

UNLOCKING NEW ZEALAND'S DIGITAL POTENTIAL: THE ECONOMIC OPPORTUNITIES OF DIGITAL TRANSFORMATION AND GOOGLE'S CONTRIBUTION

αphabeta
strategy x economics

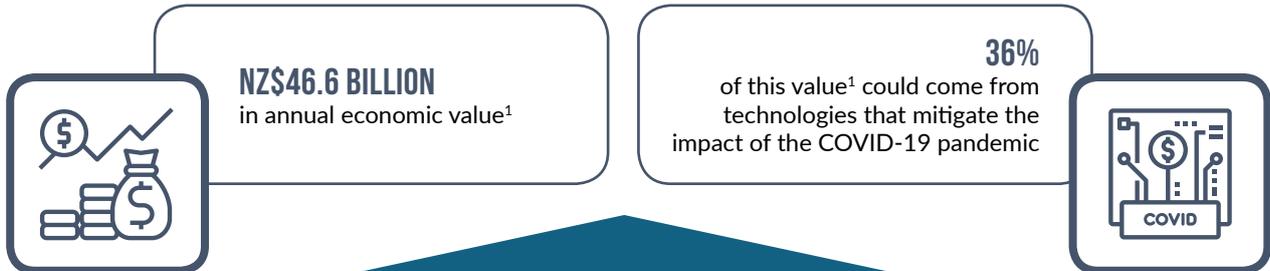
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UNLOCKING NEW ZEALAND'S DIGITAL POTENTIAL



BY 2030, IF LEVERAGED FULLY, DIGITAL TRANSFORMATION CAN CREATE UP TO...



EXAMPLES OF GOOGLE'S CONTRIBUTIONS TO EACH PILLAR

<p>GOOGLE CLOUD supports the growth of new technology-driven business models for small businesses</p>	<p>Google supports the "DIGITAL FLUENCY INTENSIVE" initiative which utilises digital tools to improve learning outcomes in schools with predominantly Māori and Pasifika students</p>	<p>GOOGLE MY BUSINESS and GOOGLE ADS create export opportunities for Kiwi businesses by extending their outreach overseas</p>
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GOOGLE'S BROADER ECONOMIC BENEFITS

<p>BUSINESSES</p> <p>Google supports NZ\$3 BILLION in annual benefits to businesses in New Zealand²</p>	<p>CONSUMERS</p> <p>Google supports NZ\$3.5 BILLION in annual benefits to consumers in New Zealand²</p>	<p>SOCIETY</p> <p>Google supports philanthropic organisations, safeguards Internet privacy and security, and promotes cultural diversity in New Zealand</p>
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1. Economic value refers to GDP increments, productivity gains, cost savings, time savings, increased revenues, increased wages and increased tax collection. Note: Estimates are based on AlphaBeta analysis using a range of original and third-party sources. See report's Appendix for methodology.
 2. Figures are estimated based on the latest available annual data as at time of research in 2020.

EXECUTIVE SUMMARY

Digital transformation has become an imperative in New Zealand. Even before the COVID-19 pandemic, New Zealand's economy had been facing headwinds from disappointing labour productivity growth amidst rising labour costs and an ageing workforce.¹ According to Stats NZ, labour productivity growth fell from an average annual rate of 2.9 in the period between 1997 and 2000, to 1.0 percent in the period between 2008 and 2018.² This is around 40 percent lower than top-performing OECD countries, which translates into below average incomes and lower living standards. New Zealand has weathered the COVID-19 crisis well, and the economy is rebounding on the back of policies that have protected businesses and kept unemployment relatively low. However, the COVID-19 crisis has exposed the over-reliance of the New Zealand economy on low-productivity, low-value exports. As we rebuild for the post-pandemic future, digital transformation can no longer be a mere aspiration. It has become an imperative.

