



# Digital transformation of **SMEs** for **cross-border trade** and **e-commerce** in the **Republic of Korea**

Insights for Latin America  
and the Caribbean

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So Jeong Lee  
Su Jin Seo



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# Digital transformation of SMEs for cross-border trade and e-commerce in the Republic of Korea: insights for Latin America and the Caribbean

So Jeong Lee  
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This document was prepared by So Jeong Lee, Associate Economic Affairs Officer of the International Trade and Industry Unit of the Economic Commission for Latin America and the Caribbean (ECLAC) subregional headquarters in Mexico, and Su Jin Seo, consultant with the International Trade Unit of the International Trade and Integration Division of ECLAC, under the supervision of Leda Peralta, Officer-in-Charge of the International Trade and Industry Unit, and Nanno Mulder, Chief of the International Trade Unit. The document was prepared under the 2020–2022 Cooperation Agreement signed between ECLAC and the Government of the Republic of Korea.

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## Acronyms

AI	Artificial intelligence
B2B	Business-to-business
COVID-19	Coronavirus
ECLAC	Economic Commission for Latin America and the Caribbean
ICT	Information and communication technology
KIEP	Korea Institute for International Economic Policy
KITA	Korea International Trade Association
KOSME	Korean SMEs & Startups Agency
KOTRA	Korea Trade and Investment Promotion Agency
KS	Korean Standards
LAC	Latin America and the Caribbean
MSS	Ministry of SMEs and Startups
OECD	Organization for Economic Co-operation and Development
PCSI	Public Client Satisfaction Index
PTA	Preferential Trade Agreement
Korea	Republic of Korea
R&D	Research and development
SME	Small and medium-sized enterprise
SOC	System on a chip
UNDP	United Nations Development Programme



## S

<b>Abstract</b> .....	9
<b>Introduction</b> .....	11
<b>I. Defining digital transformation</b> .....	13
A. What is digital transformation? .....	13
B. The importance of digital transformation for SMEs.....	14
C. Digital transformation of Korean SMEs .....	15
<b>II. The Korean Experience: supporting the digital transformation of SMEs</b> .....	19
A. Challenges in leveraging digital technologies.....	19
B. Addressing the challenges.....	21
1. Focus I. Building legal and institutional foundations for a whole-of-economy approach.....	22
2. Focus II. Addressing cross-sectoral challenges .....	27
3. Focus III. Converting trade promotion policies to operations .....	32
4. Focus IV. Monitoring and evaluating progress and results .....	38
<b>III. Exploring cooperation between Korea and LAC</b> .....	41
A. Digital transformation in LAC.....	41
B. Digital trade between Korea and LAC .....	46
C. Seeking cooperation between Korea and LAC.....	49
<b>IV. Conclusion</b> .....	51
<b>Bibliography</b> .....	53

## Tables

Table 1	Korea: barriers to leveraging digital technologies for cross-border trade and e-commerce .....	17
Table 2	Korea: laws being amended linked to digital trade, December 2021 .....	22
Table 3	Korean New Deal: budget allocations for ten projects, 2020 .....	24
Table 4	The Korean New Deal 1.0 and 2.0: comparison of allocated investment per strategic pillar .....	25
Table 5	Korean Digital Trade Transformation Policy: four stages of implementation .....	32
Table 6	Korea: strategies to strengthen e-commerce .....	33
Table 7	Korea: vision and strategy of the National Logistics Basic Plan, 2021-2030 .....	36
Table 8	LAC: inadequately educated workforce .....	45

