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THE DIGITAL SPRINTERS

Boosting exports through digital technologies in Chile

October 2022

A Digital Sprinters focus report – Commissioned by Google

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The financial figures in this report are estimated in US dollars. Conversions, where applicable, are based on the average exchange rate for the period from December 2020 to December 2021.

1. Digital Sprinters is a framework for harnessing the digital transformation of emerging markets (EMs) into sustainable, inclusive growth that could ultimately have tremendous ramifications on the global economic balance of power. The concept of "Digital Sprinters" recognizes that—with the right strategies— EMs have tremendous potential to leapfrog more established markets. It's not a question of 'if' but rather where, when, and which markets.

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CONTENT

THE DIGITAL SPRINTERS

The US$15 billion export opportunity from digital technologies for Chile

DIGITAL TECHNOLOGIES BOOST EXPORTS THROUGH THREE CHANNELS

Creating new exportable digital solutions

e.g., Chilean app developers earn **US$45 MILLION ANNUALLY** from app users outside the country

Reducing costs of access to overseas markets

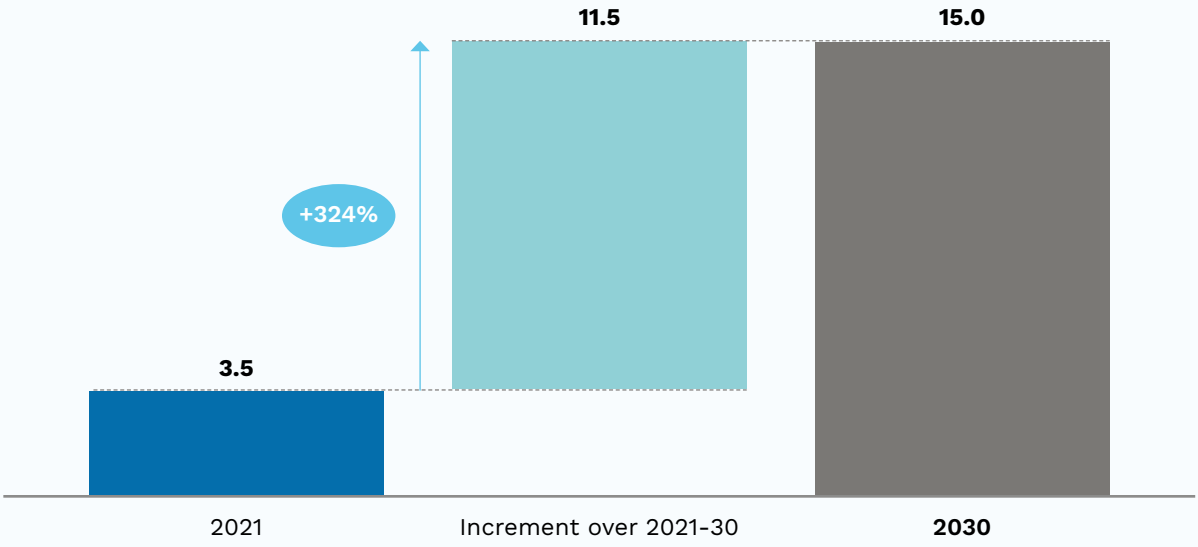
e.g., Global digital advertising platforms increase export revenues of Chile-based firms by **US$737 MILLION ANNUALLY**

Supporting efficiency in exporting processes

e.g., State-owned copper miner Codelco's focus on Internet-of-Things (IoT) technologies at its processing facilities has supported a **4 PERCENT** increase in copper production

"SIZE OF THE PRIZE" FROM DIGITAL TECHNOLOGIES FROM EXPORTS, US$ BILLIONS

Chile is already experiencing a **US$3.5 BILLION** boost to its annual export value from digital technologies, but this value could more than quadruple to reach **US$15 BILLION** in 2030[1]



1. This is a conservative estimate as it does not include all the efficiency benefits that digital technologies can bring to export-related industries (e.g., through better tracking of goods in transit through Internet of Things technology). In addition, the 2030 estimate was projected based on the 2021 performance of the best-in-class within the six focus countries only and will likely be much higher if we used global best-in-class countries as a reference point.

A CONDUCIVE POLICY ENVIRONMENT IS NEEDED TO CAPTURE THIS US$15 BILLION POTENTIAL BENEFIT FOR CHILE

Reduce technology costs for citizens

Support greater ownership and acquisition of ICT product and services, especially for low-income families, to bridge digital divide

Implement government-led digital education programs

Support digital innovation of MSMEs through tax incentives

This includes:

Implement data protection regulation

Provide clear frameworks for data protection so as to promote cross-border data transfers and drive industry best practices

Strengthen cybersecurity

Develop detailed Cybersecurity Policy with suggested standards for digital exports

SOURCE: AlphaBeta-Access Partnership analysis

UNLOCKING THE DIGITAL EXPORT OPPORTUNITY IN CHILE

The Chilean e-commerce market has experienced a large boost in growth especially during the COVID-19 pandemic, with business-to-consumer sales in 2020 almost doubling from 2019. About two-thirds of consumers in Chile increased their online purchasing as a result of the pandemic, the highest share in the Latin American region.[2] Among the six focus economies, Chile is also the most well-equipped with the right supply chain infrastructure to facilitate transport goods and services ordered via e-commerce.[3] As such, cross-border e-commerce exports are already providing a US$1.5 billion boost to Chile's annual export value. E-commerce export growth is one example of how the digital economy is creating large new export markets for businesses. Digital technologies are facilitating exports in several other ways such as by helping to lower the costs of exporting, particularly for micro, small and medium-sized enterprises (MSMEs). However, as national statistics have failed to keep pace with the rapid evolution of the digital economy, digital exports have not received as much attention as they warrant.

This report aims to address this gap,[4] and finds that Chile is already experiencing a **US$3.5 billion[5]** boost (4.4 percent of total exports) to its annual export value from applying digital technologies today (with Google facilitating up to 11.6 percent), and by 2030, this value can more than quadruple to become **US$15 billion[6]**. To fully capture this significant prize, there are four policy recommendations for Chile to focus on:

1. Reduce costs of technology for citizens;
2. Implement government-led digital education programs;
3. Implement general data protection regulation to enhance Chile's data culture and ensure cross-border data privacy measures; and
4. Strengthen cybersecurity legislation and engagement.

2. Statista (2022). "E-commerce in Chile - statistics and facts". Available at: *https://www.statista.com/topics/4975/e-commerce-in-chile/#topicHeader__wrapper*.

3. Chile ranks highest among the six focus Latin American economies (Argentina, Brazil, Chile, Colombia, Mexico, Uruguay) in the World Bank Logistics Performance Index. The World Bank Logistics Performance Index (LPI) is an interactive benchmarking tool created to help countries identify the challenges and opportunities they face in their performance on trade logistics and what they can do to improve their performance. It measures a country's performance on six key dimensions – clearance process efficiency, quality of trade and transport infrastructure, price competitiveness of logistics, quality of logistics services, timeliness of shipments, tracking and tracing technology. World Bank (2018), "International LPI: Global Rankings". Available at: *https://lpi.worldbank.org/international/global*

4. In our methodology to size the 2030 market, the country with the lowest digital export share of GDP for a particular component will see its share grow by the most over 2021-2030 in order to "catch up" to the best-in-class country for that component. This analysis is also based on current and forecasted economic conditions in the six focus economies in 2021, and could be changed if these economic conditions are changed. See Appendix in the overall regional report 'The Digital Sprinters: Boosting exports through digital technologies' for more details on the methodology.

5. This is a conservative estimate as it does not include all the efficiency benefits that digital technologies can bring to export-related industries (e.g., through better tracking of goods in transit through Internet of Things technology).

6. This estimate was projected based on the 2021 performance of the best-in-class within the six focus economies only, and will likely be much higher if we used global best-in-class countries as a reference point.