Comprehensive research has been done on the economic contributions of digital technologies in New Zealand. For example, the New Zealand Tech Alliance (NZTech) estimated that the technology sector

contributed about NZ\$16.2 billion or 8 percent of GDP in 2015, and that five new service sector jobs were created for every new technology sector job.³ The productivity impacts of specific technologies have also been well researched. Studies by Sapere Research Group estimated that the productivity impact of better use of the Internet by all Kiwi businesses was NZ\$34 billion, and that NZ\$4.5 billion was the estimated potential gain from better use of data by businesses and government.⁴ A study of the productivity benefits from IoT applications estimated a potential net economic benefit of NZ\$1.1 billion to NZ\$3.3 billion for New Zealand over the next ten years.⁵

However, there is both a knowledge gap and cynicism surrounding the economic potential of digital transformation for New Zealand's traditional, non-technology sectors. Despite comprehensive research on the economic impact of the technology sector, there is limited research on the economic value of different technologies applied in traditional sectors. Moreover, a recent survey showed that by international standards, Kiwis are less positive about the social and economic impact of emerging technologies on the economy.⁶ In an industry submission to a government inquiry on this, it was stated that "many New Zealanders

1. New Zealand Productivity Commission (2019), *Productivity by the numbers: 2019*.

Available at: <https://www.productivity.govt.nz/assets/Documents/productivity-by-the-numbers-2019/42ead8d24d/Productivity-by-the-Numbers-2019.pdf>

2. New Zealand Productivity Commission (2019), *Productivity by the numbers: 2019*.

Available at: <https://www.productivity.govt.nz/assets/Documents/productivity-by-the-numbers-2019/42ead8d24d/Productivity-by-the-Numbers-2019.pdf>

3. NZTech (2016), *From tech sector to Digital Nation*.

Available at: <https://nztech.org.nz/wp-content/uploads/sites/8/2019/02/from-tech-sector-to-digital-nation-2nd-edition-ebook.compressed.pdf>

4. Sources include: Sapere Research Group (2014), *The value of internet services to New Zealand businesses*. Available at: <https://srgexpert.com/wp-content/uploads/2017/11/Sapere-Google-INZ-The-value-of-internet-services-to-New-Zealand-Businesses-Report-31-March-2014.pdf>; Sapere Research Group and Covec (2015), *Data driven innovation in New Zealand*. Available at: https://srgexpert.com/wp-content/uploads/2017/11/Data_Innovation_Report_WEB.pdf

5. New Zealand IoT Alliance (2020), *Accelerating a connected New Zealand*.

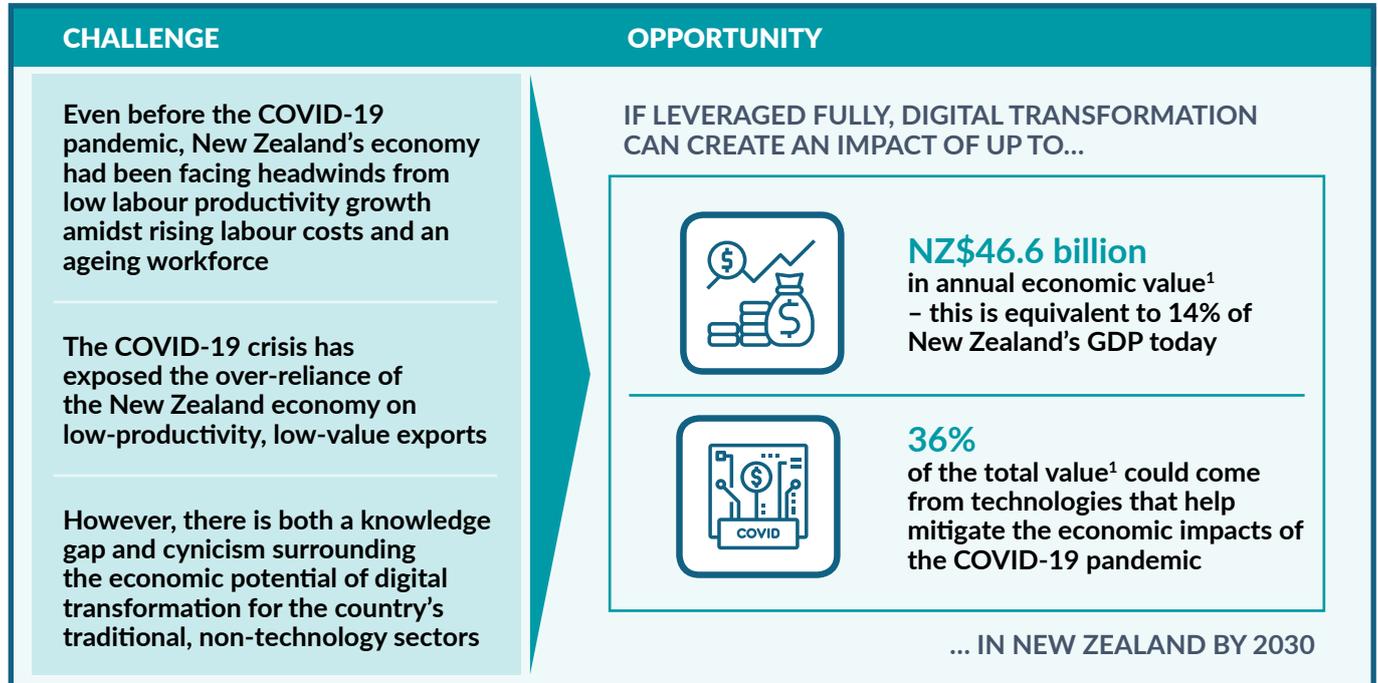
Available at: <https://nztech.org.nz/wp-content/uploads/sites/8/2019/02/Accelerating-a-Connected-New-Zealand-eBOOK.compressed.pdf>

