



New Zealand



GEARING UP FOR THE AI ECONOMY

GEARING UP FOR THE AI ECONOMY: NEEDS FOR A STRONGER LEARNING CULTURE

New Zealand's digital landscape shows a growing tech industry but faces a significant digital divide. The internet offers democratic participation but also spreads misinformation. Challenges include low AI adoption and a lack of digital benchmarks. Recommendations include improving digital literacy and implementing strong data protection measures to foster a more equitable digital future.

Mahsa McCauley Mohaghegh and Frances Valentine

.nz

How would you describe the digital trends in your country, especially regarding digital social impact ventures?

Frances Valentine: New Zealand has a buoyant tech industry, with 'Software as a Service' and niche technical products contributing to the diversification of the nation's economy.

However, digital adoption across sectors and the community is not equal. There is a significant digital divide between people who actively utilise and benefit from digital tools and technological advances and those who have yet to benefit from digital adoption. To address the inequity that has formed from a lack of access to resources, a large and growing community of social entrepreneurs and not-for-profit organisations have been developed to help bridge the adoption gap and build capability. These organisations are often built as social or philanthropic initiatives or as partnerships between the New Zealand government and the private sector to create impactful ways to build digital skills so everyone can adopt and benefit from digital technologies.

Social impact initiatives often bring higher levels of innovation and responsiveness to building digital solutions, enabling the government to support programs that meet emerging needs unencumbered by bureaucratic systems.

McCauley: According to New Zealand's Digital Strategy for Aotearoa, key digital trends in the country, especially regarding digital social impact ventures, include:

- Using digital technologies ethically to support people, communities, and the environment while reflecting New Zealand's unique culture and values.
- Growing the digital economy sustainably, creating fulfilling tech jobs that align with New Zealanders' wellbeing.
- Leveraging digital tools to transition to a low-emissions economy, such as smart agriculture, while ensuring the digital sector's growth is sustainable.
- Prioritising digital inclusion, ensuring all New Zealanders can access and benefit from digital technologies, focusing on collaborating with groups at higher risk of exclusion, such as Māori and Pacific peoples.

- Increasing trust by making digital systems and data use secure, fair, ethical, and culturally appropriate while protecting against potential harms like misinformation and privacy breaches.

New Zealand aims to be a global digital leader by leveraging technologies for positive social impact through an inclusive, ethical, sustainable, and trust-enhancing approach that reflects the nation's values and aspirations (The Digital Strategy for Aotearoa, 2022)*.

How would you describe recent digital shifts in your country?

Frances Valentine: Over the past two decades, the most tangible digital shifts have occurred due to the telecommunications sector's commitment to improve access to the Internet and lower-cost broadband connections. The combination of an improved range of connectivity, a more competitive marketplace for broadband and the significant adoption of smartphones has significantly reduced key barriers to digital uptake.

COVID-19 was a significant enabler as schools, workplaces, service providers, and the government invested significant resources in digitising core products and services to ensure access was re-established online at a time when most people were in compulsion. This shift to online services was a circuit-breaker for many people, as they developed new skills in online banking, e-commerce, online conference calls and online media. This process raised the capability and confidence of many.

However, knowing how to utilise digital technologies and software beyond core services, such as online banking, continues to be the most significant hurdle to becoming a fully digital nation, particularly for older members of the community and people who have yet to gain exposure to technology. For example, many small businesses have no internet presence, limiting both the size of their customer base and the efficiencies that come from online tools.

The next decade is likely to see greater inequality as generative AI, more sophisticated online experiences, and more advanced platforms become the new domain for the technically literate, to the increased detriment of people who have not yet engaged with digital devices or digital services to a level where they have an underlying confidence and capability to be independent users. This will likely cause a growing digital divide unless additional resources are put into teaching and learning digital skills across all communities.

McCauley: Internet adoption, computers and digital devices are now widespread among individuals and businesses. A growing tech sector is emerging, creating innovative products and services for local and global markets. Government agencies are increasingly using data and digital technologies to deliver services.

Initiatives like the *Marae Digital Capability Program*, which has connected over 560 Marae to broadband, are improving digital inclusion and skills, particularly in Māori communities. The Strategy envisions a future where “all New Zealanders have the tools, skills and confidence to participate in an increasingly digital society.”