> THE CHILEAN E-COMMERCE MARKET HAS EXPERIENCED A LARGE BOOST IN GROWTH ESPECIALLY DURING THE COVID-19 PANDEMIC, WITH BUSINESS-TO-CONSUMER SALES IN 2020 ALMOST DOUBLING FROM 2019. AMONG THE SIX FOCUS ECONOMIES, CHILE IS ALSO THE MOST WELL- EQUIPPED WITH THE RIGHT SUPPLY CHAIN INFRASTRUCTURE TO FACILITATE TRANSPORT GOODS AND SERVICES ORDERED VIA E-COMMERCE. AS SUCH, CROSS-BORDER E-COMMERCE EXPORTS ARE ALREADY PROVIDING A US$1.5 BILLION BOOST TO CHILE'S ANNUAL EXPORT VALUE.

1. THE VALUE OF DIGITAL PRODUCTS AND SERVICES FOR CHILE'S EXPORTS IN 2021

Digital technologies boost exports through three channels:

1 Creating new exportable digital solutions.

Digital technologies have given rise to a range of new digital solutions that can be exported abroad. These include mobile applications, online video services, and digital services such as data processing rendered to overseas customers. In 2020, exports of information and communications technology (ICT) services constitute 35 percent of Chile's services exports.[7] Additionally, across all types of apps, Chilean app developers are currently estimated to be earning US$45 million annually from app users outside the country, contributing to 0.1 percent of total gross exports in 2021.[8] Chile's high latent potential for growth in this area is supported by the fact that international markets constitute an increasing share of Chilean game developers' revenue streams, with the United States a close second to the Chilean domestic market.[9] In terms of successful Chilean games, these include the popular mobile game Fallout Shelter for Bethesda developed by Behavior Interactive Chile, and several hits like Banana Kong and Operate Now Hospital produced by Gamaga. Notably, Banana Kong, which was co-developed with Germany's FDG Entertainment, was one of the most downloaded games worldwide at its launch, and has now amassed more than 100,000,000 downloads and a 4.4 star rating on Google Play.[10]

7. Chilean Government Ministry of Foreign Affairs (2021), "Digital Economy Association Agreement (DEPA) is approved by the Senate and is ready to become law". Available at: *https //minrel.gob.cl/news/digital-economy-association-agreement-depa-is-approved-by-the-senate*

8. AlphaBeta-Access Partnership analysis. See Appendix in the overall regional report 'The Digital Sprinters: Boosting exports through digital technologies' for more details on the methodology.

9. Premortem Games (2021), "Check out the new wave of talented developers from Chile". Available at: *https //premortem.games/2021/11/01/check-out-the-new-wave-of-talented-developers-from-chile/*

10. Gamaga (n.d.), "Banana Kong." Available at: *https //www.gamaga.com/banana-kong*

2 Reducing costs of access to overseas markets.

These include increases in the exports of goods through cross-border digital platforms (e.g., cross-border e-commerce) and digital advertising. Chile is the top country in terms of e-commerce exports (measured as a percentage of Gross Domestic Product or GDP) among the six Latin American economies in this study. It is estimated that today, e-commerce exports contribute to 0.6 percent of the country's GDP. Although Chile is already a major exporter of manufactured goods, there has been significant initiatives and development in this aspect recently. For instance, ProChile, the Export Promotion Bureau of Chile's Ministry of Foreign Affairs, designed the E-commerce Acceleration Program to help accelerate the e-commerce sales of Chilean brands already operating in the United States, through an external consulting firm providing marketplace strategy support and channel penetration advisory.[11] Another example of a program currently in progress is the B2C Canada and Mexico E-landing, a consulting and training program for Chilean companies to position their offerings and products in overseas marketplaces. Additionally, seven major Chilean companies were integrating to Tradeling, an e-commerce platform in the Middle East and North Africa (MENA) region, which has about 60,000 buyers and sellers from more than 50 countries.[12] Health & beauty and electronic & technological products are two key sectors in e-commerce, and the two are estimated to contribute to more than 70 percent of all Chilean e-commerce exports. Access to overseas markets is not only enhanced through e-commerce platforms, but through digital advertising. Through media tie-ups, advertisements, and influencer engagements, Wines of Chile has successfully achieved over 14 million impressions in Japan.[13] Currently, Chile-based firms are estimated to reap US$737 million annually in additional export revenues from digital advertising targeted at overseas customers, demonstrating how digital advertising platforms are able to enhance access to a larger export audience.[14] In particular, MSMEs in Chile see sizable benefits as they are able to access overseas audiences at an affordable price, giving them the same amount of visibility as their larger competitors.

3 Supporting efficiency in exporting processes.

There are various examples of how technologies can do this, such as paperless trade, digital solutions for trade information and operations, machine-to-machine (M2M) tracking of exported goods, and the application of Internet-of-Things (IoT) technologies in ports. Chile's main export products are mining goods. In the mining industry, both the government and private sector are aware of the importance and have been engaging in more digitization in operations. For instance, the state-owned copper miner Codelco has established its digitization plan, focusing on data transmission and security, IoT, automation, and integrated operation centers.[15] Codelco already has four integrated operation centers and has increased production by 4 percent by using IoT in three of its processing facilities. The Port of Valparaiso in Chile has also undergone digital transformation, achieving significant efficiency improvements and cost reduction. The port recently developed a reception module for the Maritime Single Window (VUMAR), an electronic platform which eliminates data redundancy and ensures efficiency in data sharing across different systems.[16] Adopting these technologies are especially significant for MSMEs, which may not have as much financial capabilities as their larger counterparts to invest in complex logistical networks. In such cases, the use of digital technologies can help to streamline and simplify the exporting processes.

11. ProChile (n.d.,), "Speed Things Up". Available at: *https //www.prochile.gob.cl/en/tools/e-exporta/speed-things-up*

12. ProChile (2021), "Meet the first companies that will represent Chile in a well-known e-commerce platform in the Middle East". Available at: *https //www.prochile.gob.cl/en/news/news-detail/2021/09/30/meet-the-first-companies-that-will-represent-chile-in-a-well-known-e-commerce-platform-in-the-middle-east*

13. Btrax (n.d.), "Wines of Chile". Available at: *https //btrax.com/work/wines-of-chile/*

14. AlphaBeta-Access Partnership analysis. See Appendix in the overall regional report 'The Digital Sprinters: Boosting exports through digital technologies' for more details on the methodology.

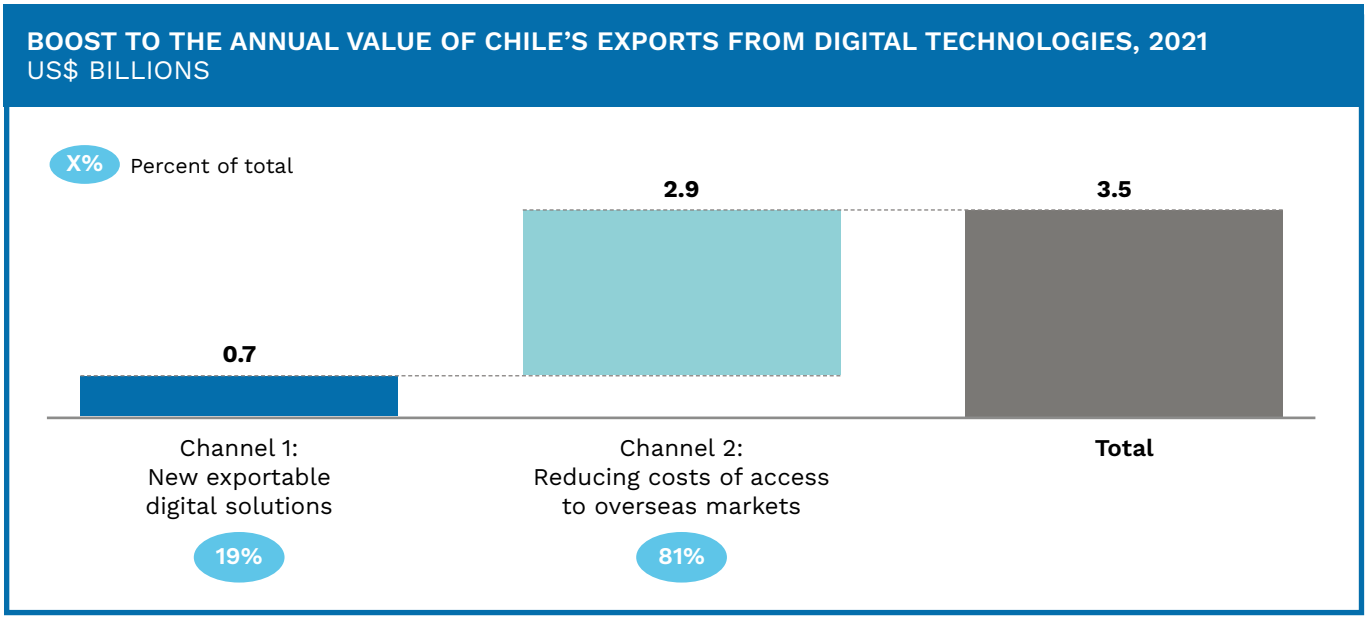
15. BN Americas (2020), "How is digital transformation in Chile's mining industry progressing?". Available at: *https //www.bnamericas.com/en/analysis/how-is-digital-transformation-in-chiles-mining-industry-progressing*