6. Productivity Commission (2020), *Technological change and the future of work*.

Available at: https://www.productivity.govt.nz/assets/Documents/223e187413/At-a-glance_Technological-change-and-future-of-work.pdf

EXHIBIT E1:

THERE IS A NZ\$46.6-BILLION ECONOMIC OPPORTUNITY ASSOCIATED WITH DIGITAL TRANSFORMATION IN NEW ZEALAND BY 2030



1. Economic value refers to GDP increments, productivity gains, cost savings, time savings, increased revenues, increased wages and increased tax collection.
 Note: Estimates are based on AlphaBeta analysis using a range of original and third-party sources. See report's Appendix for methodology.
 SOURCE: AlphaBeta analysis

(both workers and business owners) remain uncertain about both technology itself and about what successful adoption of that technology looks like⁷.

This report finds that, if leveraged fully in the economy, by 2030, digital technologies could create an annual economic value of NZ\$46.6 billion.⁸ To put this in perspective, NZ\$46.6 billion is equivalent to about 14 percent of New Zealand's GDP - or the combined GDP supported by Canterbury and Hawke's Bay.⁹ If New Zealand can fully leverage technology, it can deliver higher incomes, better living standards and improved well-being for its people.

The key messages of this report include:

- **Eight key technologies hold transformative potential for businesses and workers in New Zealand.** These include mobile Internet;
- **If leveraged fully, digital transformation can unlock NZ\$46.6 billion worth of economic value in New Zealand's non-technology sectors by 2030.**

cloud computing; big data; Artificial Intelligence (AI); financial technology (fintech); the Internet of Things (IoT) and remote sensing; advanced robotics; and additive manufacturing. Mapped to each of the eight technologies, 40 technology applications were then identified across 10 industry sectors in Exhibit E2.¹⁰ By allowing for new business models, revenue streams and productivity savings, these technologies could create significant economic value for both businesses and the government in New Zealand. Workers also receive benefits, with studies showing that by allowing them to focus on more engaging and higher-value work, technology adoption fosters greater job satisfaction, improved wages and enhanced work safety.

7. Productivity Commission (2020), *Technological change and the future of work*. Available at: https://www.productivity.govt.nz/assets/Documents/223e187413/At-a-glance_Technological-change-and-future-of-work.pdf
 8. Economic value refers to GDP increments, productivity gains, cost savings, time savings, increased revenues, increased wages and increased tax collection.
 9. Based on AlphaBeta analysis. See Appendix A for details on the methodology.
 10. These ten sectors accounted for 74 percent of New Zealand's combined GDP in 2018. Source: Stats NZ (2020), Available at: <http://infoshare.stats.govt.nz/>

EXHIBIT E2:

40 DIGITAL TECHNOLOGY APPLICATIONS ACROSS 10 INDUSTRIES WERE IDENTIFIED TO SIZE NEW ZEALAND'S ECONOMIC OPPORTUNITY FROM DIGITAL TRANSFORMATION