However, challenges remain around digital inequalities, cyber security threats, ethical use of emerging technologies, and ensuring the sustainable growth of the digital sector. The Digital Strategy for Aotearoa aims to address these proactively to create a trusted, inclusive and thriving digital nation. It sets a path towards an equitable, innovative future where digital technologies support the well-being of people, communities, the economy and the environment.¹

¹ The Digital Strategy for Aotearoa. (2022). New Zealand Government. <https://digitalstrategy.govt.nz/>

Describe and provide insight into your country being democratic or the Internet breaking democracy in your body politic.

McCauley: Opinions about the internet's impact on democracy in New Zealand vary among local experts. *NetSafe* CEO Brent Carey acknowledges that while the internet has expanded access to information and political discourse, spreading misinformation and conspiracy theories online poses a growing threat to informed public debate, a cornerstone of a healthy democracy.

However, Marianne Elliott, co-director of *The Workshop*, believes that with proper safeguards and digital literacy initiatives, the internet can strengthen democratic participation by enabling marginalised communities to organise and make their voices heard like never before. She emphasises the importance of robust transparency from tech companies and the government on data usage to maintain trust and accountability.

Former *Internet NZ* CEO Jordan Carter views the internet as a tool society must shape to bolster democratic values. This requires collaboration between the government, tech companies, and civil society to address online harms while protecting human rights. He cites initiatives like the Christchurch Call and the Action Coalition on Meaningful Transparency as positive steps towards this goal for New Zealand and the world.

Fostering transparency, accountability, and multi-stakeholder collaboration is crucial for leveraging digital technologies to support democracy in New Zealand, with the country taking an active role in these efforts domestically and globally.

Digital Tools are considered to be empowering. Can you describe which sector in your country has been helped by the Digital most?

McCauley: Digital tools have empowered various sectors in New Zealand, but some have benefited more than others. The

private sector, particularly tech-savvy businesses, has been the biggest beneficiary. E-commerce platforms like *Trade Me* have revolutionised how Kiwis buy and sell goods, while companies like Xero have made accounting more accessible for small businesses.

According to the State of AI in New Zealand report, one in five New Zealand organisations is AI mature, and only 7 per cent engage in core practices supporting widespread AI adoption. To truly harness the potential of AI, the report suggests that New Zealand needs more organisations to embrace changes and progress up the AI maturity scale.

This involves shifting mindsets, educating executives, using a common language, empowering technology leaders, and choosing the right technology and partnerships. By doing so, New Zealand has the opportunity to create its own 'AI ecosystem' and 'AI economy', potentially driving significant productivity, innovation, and economic growth.²

Frances Valintine: The education system saw the launch of the compulsory digital technologies curriculum in December 2017. This curriculum applies from the first year at school to develop students' skills in digital technologies and computational thinking. However, the adoption of the new curriculum has not been equal, as issues include varying levels of access to computers and Wi-Fi, and the lack of teacher training has resulted in highly variable outcomes.

The gap between students with digital literacy and knowledge and those without became more visible during COVID lockdowns when schools were forced online to deliver classes. The disparities between teachers with highly developed digital skills and those without created inequitable learning

2 Chakravorti, B., Bhalla, A., & Ryder, G. (2022). State of AI in New Zealand. Salesforce. https://www.salesforce.com/content/dam/web/en_nz/www/documents/pdf/platform/state-of-ai-in-new-zealand.pdf

experiences for many students.

The gap between teachers with the skills and knowledge to utilise digital tools in their teaching practices and those without is a significant hurdle requiring further deliberate action and commitment to resolve. One emerging action, seen at scale by students nationwide, was the move to self-education through the Internet. Many students, particularly those in high school, mitigated the inconsistent rollout of digital delivery of subjects through self-taught methods, including platforms such as YouTube and private online learning platforms. These self-taught tools and applications have enabled many students to apply new ways to innovate and create outside the formal education curriculum.

At face value, this self-education of new tools and ways to learn online has empowered students. The downside is that it further divides the understanding and skillset between teachers and students, creating challenges around learning relevance and building greater frustration as formal education becomes less relevant or engaging for students who find learning online more responsive to how they learn and think.

What are the biggest challenges in your country in terms of digital transformation?