16. Trans-Port (2022), "Indra joins trans-port with technologies for logistic-port efficiency and sustainability". Available at: *https //www.trans-port.cl/en/indra-joins-trans-port-with-technologies-for-logistic-port-efficiency-and-sustainability/*

Chile is already experiencing a **US$3.5 billion** boost to its annual export value from applying digital technologies today (Exhibit 1), making digital exports Chile's 4th largest export sector behind only, resources and mining, agriculture and food, and manufacturing.[17] 81 percent of this comes from the reduced costs required to access overseas markets (channel 2) through digital advertising and e-commerce platforms, representing 3.6 percent of total exports, while the remaining comes from the creation of new exportable digital solutions (channel 1), representing 0.8 percent of total exports. This is a conservative estimate as it does not include the increased efficiency in exporting processes (channel 3) that has resulted from the adoption of digital technologies. Cross-border e-commerce sales of US$2.1 billion constitutes a large bulk of this benefit, unsurprising given that when compared to the other five Latin America focus economies, Chile is considered to be a high-income country, trade-oriented economy, has high digital maturity and strong e-commerce infrastructure.[18] Among the six focus economies, Chile ranks second in GDP per capita and second in terms of exports as a percentage of GDP.[19] For digital maturity, Chile is also second in the ICT usage index in the United Nations International Telecommunication Union (ITU)'s ICT Development Index, a measure of how digitally skilled its workforce is, and also second in percentage of population who have a bank account (74 percent in 2020), a measure of its digital inclusion.[20] In terms of infrastructure, its world ranking of 40 in the World Bank Logistics Performance Index (among 180 countries) is the highest among the six focus economies.[21] Collectively, this indicates that digital infrastructure (including payments infrastructure and digital technology to improve supply chain logistics management) and digital adoption (including shares of retailers that use e-commerce platforms) in the country are optimized to facilitate Chilean businesses' cross-border e-commerce efforts.

Exhibit 1:

CHILE IS ALREADY EXPERIENCING A US$3.5 BILLION BOOST TO ITS ANNUAL EXPORT VALUE FROM DIGITAL TECHNOLOGIES TODAY



NOTE: Figures may not sum due to rounding. Figures are conservative estimates as they do not include all the efficiency benefits that digital technologies can bring to export-related industries under channel 3 (e.g., through better tracking of goods in transit through Internet of Things technology).

SOURCE: AlphaBeta-Access Partnership analysis

17. Channel 1 (Creating new exportable digital solutions) and Channel 2 (Reducing costs of access to overseas markets) are sized. As there are numerous ways in which technology applications drive efficiencies in the exporting process (e.g., overseas shipping, streamlining trade paperwork), rather than sizing this value (which can turn out to be less than comprehensive), Channel 3 (Supporting the efficiency of exporting processes) is assessed through case studies. See Appendix for more details. For comparison, merchandise and services exports were segmented into 8 key sectors: healthcare, financial services, agriculture and food, education and training, consumer and retail, resources and mining, manufacturing, and infrastructure. This analysis assumed that we are able to define digital trade as a sector. OEC (2020), Yearly Exports. Historical Data. Available at: https://oec.world/en/profile/country/chl?depthSelector1=HS2Depth. United States Department of Agriculture (2020). "Chile: Food Processing Ingredients." Available at: https://www.fas.usda.gov/data/chile-food-processing-ingredients-4

18. The six Latin American economies analyzed are Argentina, Brazil, Chile, Colombia, Mexico, and Uruguay.

19. Sources include World Bank (n.d.,), "GDP per capita (current US$)". Available at: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD; and World Bank (n.d.,), "Exports of goods and services (% of GDP)". Available at: https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS

20. The ICT usage index measures the degree of ICT usage in a country. It is a composite indicator that weights three ICT indicators (33% each): (1) Percentage of individuals using the Internet; (2) Fixed (wired)- broadband Internet subscriptions per 100 inhabitants; (3) Active mobile-broadband subscriptions per 100 inhabitants. It is the second sub-index in ITU's ICT Development Index (IDI). WIPO (2021), "Global Innovation Index". Available at: https://www.globalinnovationindex.org/analysis-indicator. ITU (2017), "The ICT Development Index (IDI): conceptual framework and methodology". Available at: https://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2017/methodology.aspx

21. The World Bank Logistics Performance Index (LPI) is an interactive benchmarking tool created to help countries identify the challenges and opportunities they face in their performance on trade logistics and what they can do to improve their performance. It measures a country's performance on six key dimensions – clearance process efficiency, quality of trade and transport infrastructure, price competitiveness of logistics, quality of logistics services, timeliness of shipments, tracking and tracing technology. World Bank (2018), "International LPI: Global Rankings". Available at: https://lpi.worldbank.org/international/global

2. THE VALUE OF GOOGLE'S PRODUCTS FOR CHILE'S EXPORTS IN 2021

Google has been instrumental to advancing Chile's digital export journey through its products such as Google Play, YouTube, Google Ads and Google Cloud. For instance, Google Play, an app distribution platform with over 111.3 billion app downloads in 2021, allows app developers in Chile to reach overseas users with minimal cost. According to data.ai and AppsFlyer, Google Play represented 49 percent of all app store consumer spend in Q1 2021 in Spanish-speaking countries (Argentina, Chile, Colombia, Costa Rica, Peru), significantly higher than the 32 percent share in Q1 2020, underlining the growing opportunity for Chilean app and game developers through Google's platforms.[22]

It is estimated that Google's products helped to facilitate **US$409 million** (or 11.6 percent) of Chile's digital export opportunity in 2021.[23] This is a conservative estimate as it does not include all of the efficiency benefits (Channel 3) that digital technologies can bring to export-related industries (e.g., through better tracking of goods in transit through Internet of Things technology).

Box 1 lists examples of how Chilean businesses, especially MSMEs, have benefited from exports facilitated by Google's products.

In addition, Google also helps businesses in Chile build their e-commerce presence and make better decisions regarding exports. Google's Market Finder, a free platform provided by Google, identifies the markets with the highest export potential for each business based on their product or service and various factors such as search traffic volumes, advertising costs, and purchasing power of consumers.[24] After the initial market shortlist, the platform guides businesses to plan its internationalization operations and market their products and services in new countries.

22. App Annie & Apps Flyer (2021), "The State of App Marketing in Latin America". Available at: *https //www.data.ai/en/insights/market-data/latam-state-of-app-marketing-2021/*

23. Only the following three digital solutions were sized for Google: mobile app exports, online videos, and digital advertising. Refer to the Appendix for the detailed methodology of how each digital solution was sized.

24. Google (n.d.), "Market Finder". Available at: *https //marketfinder.thinkwithgoogle.com/intl/en/*

BOX 1.
GOOGLE'S TOOLS HELP BUSINESSES IN CHILE REACH OVERSEAS CUSTOMERS AND OPTIMIZE BUSINESS PROCESSES

DAGLAM:
CHILEAN JEWELRY BRAND BETS ON GOOGLE ADS TO TURN AROUND AN AILING BUSINESS, EVENTUALLY EXPANDING INTO PERU[25]

A lover of fashion accessories, Daniela Provoste launched her jewelry brand, DaGlam, in August 2010. Together with her husband, Daniela opened a small 30-square-meter office in Santiago, Chile, where she began selling her products wholesale. Sales, however, were low and, having no investment in advertising, the company relied on word of mouth to let potential customers know about the business.