<p>Agriculture & food</p> 	<p>Consumer, retail & hospitality</p> 	<p>Education & training</p> 	<p>Financial services</p> 
<ul style="list-style-type: none">  Precision farming  IoT-enabled supply chain management  Food safety technologies 	<ul style="list-style-type: none">  Digital retail sales and marketing channels  IoT-enabled inventory management  Automation & AI customer service in hotels  Data analytics on travel patterns  Online F&B delivery channels 	<ul style="list-style-type: none">  E-career centres and digital jobs platforms  Personalised learning  Online retraining programmes 	<ul style="list-style-type: none">  Big data analytics  Digital banking services  Reg tech
<p>Government</p> 	<p>Health</p> 	<p>Infrastructure</p> 	<p>Manufacturing</p> 
<ul style="list-style-type: none">  Cloud computing  E-services  E-procurement  Geographic Info. System enabled tax collection  Data analytics for government transfer payments 	<ul style="list-style-type: none">  Remote patient monitoring  Telehealth applications  Data-based public health Interventions  Detection of counterfeit pharmaceutical drugs  Smart medical devices  Electronic medical records 	<ul style="list-style-type: none">  Smart grids  5D BIM & project management technologies  Predictive maintenance technologies  Smart buildings 	<ul style="list-style-type: none">  Big data analytics  Additive manufacturing  IoT-enabled supply chain management  Automation & robotics
<p>Transport services</p> 	<p>Resources</p> 	<p>Key technologies:</p> <ul style="list-style-type: none"> <li style="width: 50%;"> Mobile Internet <li style="width: 50%;"> Fintech <li style="width: 50%;"> Advanced robotics <li style="width: 50%;"> Additive manufacturing <li style="width: 50%;"> Cloud computing <li style="width: 50%;"> Big Data <li style="width: 50%;"> AI <li style="width: 50%;"> IoT 	
<ul style="list-style-type: none">  Smart roads  Smart ports  Autonomous vehicles  Geospatial services 	<ul style="list-style-type: none">  Smart exploration and automation in mining operations  Predictive safety technologies  Predictive maintenance technologies 		

By generating productivity gains, revenue boosts and cost savings, digital technologies can reap up to NZ\$46.6 billion worth of economic value annually in New Zealand's non-technology sectors by 2030. The largest projected beneficiaries are the government services, healthcare and manufacturing sectors.

- **Digital adoption can also support higher incomes, as well as higher-quality and safer jobs for Kiwis.**

Income improvements can be brought about by technology adoption through increased demand for specialised tech skills such as machine learning, shifts in the type of work performed by workers, economy-wide productivity benefits, as well as additional income-earning opportunities from the sharing economy. At the same time, with the increasing ability of technologies to displace mundane and routine tasks, surveys have shown that employees experience greater job satisfaction as they are able to focus more on meaningful and higher-order work requiring human ingenuity, critical thinking and creativity. Jobs can also be made safer through technologies such as industrial robotics that can perform dangerous physical tasks, which have been shown to reduce workplace injuries.

- **Digital adoption is also crucial for the country to gain resilience during the COVID-19 crisis and in the post-pandemic future.**

By allowing businesses to engage customers digitally, and minimise logistical bottlenecks amidst supply chain disruptions, technologies can help businesses manage the severe economic impacts of COVID-19. It is estimated that such applications present a combined economic value of NZ\$17.1 billion (as a subset of the overall opportunity of NZ\$46.6 billion). Beyond expediting short-term economic recovery, advanced technology applications such as increased automation may help address difficulties in access to temporary or seasonal migrant labour (particularly in industries that are reliant on them such as agriculture, hospitality and

retail). Increased use of virtual reality technology could support a digital transformation in New Zealand's international tourism industry in the post-pandemic future.

