regulation on artificial intelligence (13 March 2024)

Press conference by Margrethe Vestager who is executive vice president of the European Commission leading the initiative - A Europe fit for the digital age



Commission européenne
European Commission

Key takeaways

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1. E-Government is a crucial stepping stone on the pathway to economic development. Do it well and it boosts the economy, jobs and quality of life.
2. Trust, security and the management of disinformation mal-information and harmful content is emerging as a critical challenge for government.
3. Digital disruption is creating opportunity/risk for workers and businesses. Need to be nimble, need to reskill workers and pivot business models.
4. Being data driven and data savvy gets better outcomes. This involves developing data driven cultures and evidence-based decision-making frameworks.
5. There's been huge progress in artificial intelligence. It's not coming – it's here now. It's going to impact on e-government and your economy and society in general.

Thank you

Stefan Hajkowicz, Chief Research Consultant