DaGlam sought to connect with a greater number of customers to boost their income. DaGlam tried out Google Ads search campaigns. 15 queries a day increased, first to around 40, and later to 60. This also had a direct impact on sales, which increased by 80 percent in two years. Daniela received the Young Entrepreneur award from the Mujeres Empresarias organization, and also successfully expanded its geographical footprint into Lima, Peru.

HOLASOYGERMAN/JUEGAGERMAN:
CHILEAN YOUTH LEVERAGES YOUTUBE TO ENTERTAIN GLOBAL AUDIENCE AND DEVELOP OWN BRAND[26]

In 2011, at the age of 21, Germán Alejandro Garmendia Aranis followed his friend's encouragement to start his YouTube career. On HolaSoyGerman, he started to gain a strong following by creating comedy sketches and commenting on everyday unusual topics but in a fast-paced and quirky manner. By 2014, Germán had generated more than one billion total views and amassed over 14 million subscribers worldwide. While the HolaSoyGerman account has been inactive since 2016, its past videos are still being played by active subscribers up till today. Germán also created a secondary gaming-focused channel, JuegaGerman. With more than 43 million and 45 million subscribers on HolaSoyGerman and JuegaGerman respectively as of April 2022, Germán has carved out a niche for himself through YouTube.[27] Parlaying his YouTube fame into other fields, Germán had produced a best-selling book in 2016, forayed into voice work in the Spanish version of Ice Age: Collision Course, music and possibly into Hollywood as well.

REDSALUD:
LAUNCHING A TELEMEDICINE SERVICE BY LEVERAGING GOOGLE CLOUD[28]

RedSalud, a Chilean private health services company, found Google Cloud to be a suitable partner for its technological innovation journey. Given the need to service nine clinics, over 40 medical and dental centers, and support over 8,000 employees and 5,000 doctors throughout the country, it turned to the public cloud to achieve a stable platform at a minimum monthly cost, with the support of Kochasoft, a service provider with experience in implementing SAP for Google Cloud. This was made possible through the adoption of native Google Cloud tools, such as Cloud Storage for backups, BigQuery as a data warehouse, Google Data Studio for analytics and Apigee for integrations, which strengthened the infrastructure and operations across clinics and medical and dental centers. When the COVID-19 pandemic hit in March 2020, RedSalud swiftly leveraged its prior Google Cloud transformation to implement telemedicine, developing a remote medical care system to substitute for in-person doctor consultations. By implementing Google Cloud, it also achieved infrastructure cost savings of 30–50 percent, increased productivity for its employees and doctors, ensured 99.9 percent uptime, as well as optimized patient care at a minimum monthly cost. RedSalud now offers its telemedicine services across the globe, with web traffic from countries such as the United States.[29]

25. Google (2018), "La joyería DaGlam apuesta por Google Ads y se expande por todo Chile". Available at: https://www.thinkwithgoogle.com/intl/es-419/estrategias-de-marketing/busqueda/la-joyeria-daglam-apuesta-por-google-ads-y-se-expande-por-todo-chile/
26. SocialBlade (2022), "Top 250 YouTubers in Chile Sorted by Video Views." Available at: https://socialblade.com/youtube/top/country/cl/mostviewed
27. Hall, K (2019), German Garmendia: Star Chilean Gamer with 10 Billion+ Views. Rosen Central.
28. Google (n.d.), "RedSalud meets telemedicine challenges by implementing SAP for Google Cloud". Available at: https://cloud.google.com/customers/redsalud
29 Crunchbase (2022), "Redsalud". Available at: https://www.crunchbase.com/organization/redsalud/technology

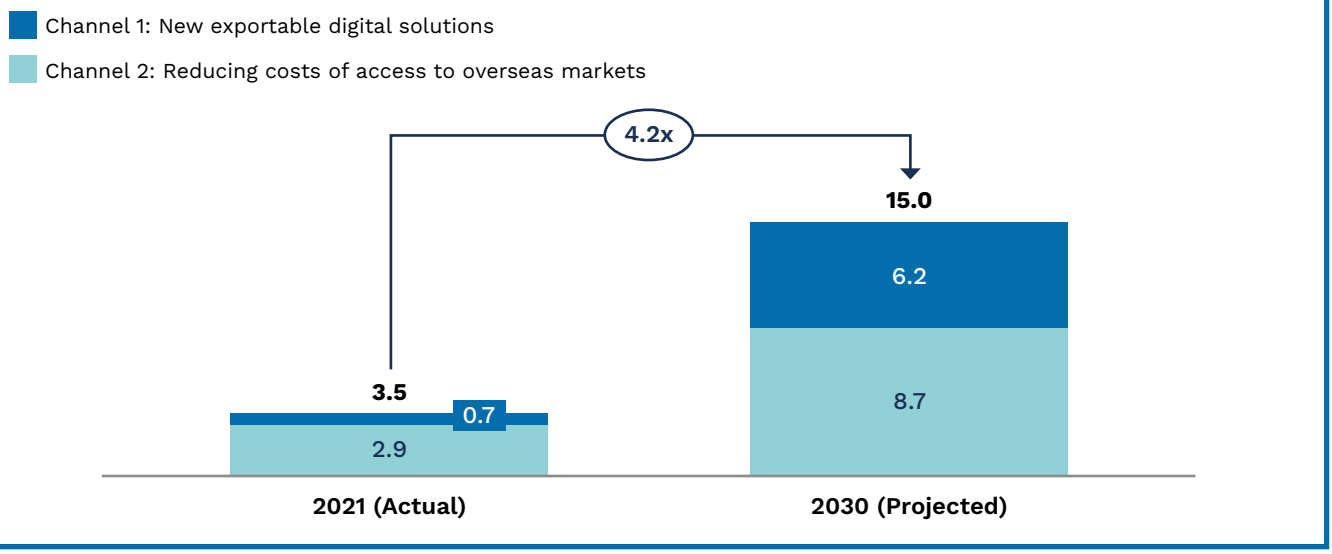
3. THE DIGITAL EXPORT POTENTIAL OF US$15 BILLION BY 2030

Chile could continue working towards a significant "size of the prize" for exports in the next few years. By 2030, the boost to its annual export value from digital technologies could more than quadruple to reach US$15 billion by 2030 (Exhibit 2).[30] Notably, digital services are expected to grow at a compound annual growth rate (CAGR) of 28.2 percent, from US$627 million in 2021 to about US$5.9 billion by 2030. Though an export-oriented economy, services currently contribute a small proportion of exports from the country due to Chile's strong orientation towards copper and gold exports. Another fast-growing area, though still nascent in size, is in mobile application exports. Chile's mobile application exports are projected to grow by a CAGR of 24.2 percent between 2021 and 2030 to reach US$315 million.[31] According to the Chilean Association of Video Game Development (VG Chile), the national games industry has grown exponentially in recent years and now consists of more than 60 companies. Mobile application export potential is also strengthened by a gradual increase in foreign companies' interests to form cross-border partnerships with Chilean game developers. For instance, Wanako Games was purchased by Canadian developer and publisher Behavior Interactive, while in 2018 an American publisher iEntertainment Network partnered with Chile's largest independent video games company Gamaga to produce new original games for a major television network.[32]

Exhibit 2:

BY 2030, THE TECH-ENABLED BOOST TO CHILE'S ANNUAL EXPORT VALUE COULD MORE THAN QUADRUPLE FROM 2021 TO REACH US$15 BILLION

BOOST TO THE ANNUAL VALUE OF CHILE'S EXPORTS FROM DIGITAL TECHNOLOGIES, 2021 & 2030
US$ BILLIONS



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SOURCE: AlphaBeta-Access Partnership analysis

30. This is a conservative estimate as it does not include all the efficiency benefits that digital technologies can bring to export-related industries (e.g., through better tracking of goods in transit through Internet of Things technology). In addition, the 2030 estimate was projected based on the 2021 performance of the best-in-class within the six focus economies only, and will likely be much higher if we used global best-in-class countries as a reference point.