- **Three pillars of action are required for New Zealand to fully capture its digital opportunity.**

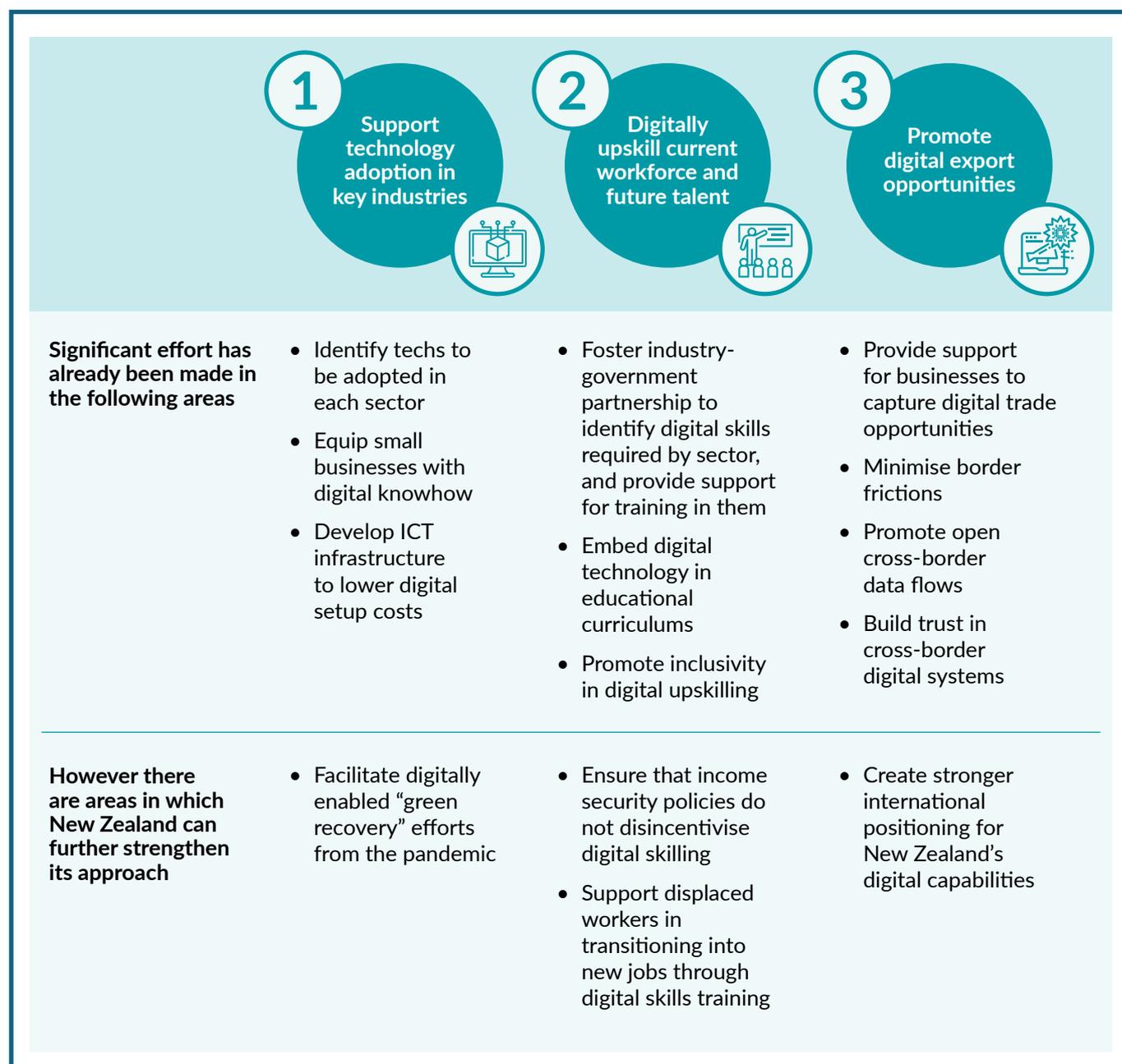
(Exhibit E3)

- First, there needs to be **strong support for technology adoption in key industries**. While New Zealand has made significant efforts in identifying relevant technologies for adoption in each sector (e.g., through the Ministry of Business Innovation and Employment's "Industry Strategy"), equipping small businesses with digital knowhow (e.g., through the recently announced "Small Business Digital Boost" package), and developing ICT infrastructure to defray the digital setup costs for businesses (e.g., through the "Ultra-Fast Broadband" programme and "Rural Broadband Initiative"), the country could go further to consider a stronger focus on a digitally-enabled "green recovery" process from the COVID-19 pandemic. This could in turn support the development and adoption of digital solutions that bring about more environmentally sustainable outcomes as part of the COVID-19 recovery process. Germany and South Korea's economic stimulus packages, which include a strong focus on technologies that promote clean energy and climate-friendly industries, offer positive international best practices in this regard.