## Figures

Figure 1	Korea and other OECD countries: mobile and fixed broadband connection .....	16
Figure 2	OECD countries: digital Government Index, 2019 .....	17
Figure 3	OECD countries: share of businesses with ten or more employees purchasing cloud computing services, 2021 .....	18
Figure 4	OECD countries: share of businesses receiving orders over computer networks, 2021 .....	18
Figure 5	Korea and other OECD countries: shares of employees in businesses and of adults with limited or no digital skills .....	19
Figure 6	OECD countries: share of businesses with a formal ICT security policy, 2021-2022 .....	20
Figure 7	Korea: the main difficulties faced by SMEs, April 2018 .....	21
Figure 8	LAC (selected countries): high Frequency, Phone Survey results, surface the region's digital divide, 2021 .....	42
Figure 9	LAC: challenges faced by internet users .....	43
Figure 10	LAC (selected countries): expenditure on R&D as percentage of GDP, 2017 or latest year .....	45
Figure 11	LAC: percentage of firms identifying an inadequately educated workforce as a major constraint .....	46
Figure 12	Korea: trade in modern services with LAC as percentage of total trade (goods and services), 2005-2021 .....	47
Figure 13	Korea and selected LAC countries: digital Services Trade Restrictiveness Index, 2022 .....	48

## Boxes

Box 1	Leveraging Data Dams for the inclusive use of public data .....	24
Box 2	Providing support for women-led enterprises .....	27
Box 3	The chatbot Lee Luda's impact on the need to regulate the use of AI .....	28
Box 4	Samsung SDS's Cello Square 4.0: creating a digital single window for e-commerce facilitation .....	34
Box 5	The three leading Korean public B2B e-commerce export platforms .....	35
Box 6	uTradeHub: Korea's national paperless trade platform .....	37
Box 7	Korea's Public Client Satisfaction Index (PCSI) .....	39

**Diagrams**

Diagram 1 Korea: structure of the Presidential Committee on the Fourth Industrial Revolution ..... 23

Diagram 2 Korea: complementary trade and innovation strategy ..... 33

Diagram 3 Korea: data Vouchers Framework ..... 34

Diagram 4 Korea: process within the uTradeHub ..... 38

**Map**

Map 1 Preferential trade agreements between Korea and LAC, 2022 .....49



## Abstract

The Republic of Korea is widely considered as one of the world's leading countries in terms of an inclusive digital business environment, with its government providing substantive support to help SMEs tackle specific challenges, particularly those faced when engaging in digital trade. This includes the improvements of the legal and institutional foundations, which helped to obtain the necessary budget, address cross-sectoral obstacles ranging from regulatory updates to improving access to financing, and foster collaboration among ministries and affiliated organizations. It has also provided support to build the digital capacity of SMEs, including developing digital trade platforms and programs. Additionally, comprehensive monitoring and evaluation processes have been implemented at organizational and government-wide levels to ensure adequate resource allocation and incorporate business feedback. While Korea continues to work towards achieving a fully inclusive digital business environment, there are valuable insights and lessons that Latin America and the Caribbean (LAC) can draw upon. Korea's experience can help LAC gain a deeper understanding of its domestic challenges and explore avenues for cooperation and collaboration across borders and sectors.



## Introduction

In recent years, the rapid advancement of digital technologies has brought about significant changes in the global business landscape. To adapt to this changing environment, small and medium-sized enterprises (SMEs) increasingly use e-commerce and cross-border trade to expand their markets and reach new customers. However, despite digital technologies' availability and potential benefits, many SMEs need help accessing and using them effectively.

In the Republic of Korea (after this "Korea"), the government has supported SMEs in various areas, including human capital development, financing, and research and development (R&D). Improvements and updates in its trade regulations and its legal and institutional frameworks have increased budgets for policy support. Moreover, the government is actively promoting digital capacity building for SMEs, developing and facilitating digital trade platforms and programs, and aligning national regulations to international standards to address the multisectoral challenges businesses, especially SMEs, may face when engaging in digital trade.

In this context, the purpose of this report is twofold. First, it provides an in-depth understanding of Korea's government's policy trajectories in leveraging digital technology for cross-border trade and e-commerce. The report identifies the challenges faced by SMEs and examines the government's actions to address these challenges. Second, it analyzes multiple Korean government's initiatives and experiences to provide valuable insights and lessons for policymakers, businesses, and other stakeholders in Latin America and Caribbean (LAC).