31. AlphaBeta-Access Partnership analysis. See Appendix in the overall regional report 'The Digital Sprinters: Boosting exports through digital technologies' for more details on the methodology.

32. Premortem Games (2021), "The growing games industry in Chile thinks globally."
Available at: *https //premortem.games/2021/09/30/the-growing-games-industry-of-chile-thinks-globally/*

4. POLICY RECOMMENDATIONS AND MEASURES TO ACHIEVE GOALS

A review of impactful, innovative, and practical digital policies, using the Digital Sprinters Framework with an export focus, identified 11 policy levers linked to five strategic imperatives that are crucial for capturing the technology-enabled export opportunity identified earlier in this report (Exhibit 3).[33] Each policy lever has also been classified as a general or critical enabler of digital exports. In this context, general enablers refer to those which contribute to the broader digitalization of the country, whereas critical enablers are specific and crucial to the achievement of digital exports.

Four of these policy levers were identified as most relevant to Chile, and translate into the core recommendations outlined below (Exhibit 4). We used a two-step process to identify the policy gaps and determine the most applicable recommendations for Chile. First, we identified which policies and initiatives linked to the 11 policy levers have already been enacted or are currently in place. The policies identified were then ranked following a scoring protocol (a set of questions that serve as parameters to ensure a consistent scoring methodology across all six country reports). This allowed us to rank the policies on a scale of one (low level of progress) to three (high level of progress) and identify areas where further policy action is required. We then drafted our recommendations after considering the data and literature available to support the proposed arguments, the cost-effectiveness of each measure, and their priority and level of urgency (e.g., whether they act as structural bottlenecks to other policy gaps).

These recommendations are designed to support Chile in alleviating the bottlenecks currently hindering its export growth from moving forward in capturing the potential digital export opportunity. They are regarded as the most

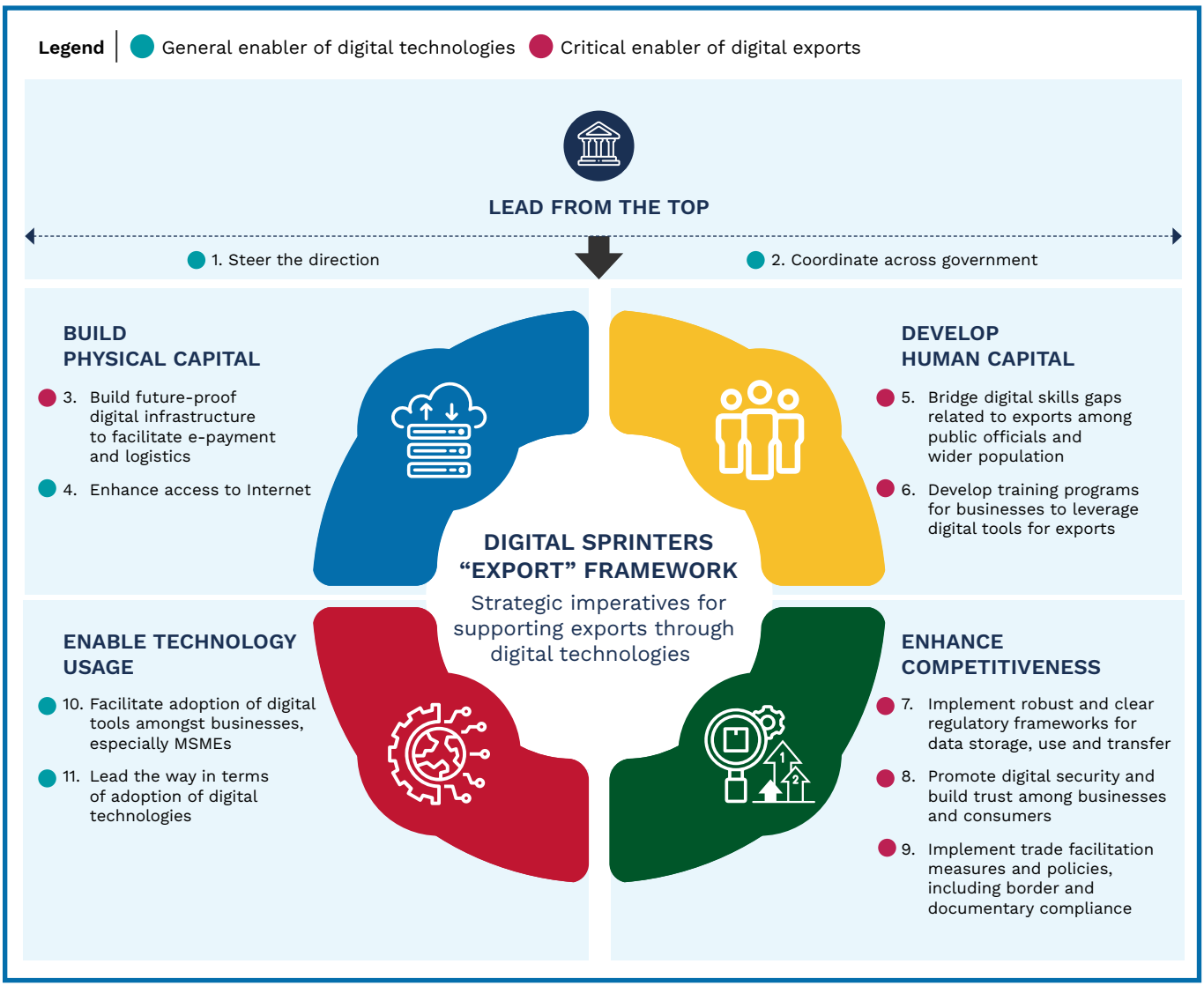
actionable in the short and medium term compared to other possibilities that would require more time or depend on extraordinary political conditions.

For Chile to achieve the US$15 billion “size of the prize” for digital exports by 2030, it will require policymakers to find ways to integrate the implementation of the four policy recommendations highlighted above. Crucially, these four policy recommendations are cross-cutting in nature, and are targeted at strengthening the enabling environment for the respective digital components to unlock higher export growth for Chile (Exhibit 5). If leveraged and implemented well, it would go a long way in helping Chile capture its digital export opportunity.

33. The Digital Sprinters Framework focuses on key areas such as physical capital, human capital, technology innovation and competitiveness. Google (2020), The Digital Sprinters: Driving Growth in Emerging Markets. Available at: *https //blog.google/documents/94/The_Digital_Sprinters_FINAL.pdf/*

Exhibit 3:

11 POLICY LEVERS CAN HELP UNLOCK THE BENEFITS OF THE TECHNOLOGY-ENABLED EXPORT OPPORTUNITY AND ADDRESS POTENTIAL CONCERNS



SOURCE: Google; AlphaBeta-Access Partnership analysis

Exhibit 4:

FOUR RECOMMENDATIONS CAN HELP CHILE ADDRESS CURRENT GAPS HINDERING EXPORT-LED GROWTH

Policy Lever	Recommendation	From...	...To	Best Practice
Enhance access to Internet	Reduce the cost of technology for citizens through programs aimed at supporting low-income families in the acquisition of digital products and services	High costs of technology devices serves as a barrier to digital adoption	Lowered costs of Internet devices achieved through agreements with technology companies	Argentina's Connect Equality program
Bridge digital skills gaps related to exports	Implement government-led digital education among public officials and the wider population	Unequal access to digital skills training opportunities	Development of a digital education strategy with key legislative objectives	ECLAC's online courses organized for policymakers
Implement robust and clear regulatory frameworks	Implement general data protection regulation for data storage, use, and transfer and ensure there are measures to promote cross-border data privacy	Outdated data protection law that is in need of actualization	Robust general data protection framework to govern the export of digital products and services	German Privacy Act
Promote digital security and build trust	Enhance cybersecurity legislation and engagement to protect consumers of digital services against cyberattacks and spam	No outlook on how companies and consumers engaging in cross-border commerce will be protected against cyberattacks or spam	Implement measures to educate citizens on how to protect their data and avoid falling prey to cyberattacks	Mexico's Cybersecurity Microsite