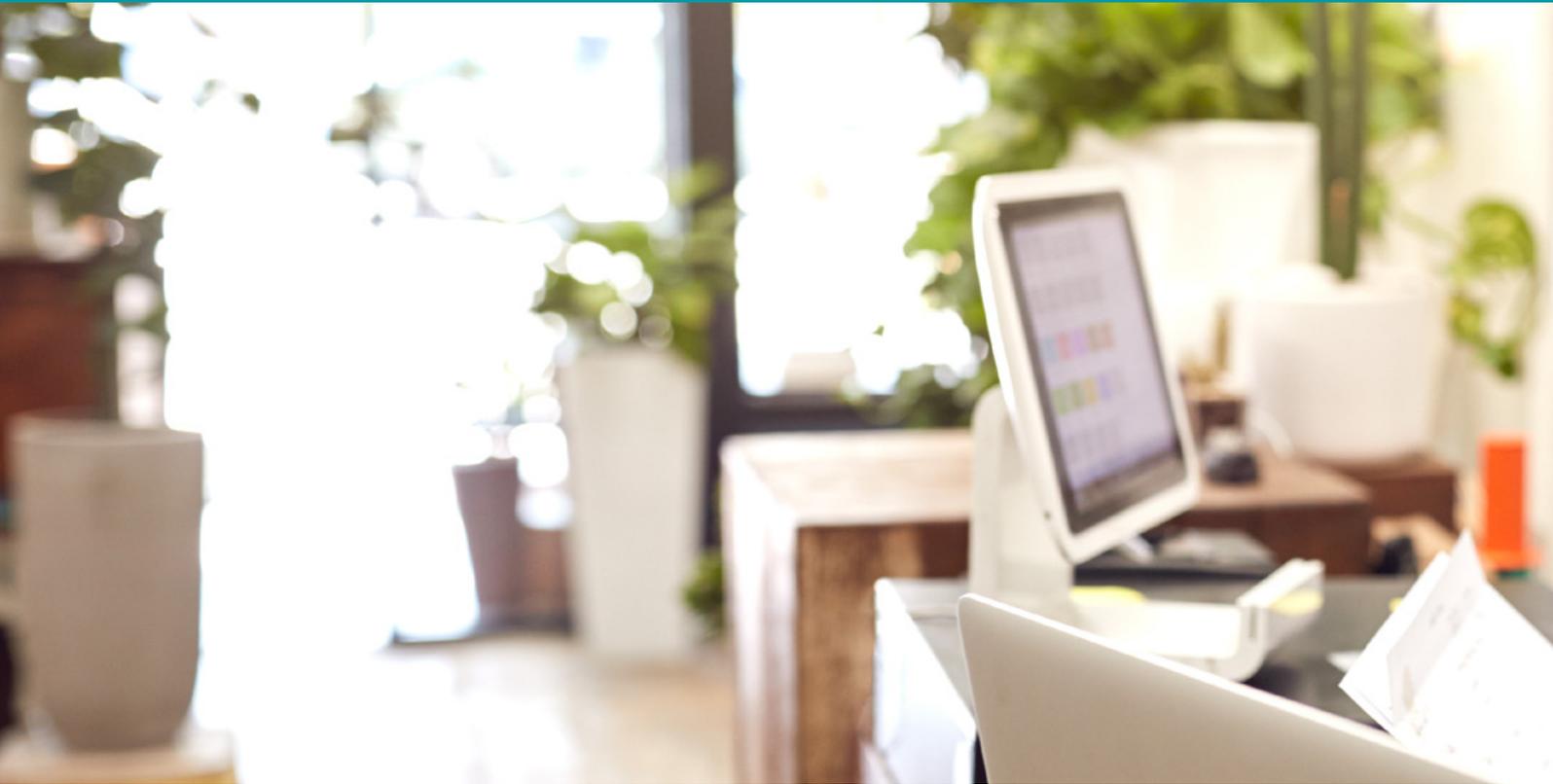
- Second, there would need to be a **focus on digitally upskilling the current workforce and future talent**. The New Zealand Government is making significant investments here, in particular, it is fostering partnerships with industry to identify the digital skills required in each sector and providing support for training in them (e.g., through the "New Zealand Digital Skills Forum" and digital vouchers rendered to small