The report is structured as follows: Chapter II reviews broad definitions of digital transformation, specifically in the context of SMEs; Chapter III describes the policy trajectory of the Korean government in addressing the challenges faced by SMEs in leveraging digital technologies for international trade and cross-border e-commerce; Chapter IV considers the potential for collaboration between Korea and LAC to accelerate the digital transformation of exporting SMEs; and finally, Chapter V concludes.



# I. Defining digital transformation

## A. What is digital transformation?

Despite the widespread hype and extensive discussions during the coronavirus (COVID-19) pandemic, there is no universally agreed-definition of digital transformation and its components. The term is ambiguous and may have different meanings for various countries and companies. In this sense, Jim Swanson, the Chief Information Officer of Johnson & Johnson, has pointed out that "digital is a loaded word that means many things to many people" (The Enterprisers Project, n.d.).

Digital transformation generally refers to integrating digital technologies into an organization's operations, processes, and strategies to change how it operates and provides value to its customers. This involves leveraging emerging technologies such as artificial intelligence (AI), cloud computing, the Internet of Things, and blockchain to enhance customer experiences, streamline operations, and create new business models. Digital transformation also involves a cultural shift that requires organizations to continuously challenge the status quo, frequently experiment, and embrace failure (ibid.). Sometimes, this consists of abandoning long-standing business processes and models in favor of newer, still-evolving practices.

Digital transformation is closely connected to adapting to and leveraging the changing environments affecting public and private organizations. For example, Salesforce (n.d.) defines digital transformation as "the process of using digital technologies to create new or modify existing business processes, culture, and customer experiences to meet changing business and market requirements." Similarly, Kafel (2017) defines digital transformation as "the continuous process of leveraging digital competencies to drive disruptive changes or adapt to your customers, partners, employees, and competitors to create new business models, products, and services."

Digital transformation begins with a clear problem statement, an opportunity, or an aspirational goal. Jay Ferro, the Chief Information and Technology Officer of Clario, noted that "the 'why' of your organization's digital transformation might be around improving customer experience, reducing friction, increasing productivity, or elevating profitability. If it's an aspirational statement, it might

revolve around becoming the absolute best to do business with, utilizing enabling digital technologies unavailable years ago" (The Enterprisers Project, n.d.). Hence, to define digital transformation, it is crucial to consider enablers like digital skills, data analytics, technologies, and software alongside drivers like leadership and culture.

Digital transformation begins with a vision and ends with successfully implementing new technologies and processes. To further develop this narrative, some experts have attempted to define the stages of digital transformation. For example, Bhavin Patel (Forbes, 2022), the Group CEO of digital, Omnichannel, and Platforms at CT Corp., suggests four stages businesses must go through: (i) Defining the digital future; (ii) Rethinking the business model; (iii) Implementing new technology; and (iv) Measuring success. However, the third stage of implementing new technology may vary depending on factors such as the size, sector, capacity of the enterprise, and access to finance.

The digital transition for most SMEs in member states of the Organization for Economic Cooperation and Development (OECD) focuses on administration or marketing functions. In these areas, the digital gap between SMEs and large firms in online interactions with the government, electronic invoicing, use of social media, and e-commerce is smaller (OECD, 2021a). Significant differences exist across sectors regarding the intensity and types of digital tools adopted. In the accommodation and food services sector, high-speed broadband connections, having a website, and using cloud computing to store files are the leading technologies associated with higher value-added and more significant digital gaps (ibid.). Meanwhile, in the wholesale sector, the key technologies that drive gaps in adoption and value-added are e-sales, cloud computing to host databases, and training information and communication technology (ICT) specialists. In contrast, in retail trade, e-sales and cloud computing to manage customer relationships are the primary technologies (ibid.).