Exhibit 5:

THE POLICY RECOMMENDATIONS CAN HELP CHILE CAPTURE THE FAST-GROWING DIGITAL COMPONENTS

RELEVANCE OF POLICY RECOMMENDATIONS FOR EACH DIGITAL COMPONENT

Relevance[1] | **Strong** **Moderate**

Strategic Imperative | Build physical capital | Develop human capital | Enhance competitiveness

POLICY RECOMMENDATIONS	MOBILE APPS	ONLINE VIDEO	E-COMMERCE	DIGITAL SERVICES	DIGITAL ADS
Reduce the cost of technology for citizens through programs enabling low-income families' acquisition of ICT products and services	✓	✓	✓	✓	✓
Implement government-led digital education programs to bridge digital skills gaps among public officials and the wider population	✓	✓	✓	✓	✓
Implement general data protection regulation for data storage, use, and transfer to enhance Chile's data culture and ensure there are measures in place to promote data privacy in cross-border situations	✓		✓	✓	✓
Enhance cybersecurity legislation to protect consumers against cyberattacks and spam, as well as foster trust between economic stakeholders	✓		✓	✓	✓

1. "Strong": Policy lever is extremely relevant to help capture the digital component as it pertains directly to the component or strongly enables its growth; "Moderate": Lever is relevant for the country as it indirectly enables its growth. In the absence of "Strong" or "Moderate", the policy lever does not directly affect the digital component nor provide a critical enabling environment.

SOURCE: Literature review; Expert interviews; AlphaBeta-Access Partnership analysis

Recommendation 1:
Reduce the cost of technology for citizens through programs enabling low-income families' acquisition of ICT products and services

In line with ***Policy Lever 4: Enhance access to Internet (General enabler)***, Chile should seek to reduce the cost of technologies to effectively lower existing barriers to adoption. Although efforts have been made (i.e., Programas Becas TIC, which aims to foster digital access by supporting education), Chile could continue to further its work.[34] Out of all Latin American countries, Chile currently has the highest cost of technology devices[35], a reality that should incentivize the government to continue its efforts towards implementing programs that provide low-income families with the conditions that facilitate access to computers and devices. This could be done by replicating programs similar to the United States' Emergency Connectivity Fund Program, which delivers free or discounted desktops, laptops, or tablets to low-income households.[36]

While such initiatives were undertaken in 2020 during three months as a response to the pandemic[37], they could be extended to the entire low-income households. This, along with reducing tariffs on technology devices, would allow all citizens to access digital services and take advantage of the affordable telecommunication infrastructure in place in Chile, thereby truly bridging the digital divide.

Digital infrastructure and connectivity are key enablers for digital platform companies. In terms of connectivity, Chile is progressing with connecting rural areas significantly in comparison to its regional counterparts.[38] Public-private agreements such as the "National Agreement for Connectivity to Reduce the Digital Divide",[39] which commits US$2 billion worth of resources to connect rural areas to the Internet using telecommunication infrastructure, point towards this direction. Most recently, the government launched the "2022-2025 Zero Digital Gap Plan," aiming to enable connectivity to all inhabitants, regardless of where they live, or their economic background. The plan is based on four key pillars: Regulation for connectivity, Digital Infrastructure, Our Projects, and Connectivity for Everyone.[40]

Citizen's access to affordable technology devices that connect them to this infrastructure is as necessary as efficient, affordable and extensive infrastructure telecommunication infrastructure. It is thus crucial for Chile to invest in rolling out technologies and ICT services for the general population, while ensuring that there is adequate digital infrastructure to provide high-quality Internet access across the country.

34. Ministerio de Educación, Junta Nacional de Auxilio Escolar y Becas (JUNEP). Programas Becas TIC 2022. Available at: https //www.junaeb.cl/becas-tic

35. América Economía (2018), "¿En qué país de América Latina es más barato comprar tecnología?". Available at: https //www.americaeconomia.com/articulos/en-que-pais-de-america-latina-es-mas-barato-comprar-tecnologia

36. USAC Emergency Connectivity Fund (n.a.), "About the Emergency Connectivity Fund Program". Available at: https //www.emergencyconnectivityfund.org/about/

37. Ministry of Education (2020), "Becas TIC: Mineduc adelanta entrega de 122 mil computadores con conexión gratuita a internet a estudiantes de 7° básico". Available at: https //www.mineduc.cl/becas-tic-se-adelanta-entrega-de-122-mil-notebooks-con-internet-gratis/

38. La Tercera (2021) "Chile es el país más conectado a Internet en Latinoamérica". Available at: https //www.latercera.com/que-pasa/noticia/chile-es-el-pais-mas-conectado-a-internet-en-latinoamerica/BWZ5FVJ7NNH67KPTX6GY7ADXIQ/

39. USAC Emergency Connectivity Fund (n.a.), "About the Emergency Connectivity Fund Program". Available at: https //www.emergencyconnectivityfund.org/about/

40. Gobierno de Chile (2022). Lanzamos el Plan Brecha Digital Cero para que todas y todos tengan acceso a conectividad independiente del lugar en que viven. Available at: https //www.gob.cl/noticias/lanzamos-el-plan-brecha-digital-cero-para-que-todas-y-todos-tengan-acceso-conectividad-independiente-del-lugar-en-que-viven/

Recommendation 2:
Implement government-led digital education programs to bridge digital skills gaps among public officials and the wider population

In line with ***Policy Lever 5: Bridge digital skills gaps related to exports (Critical enabler)***, Chile should expand and strengthen existing programs aimed at closing the digital skills gap. Specifically, it should consider focusing on programs that increase digital talent in the areas of digital economy and digital trade. This would enable public officials to access the skills needed to use digital technologies as well as understand the digital trade system, thereby expanding the ways in which they can both benefit from and contribute to the digitalization of the economy.

For instance, the Economic Commission for Latin America and the Caribbean (ECLAC) recently organized a course for public officials in charge of MSME support programs. This course provided them with training on opportunities and challenges for companies when conducting cross-border e-commerce in the region, highlighting key areas in which the government can support them.[41]

To bridge digital skills gaps among citizens, Chile could leverage existing programs. For example, the Ministry of Education's Digital Education Network Program (Programa Red Educación Digital)[42] has the objective of enhancing ICT acquisition and talent in educational institutions for children with additional needs. This excellent initiative could be replicated or broadened to apply to other marginalized groups, ensuring that all students are awarded the right to digital education. Another initiative that could be built upon is "Adulto Digital", an online training program which seeks to promote the digitalization of older adults in the country. It offers courses in areas such as cybersecurity, basic computing and entrepreneurship.[43]

Another possible avenue could focus on enhancing ICT skills with the female population, which would be in line with the International Telecommunication Union's Action Plan to Close the Digital Gender Gap.[44] According to the government of Chile's 2020 Gender Equality in Science, Technology, Knowledge, and Innovation Report, only 28 percent of people engaged in careers related to science and engineering were women. Furthermore, women's participation in the ICT sector is only five percent, according to information provided by the Chilean Association of Information Technology Companies.[45] Therefore, the country would benefit from enhancing programs aimed at improving digital skills among the female population.

Although not yet passed into law, the government of Chile has presented various legislative frameworks on incorporating digital skills into primary and secondary education. These include Bill 12128-19,[46] Bill 11896-04[47] and Bill 13482-04[48] which all amend the General Law on Education 20,370 to include digital education in the curricula of various levels of education. This demonstrates an effort by the government to equip the next generation of adults with the necessary skills to use digital technologies and take advantage of digital services.

However, these bills remain in Congress and have been paid little attention to in the last few years. A coordinated effort leading to the development of a digital education strategy with key legislative objectives could spur progress on these bills, thereby ensuring that digital education becomes a part of the curricula in educational institutions.