EXHIBIT E3:

THREE PILLARS OF ACTION ARE REQUIRED TO FULLY UNLOCK THE DIGITAL OPPORTUNITY



SOURCE: AlphaBeta analysis



businesses for training), incorporating technology into educational curriculums (e.g., through the introduction of computational thinking and digital design elements into curriculums), and promoting inclusivity in digital skilling and access particularly for ethnic minorities and people with disabilities (e.g., through its “Digital Inclusion Action Plan”). The country could go further to ensure that income security policies (while important for enhancing social safety nets) do not disincentivise digital skilling efforts, and that workers displaced by the pandemic could be successfully transitioned into new jobs through digital skills programmes.

- Third, it is important to ensure that *digital export opportunities are enhanced* for businesses. The New Zealand Government has been active in providing capacity-building support for businesses to tap into overseas markets (e.g., through the “Getting Started Grants”

provided by the New Zealand Government agency, Callaghan Innovation, in partnership with the IT industry alliance, NZTech), minimising border frictions and promoting open cross-border data flows in the region (e.g., through the recently signed “Digital Economy Partnership Agreement” with Singapore and Chile). The country can go further to create a stronger international positioning for New Zealand’s digital capabilities and companies - though some progress has been achieved here through the government’s “New Zealand Story” initiative, international best practices of how countries that have successfully built their reputations as global tech and innovation leaders can be considered. These include increasing government support for research and development (R&D) capacities, fostering industry-academic collaboration to spearhead domestic innovation efforts and promoting collaborations between local start-ups and global technology firms.



- **Through both its programmes and products, Google is making a significant contribution to advancing New Zealand’s digital transformation journey.** The company’s suite of products and services such as Google Search, YouTube, Google Earth, Google Maps and Google Cloud have not only supported digital offerings of key industries such as retail and tourism, but also delivered transformative impacts that contribute to the growth of New Zealand’s digital economy. Google is also supporting the development of digital skills through programmes like the “Google Certification Program”, “Digital Fluency Intensive” for teachers, and its partnership with Spark to run workshops to support Kiwi businesses in using digital tools by delivering digital skills training for small and medium-sized enterprises (SMEs) at no cost.¹¹ Kiwi businesses have also leveraged Google tools like Google Ads to reach foreign markets and explore new export opportunities.
- **Google also delivers wider benefits to Kiwi businesses, consumers and the wider society.** Google’s products and services are estimated to bring about total annual business and consumer benefits worth **NZ\$3 billion and NZ\$3.5 billion**, respectively.¹² These products include Google Search, Google Ads, AdSense, YouTube, Google Play, Google Maps, Google Drive, and Google Docs, Sheets and Photos. For businesses, such benefits come in the form of increased revenue through better customer outreach and access to new markets, as well as improved productivity through time savings. Consumers, on the other hand, experience greater convenience, access to information, and more avenues for learning and skills development opportunities. Beyond its economic contributions to businesses and individuals, Google delivers benefits to the broader society by supporting the country’s non-profit sector, enabling safe and secure Internet use, promoting local culture, and reducing carbon emissions.¹³

11. Google New Zealand Blog (2020), “Google and Spark deliver no-cost digital skills training for SMEs”.

Available at: <https://newzealand.googleblog.com/2020/11/google-and-spark-deliver-no-cost.html>

12. The Google applications and services included in the analysis of business benefits include Google Search and Ads, AdSense, Google Maps, and Google Play. The Google applications and services included in the analysis of consumer benefits include Google Search, Google Maps, Google Play, Drive, Photos, Docs, and Sheets. Figures are estimated based on the latest available annual data as at time of research in 2020.

13. For further information, please see the forthcoming “Google Social Impact Report” in New Zealand.



Important Notice on Contents

This report has been prepared by AlphaBeta for Google. AlphaBeta and Google would like to thank Andrew Sweet, Director of Firecone NZ, for his valuable contribution in peer reviewing the report.

All information in this report is derived or estimated by AlphaBeta analysis using both proprietary and publicly available information. Google has not supplied any additional data, nor does it endorse any estimates made in the report. Where information has been obtained from third-party sources and proprietary research, this is clearly referenced in the footnotes.



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