McCauley: The “Accelerating Aotearoa Businesses One Technology Generation Forward” report, commissioned by Spark and conducted by the New Zealand Institute of Economic Research in 2024, highlights several key challenges hindering New Zealand’s digital transformation:

- Lack of a robust national framework to measure and benchmark digital adoption among businesses over time, making it difficult to track progress and target investments
- Declining global competitiveness, New Zealand is falling behind peer countries in the IMD World Digital

Competitiveness Ranking, and it is now ranked 27th.³

- Low uptake of advanced digital technologies due to insufficient awareness and information among businesses, particularly regarding AI, data analytics, and computer vision.⁴
- There is an absence of a national AI strategy to capitalise on the technology's potential to drive productivity growth and provide a responsible usage framework.⁵
- An inadequate innovation ecosystem and low R&D investment require stronger collaboration between business, academia, and government.⁶

The report calls for establishing national benchmarks, strategies, and cross-sector collaborations to accelerate digital transformation to increase advanced technology adoption and strengthen the innovation ecosystem. Addressing these challenges will boost productivity and competitiveness in an increasingly digital global economy.

Does your country consume digital content more than it produces, or vice versa?

McCauley: The *Digital Technologies Industry Transformation Plan* outlines a strategic vision and initiatives aimed at growing New Zealand's digital technologies sector and establishing the country as a leader in producing innovative digital technologies:

3 Spark (2024) "Accelerating Aotearoa Businesses One Technology Generation Forward". Report conducted by the New Zealand Institute of Economic Research (NZIER). p.9.

4 Spark (2024) "Accelerating Aotearoa Businesses One Technology Generation Forward". Report conducted by the New Zealand Institute of Economic Research (NZIER). p.14.

5 Ibid, p.14.

6 Ibid, p.19.

- The vision statement positions New Zealand as aspiring to be a world leader in “ethical, innovative, inclusive and sustainable digital technologies.”
- A key focus area is “Telling our Tech Story” domestically and internationally to showcase New Zealand’s digital technology capabilities.
- Another priority is building the skills pipeline to enable more New Zealanders to become creators of digital tech, products and services.

So, while current consumption versus production levels are not quantified, the ITP intends to expand New Zealand’s role as a producer of digital technologies and content.

Frances Valintine: New Zealanders are high consumers of digital services. Statically, New Zealand has high levels of adoption of services such as social media, online banking and e-commerce. However, this adoption has not translated into the creation of a significant digital sector. The most significant contributors to the New Zealand digital sector are the large film production studios such as *Weta Digital* and video games companies, as well as the fintech sector, which have had significant international success.

However, many of New Zealand’s highest-profile technology companies were established over 20 years ago, with noticeably less significant digital innovation startups established in recent years. This is partially due to limited access to funding for early-stage startups and a tech talent shortage that has been a significant barrier to growth for most tech companies for many years.

Government services are steadily digitising; however, these systems are not inter-connected, and citizen data is not shared between government agencies. No compulsory Citizen ID exists, and therefore, each government website operates in a

silos, removing the ability to build a highly responsive digital system that benefits from the collective knowledge of all.

However, for citizens with high levels of digital fluency and confidence, the range of government services now available online includes registering businesses, paying taxes, ordering a passport and completing a census. Significant investment has been committed to improving access to government services, including the development of online education platforms to help businesses digitalise. One such example is www.digitalboost.co.nz.

Future government aspirations include open banking, the ability to vote online, and students being able to sit compulsory exams through online examinations.

Some further commitment has been seen in recent years to improving access to online services for speakers of Te Reo Māori (New Zealand's indigenous language) and higher standards of accessibility, such as the adoption of screen readers and captions.

Compared to other small, advanced economies, New Zealand is in the lower quartile regarding digital innovation and creativity. This has significantly contributed to the country's low productivity rate and low numbers of large businesses emerging in response to the digital economy.

Can you make recommendations on how your country should make digital policies an equaliser?

Frances Valintine: For New Zealand to truly become a digital nation, a comprehensive approach to collaboration between the government and the private sector will be required.

The development of a single instance (record of truth) in the form of a personal digital identity would greatly help citizens engage with online government services. This would also give

the government greatly improved insights and data on the state of the nation across all services.

Education on digital literacy is essential for all - from school right through to retirement. Targeted incentives to promote digitisation would greatly help move businesses online and create a stronger ecosystem to build digital services. Teacher education and learning access for parents and more mature members of the workforce to learn and build confidence with digital technologies would significantly improve the adoption rate and prepare the workforce for emerging digital technologies such as AI.