41. CEPAL (2021), "Opportunities and challenges for MSMEs in Caribbean cross-border e-commerce". Available at: https //www.cepal.org/en/courses/opportunities-and-challenges-msmes-caribbean-cross-border-commerce

42, Ministerio de Educación (n.d.), "Recursos Educativos Digitales, RED." Available at: https //especial.mineduc.cl/recursos-apoyo-al-aprendizaje/recursos-educactivos-digitales/

43. DiaroJuridico.com (2021), "Chile – Primera Dama lanza programa «Adulto Digital»". Available at: https //www.diariojuridico.com/chile-primera-dama-lanza-programa-adulto-digital/

44. ITU (2020), Action Plan to Close the Digital Gender Gap. Available at: https //www.itu.int/en/action/gender-equality/Documents/ActionPlan.pdf

45. Government of Chile (2021), "Government launches Gender Equality Policy for Science, Technology, Knowledge and Innovation, as well as the Regional Alliance for the Digitalization of Women in Latin America". Available at: https //www.gob.cl/en/news/government-launches-gender-equality-policy-science-technology-knowledge-and-innovation-well-regional-alliance-digitalization-women-latin-america/

46. The Senate of the Republic of Chile (2018), Boletín 12128-19. Available at: http //www.senado.cl/appsenado/templates/tramitacion/index.php?boletin_ini=12128-19

47. The Senate of the Republic of Chile (2018), Boletín 11896-04. Available at: https //www.senado.cl/appsenado/templates/tramitacion/index.php?boletin_ini=11896-04

48 The Senate of the Republic of Chile (2020), Boletín 13482-04. Available at: https //www.senado.cl/appsenado/templates/tramitacion/index.php?boletin_ini=13482-04

Recommendation 3:
Implement general data protection regulation for data storage, use, and transfer to enhance Chile's data culture and ensure there are measures in place to promote data privacy in cross-border situations

In line with ***Policy Lever 7: Implement robust and clear regulatory frameworks (Critical enabler)***, Chile should consider advancing existing legislative initiatives in aiming to provide clear frameworks for data protection. Decreed in 1999, Chile's current data protection law is in urgent need of an update that enables the country to withstand (and reap the benefits) of the digital transformation wave. Unlike Mexico and Brazil, Chile lags significantly in data protection regulation.

At the moment, the main data protection law in Chile is Law No. 19,628 on the Protection of Private Life.[49] Over the past few decades, multiple bills have been introduced to Congress in an attempt to modify its content, with very limited success. Thus far, the only proposal that has made significant headway in discussion, with meaningful changes proposed, is the Bill 11144-07 (2007).[50] In its current form, the bill creates an independent Data Protection Agency (DPA) and updates personal data processing, use, and handling, among others. The proposed law is based on the EU's General Data Protection Regulation, including measures that focus on cross-border data transfer in that data transfer will only be permitted to countries with an adequate data protection framework. Further, the bill aligns with the commitments made by Chile upon joining the OECD in 2010.

In addition, Chile's new Constitution Proposal, which was published in July 2022, included a provision that would create the country's first ever DPA.[51] While the constitution eventually failed to be passed in September, this episode underscores the increased calls by different stakeholders to update data protection frameworks and face concerns around international data flows, data localization, and data privacy, among others.

Despite the efforts above, the 2017 bill has remained in Congress ever since. Against this backdrop, and with the momentum built by the new proposed constitution, this represents a key opportunity for the government to proactively engage and modernize its regulatory framework, providing robust and clear guidance for private and public entities. The government should consider implementing a regulation that would serve as the framework to be followed when digitally exporting products and/or services.

Supporting actions emanating from national agencies could also be leveraged. For instance, the "Gobierno Digital" and the regulator Subtel could organize data protection trainings aimed at public servants. Likewise, the Ministry of Science, Technology, Knowledge, and Innovation could consider issuing best practice standards to industry players and civil society. Agencies across the government could also work together in promoting awareness and communications campaigns around the importance of safeguarding citizen privacy and personal data.

At a global level, Chile should continue fostering its leadership around digital trade. In addition to engaging with the EU and OECD, Chile could leverage its plethora of Free Trade Agreements (FTAs) to promote cross-border data transfers that ensure the interoperability of devices and guarantee consumer protection. Chile could also partake in discussions around data protection and privacy best practices. Data privacy is a key aspect of digital exports. According to the United Nations Conference on Trade and Development (UNCTAD), while a data-driven economy supported by ICT-related trade gives rise to new opportunities for wealth creation and for addressing development challenges, it also raises various potential concerns related to, for example, data privacy and security, cross-border data flows, market concentration and taxation. This would enable the country to continue supporting its citizens in accessing digital services such as gaming and streaming services easily and with minimal risk.

49. Biblioteca del Congreso Nacional de Chile. Ley 1968 sobre Protección de la Vida Privada.
Available at: *https //www.bcn.cl/leychile/navegar?idNorma=141599&idVersion=2020-08-26&idParte=*

50. Senado de la República de Chile. Regula la proteccion y el tratamiento de los datos personales y crea la Agencia de Protección de Datos Personales.
Available at: *https //www.senado.cl/appsenado/templates/tramitacion/index.php?boletin_ini=11144-07*

51. Chile Convencion (2022), "CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE".
Available at: *https //www.chileconvencion.cl/wp-content/uploads/2022/07/Texto-Definitivo-CPR-2022-Tapas.pdf*

BOX 2.
GOOGLE'S INITIATIVES TO ESTABLISH CLOUD ECOSYSTEM IN CHILE THROUGH ESTABLISHING A GOOGLE DATA CENTER AND CLOUD REGION[52]

The first Google data center in Latin America was established in Quilicura, Chile. Announced in 2012, the data center allows Google to provide support to and guarantee the operation of all their products, not just for Chile but for the entire Latin America region. In 2018, Google announced the expansion of its Quilicura data center, with an additional investment of US$140 million that will triple the capacity of the center. In 2021, Google inaugurated a cloud region in Santiago, the second in Latin America. The establishment of such infrastructure is to build an environment to support the growth of companies in Latin America. The new cloud region, together with the data center, is dedicated to cloud services and data storage. This will ensure lower latency and allow the modernization of their clients' IT infrastructure. Companies that they will support include the private healthcare company RedSalud, airline company LATAM airlines, bank and financial services company Banco de Chile, and foodtech company NotCo. The infrastructure is also a part of Google's broader connectivity network that includes submarine cables and connects to other cloud regions.

Besides supporting Chilean companies, these digital infrastructure initiatives are also accompanied by community development projects for human capital. For instance, the Quilicura Community Development Program, in conjunction with the Google data center since 2015, directly benefits the Quilicura community through projects carried out by nonprofit organizations, such as STEM education, solutions fostering inclusive economic growth; proposals increasing equity in Internet access; sustainable initiatives generating local impact; programs supporting general population health maintenance, and projects supporting art and cultural development. The program received special recognition from the Quilicura Municipality in 2018 for its commitment and work carried out with members of the community.[53]

Google is not building capacity at a fragmented level, but developing a holistic infrastructure to drive digitization for Chilean companies to access domestic and international markets, as well as for companies in the entire Latin America region.

52. Sources include: Google (2019), "Google for Chile: Supporting development through tech". Available at: *https //blog.google/technology/next-billion-users/google-for-chile/*; BN Americas (2021), "Google launches cloud region in Chile". Available at: *https //www.bnamericas.com/en/news/google-launches-cloud-region-in-chile*

53. InvestChile (2021), "The 10 milestones of Google's first decade in Chile".
Available at: *https //blog.investchile.gob.cl/the-10-milestones-of-googles-first-decade-in-chile*

Recommendation 4:
Enhance cybersecurity legislation to protect consumers against cyberattacks and spam, as well as foster trust between economic stakeholders

In line with ***Policy Lever 8: Promote digital security and build trust among businesses and consumers (Critical enabler)***, Chile should consider expanding its current cybersecurity framework, including standards for digital exports' growth. The newly-introduced law, which modernized cybercrime law in Chile (adhering to the Budapest Convention on Cybercrime), represents a significant step in the right direction. Given the momentum, the country should continue strengthening digital security measures.[54]

In addition, the government introduced in March 2022 the Cybersecurity and Critical Information General Law.[55] Currently under discussion, the proposed bill seeks to enhance protection systems and protocols for networks, and data and digital infrastructures, as well as establish a National Agency for Cybersecurity. The Agency will advise the President on cyber-related matters and monitor entities bound by the new law.[56] Building on existing discussions, the current legislation could be enhanced by defining clear roles and responsibilities for the Agency, so as to avoid placing overburdensome processes on the private sector, while balancing the protection of citizen data. The text could also provide an outlook to plan how MSMEs and consumers will be protected against cyberattacks and unwanted spam in cross-border commerce, a crucial aspect in growing digital exports. The bill represents a key opportunity for Chile to complement the protection of its flourishing digital ecosystem. Once the appropriate legislative framework has been refined, the government could implement measures to educate citizens on protecting their data and avoiding falling victim to cyberattacks.

One such measure is enabling free access to information, such as capacity-building initiatives and open source information. As an example, Mexico's telecommunications regulator (IFT) launched a "Cybersecurity Website",[57] a public digital tool providing information and training on cybersecurity measures with specific sections for MSMEs, women and teens. This would equip MSMEs who cannot afford to invest in expensive cybersecurity solutions and digital service consumers alike with the opportunity to self-educate and easily report any cybersecurity issues.[58]

Further, the government of Chile established a National Cybersecurity Policy,[59] which is dated 2018-2022. Both the bill and policy make no reference to e-commerce and to exports only once in the National Cybersecurity Policy, establishing that the Ministry of Foreign Affairs through ProChile must support the export of products and services in the area of cybersecurity, identifying international trends and evaluating support possibilities in the years 2017-2018. To this end, a revised framework should expound on the intersection between digital exports and cybersecurity, such as developing definitions, scope and limitations to convey clarity to the sector and ensure accountability and compliance from both sides.

54. Biblioteca del Congreso Nacional de Chile. Ley-21459 Establece Normas Sobre Delitos Informáticos, Deroga la Ley 19.223 y Modifica Otros Cuerpos Legales con el Objeto de Adecuarlos al Convenio de Budapest. Available at: https://www.bcn.cl/leychile/navegar?idNorma=1177743

55. Cámara de Diputadas y Diputados. Establece una Ley Marco sobre CIberseguridad e Infraestructura Crítica de la Información. Available at: https://www.camara.cl/legislacion/ProyectosDeLey/tramitacion.aspx?prmID=15344&prmBOLETIN=14847-06

56. Lexology (2022), "New bill on cyber security in Chile". Available at: https://www.lexology.com/library/detail.aspx?g=efc2cfc3-f084-478f-8359-28aba97e1e41

57. IFT (n.a.), "Cybersecurity". Available at: https://ciberseguridad.ift.org.mx/

58. Ministerio de Interior y Seguridad Público | Ministerio de Justicia y de Derechos Humanos (2018), Boletín 12192-25. Available at: https://www.camara.cl/legislacion/ProyectosDeLey/tramitacion.aspx?prmID=12715&prmBOLETIN=12192-25

59. Government of Chile (2017), Política Nacional de Ciberseguridad. Available at: https://cms-dgd-prod.s3-us-west-2.amazonaws.com/uploads/pdf/Politica_Nacional_de_Ciberseguridad_2017.pdf?

BOX 3.
BEST PRACTICES FOR RELEVANT POLICY RECOMMENDATIONS

RECOMMENDATION 1:
REDUCE THE COST OF TECHNOLOGY FOR CITIZENS THROUGH PROGRAMS AIMED AT SUPPORTING LOW-INCOME FAMILIES IN THE ACQUISITION OF ICT PRODUCTS AND SERVICES [ARGENTINA]

Argentina's Connect Equality Program is an initiative developed by the Ministry of National Education. The program seeks to distribute one-to-one computers to all secondary and special education students in public schools and aims to ensure young people's access to new technologies.[60] In addition to the distribution of netbooks, there is a digital platform associated with the program with open educational content, created collaboratively by all the provinces of the country, and a system of virtual classrooms for teachers to prepare their classes online. As mentioned above, a similar program, Programas Becas TIC, also provides assistance to students through scholarships or tools (e.g., computers).

RECOMMENDATION 3:
IMPLEMENT GENERAL DATA PROTECTION REGULATION FOR DATA STORAGE, USE, AND TRANSFER TO ENHANCE CHILE'S DATA CULTURE AND ENSURE THERE ARE MEASURES IN PLACE TO PROMOTE DATA PRIVACY IN CROSS-BORDER SITUATIONS [GERMANY]

In the area of privacy protection, a case study that Chile can take reference from is Germany. Germany has been cited as a leader in privacy protection, with robust laws that provide extensive coverage. For instance, The German Privacy Act, also known as Bundesdatenschutzgesetz (BDSG), provides regulations for data processing in both the public and private sectors, with specific privacy rules for topics such as telecommunications. These rules are also business-friendly, seeking to promote the country as a trusted partner for digital trade.[61]

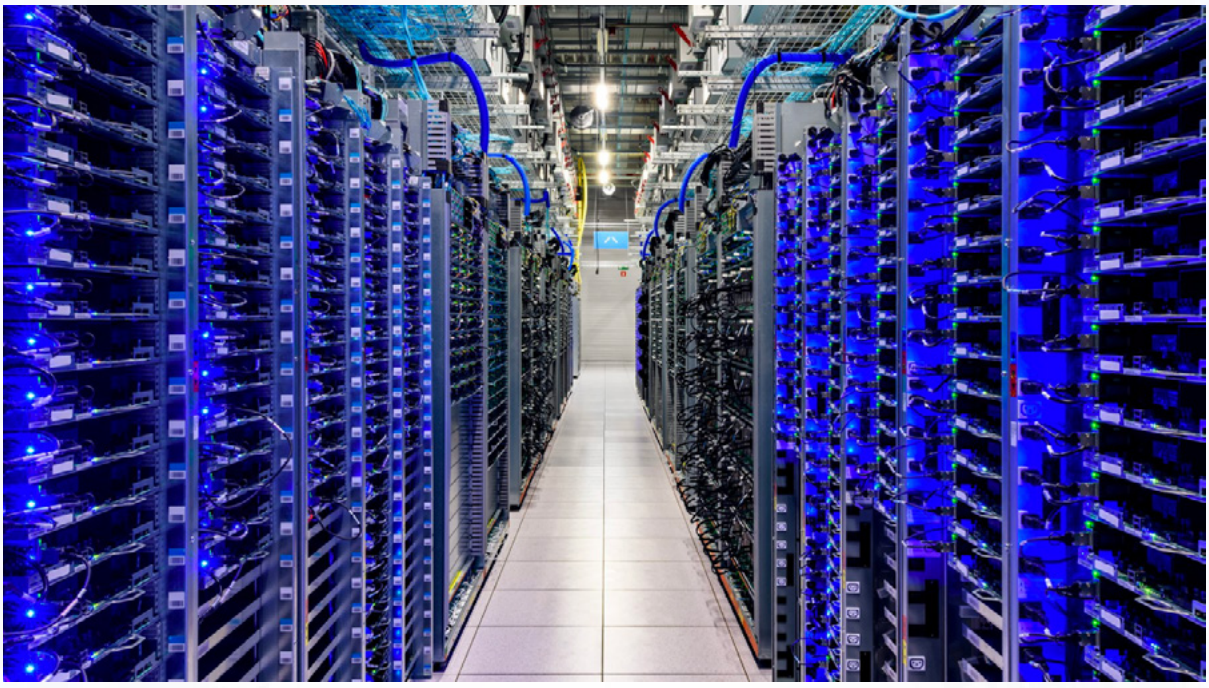


Photo Source: *https //blog.google/inside-google/infrastructure/how-data-center-security-works/*

60. Government of Argentina (2022), "Conectar Igualdad". Available at: *https //www.argentina.gob.ar/educacion/conectarigualdad# ~ text=Conectar%20Igualdad%20es%20un%20programa%20del%20Ministerio%20de,y%20ahora%20es%20retomada%20por%20la%20actual%20gesti%C3%B3n*

61. Deloitte (n.d.), "The new German Privacy Act: An overview".
Available at: *https //www2.deloitte.com/dl/en/pages/legal/articles/neues-bundesdatenschutzgesetz.html*

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