Fundamentally, New Zealand needs to build a stronger learning culture that embraces lifelong learning, active planning and preparedness for the fast-evolving digital economy. This will require individuals, employers, the government, and communities to invest more resources and time in building new ways to learn and commit to the future.

McCauley: There are several recommendations which would assist the development of the digital ecosystem:

- Implement policies and programs to improve digital literacy and skills across all segments of the population, especially underserved groups. This ensures more equal access to the opportunities enabled by digital technologies.
- Ensure affordable, reliable and widespread Internet connectivity, especially in rural and remote areas. Lack of connectivity is a major barrier to equal participation in the digital economy.
- Provide incentives and support for small businesses and entrepreneurs to adopt digital technologies. Smaller enterprises often lag in digital adoption compared to large companies.

- Implement strong data protection and privacy regulations to safeguard citizens' rights in the digital realm. A lack of trust can inhibit equal participation.
- Collaborate with the private sector and civil society in policymaking to understand on-ground challenges to digital inclusion and co-create solutions.
- Continuously evaluate policies to determine whether they are bridging or exacerbating the digital divide between different socio-economic groups.

Regarding the development of the AI economy, the following recommendations are worth discussion and implementation:

- In Aotearoa, New Zealand, incorporating Tikanga Māori principles into AI deployment is paramount. This includes Māori leadership and governance at all levels, equity for Māori, active protection of Māori data, and following cultural practices.
- New Zealand should create its own national AI strategy to ensure the country takes advantage of the significant growth this technology will deliver. The strategy should support AI innovation and help ensure New Zealand remains a creator of AI, not just a consumer.
- The national AI strategy could consider establishing nationally consistent AI governance principles for organisations to adhere to, taking an “ethics by design” approach as has been done in Australia. This would encourage businesses to make responsible use of AI.
- Harnessing AI responsibly has huge potential to improve how businesses work and deliver results in New Zealand. Establishing a national strategy and upskilling business leaders will be key to realising AI's economic benefits.

Mahsa McCauley Mohaghegh, WSA Board of Directors Member & National Expert New Zealand; Director/Founder She Sharp; School of Engineering, Auckland University of Technology; and

Dr Mahsa McCauley is a Senior Lecturer and Director of Women in Tech at AUT's School of Computer, Engineering, and Mathematical Sciences. She is a well-recognised leader in AI and machine learning. She is also the founder of the charitable trust She Sharp, a women's technology networking and learning group, where she works to encourage young New Zealand girls to consider what a career in technology offers. She founded She# hoping to bring about the much-needed change in the gender split in tech and believes that we must work together to solve this! She was named the Emerging Leader category winner in the 2013 Westpac Women of Influence Awards and was one of ten finalists for the 2018 Kiwibank New Zealander of the Year. In 2019, she was the Champion Award winner of the YWCA Equal Pay awards, and in 2020, she presented the Massey University Distinguished Alumni Award.

Frances Valintine, WSA National Expert for New Zealand; Founder & Board Director, academyEX, Auckland

Frances Valintine CNZM is a passionate educator and technologist who is focused on developing education opportunities that connect professionals to the knowledge they need to be successful in today's rapidly advancing world. For 25 years, she has been dedicated to shifting education and business practice to develop the capabilities, knowledge and mindset needed to respond to the future of work. As Chief Executive of academyEX, a post-graduate institute, she focused on professional development and knowledge in the fields of technological advancement, education, sustainability and leadership. In 2013, she founded The Mind Lab, a unique offering designed to empower students and educators to develop applied digital knowledge and capability. It was judged Best Startup in Asia Pacific by Steve Wozniak and Sir Richard Branson in 2014. A Companion of the New Zealand Order of Merit for her lifetime contribution to education and technology (2018), Frances has received numerous awards recognising her passion and commitment to supporting the young and more mature to seek opportunities and reach their potential. Frances is also a mentor to several global female technology leaders and a director of On Being Bold, an initiative to support and encourage emerging female leaders and female students to aim high and dream big. Frances is also on the Board of Trustees for the University of Silicon Valley. Frances is the author of Future You, a book dedicated to shifting perceptions about learning as an adult. She holds a Master of Education Management from the University of Melbourne.