## **B. The importance of digital transformation for SMEs**

The ability of organizations to rapidly adapt to supply chain disruptions, market pressures, and evolving customer expectations has become increasingly critical in the aftermath of the pandemic. Although it remains unclear whether changes in consumer behavior seen during the pandemic will persist in the long run, McKinsey Digital's global leader, Rodney Zempel, has observed that digital adoption has accelerated across most categories (Haff, 2020). According to McKinsey, the shift towards streaming and online fitness, home cooking, and online grocery shopping is expected to be permanent, as are cashless transactions and remote selling in the business-to-business (B2B) space (ibid.). These changes brought about by the pandemic indicate that digital transformation is increasingly linked to business survival.

Digital transformation provides instruments to be leveraged by organizations willing and prepared to adapt to the new reality and adopt digital technologies enabled by a support system. Therefore, the survival of a business during the digital transformation process is heavily linked to an enabling ecosystem and the preparedness of the organization to leverage the available measures and tools to join the transformation.

In global value chains. The impact of digital transformation varies across its segments and firms. For example, manufacturers failing to adopt more innovative ways of doing business may not survive, which could impact sub-contractors, many SMEs that supply parts and materials to larger corporations. Some SMEs struggle to adapt to changing digital environments due to limited human and financial resources. In contrast, goods and service providers with good access to and use digital technologies may engage more readily with end consumers without intermediaries. In sum, digital transformation opportunities and challenges depend on readiness and openness levels to embrace change within organizations alongside a supportive business environment.

For SMEs, leveraging available digital technologies helps them expand their customer base and reach new markets without a physical presence, benefiting from reduced costs and the complexity of cross-border trade. Furthermore, digital transformation can optimize supply chains and improve efficiency by utilizing technologies like the Internet of Things and big data analytics to provide real-time visibility into supply chain operations and relations, enabling data-driven decisions and responsive actions to changes in demand, inventory management and customer satisfaction. Various tools such as translation software, chatbots, social media platforms, digital wallets, and blockchain help overcome language and other barriers, build customer relationships, and conduct cross-border transactions more securely and efficiently.

However, digital transformation is not a panacea for business growth and new opportunities, nor is it easily achieved. Cybersecurity and data privacy issues must be addressed to realize these benefits fully. Unfortunately, many smaller businesses lack the financial and human resources or in-house expertise to implement robust cybersecurity measures or comply with complex data privacy regulations, making them vulnerable to cyberattacks or data breaches (OECD, 2020). Conversely, digital transformation often requires significant changes to an organization's culture, processes, and business models, making it challenging to get buy-in from employees or stakeholders who are resistant to change or unfamiliar with new technologies (Inamdar, 2022). SMEs may struggle to integrate new digital technologies with existing systems and processes, leading to data silos, inefficient processes, and a lack of organizational visibility. Furthermore, accessing financing is often difficult, particularly for SMEs without a track record of success or collateral to offer lenders (OECD, 2021b). This could hinder the SME's journey towards digital transformation as traditional banking systems tend to prefer investments by larger and more secure enterprises rather than SMEs.

These unique challenges in successfully undertaking digital transformation require SMEs to receive comprehensive support addressing their needs and constraints. This may involve partnering with external experts or service providers, leveraging open-source technologies, investing in employee training and education, and receiving government support. Access to core digital tools is a crucial starting point for SMEs to undertake digital transformation, and a sector-specific and function-specific approach is necessary to promote the essential tools for the type, size, and goal of the business.

### C. Digital transformation of Korean SMEs<sup>1</sup>

Korea has emerged as one of the world's leading countries in creating an inclusive digital business environment. The country has achieved this through robust digital infrastructure, including fast and reliable fixed broadband and mobile internet speeds. According to the Speedtest Global Index as of March 2023, Korea ranked 25th globally in average fixed broadband speed, clocking in at 122.04 Mbps, and 6th globally in average mobile internet speed, at 120.38 Mbps (see figures 1a and b). Furthermore, Korea had the highest number of fast fixed broadband subscriptions per 100 inhabitants among OECD countries, together with one of the most affordable broadband connections (see figures 1c and d).

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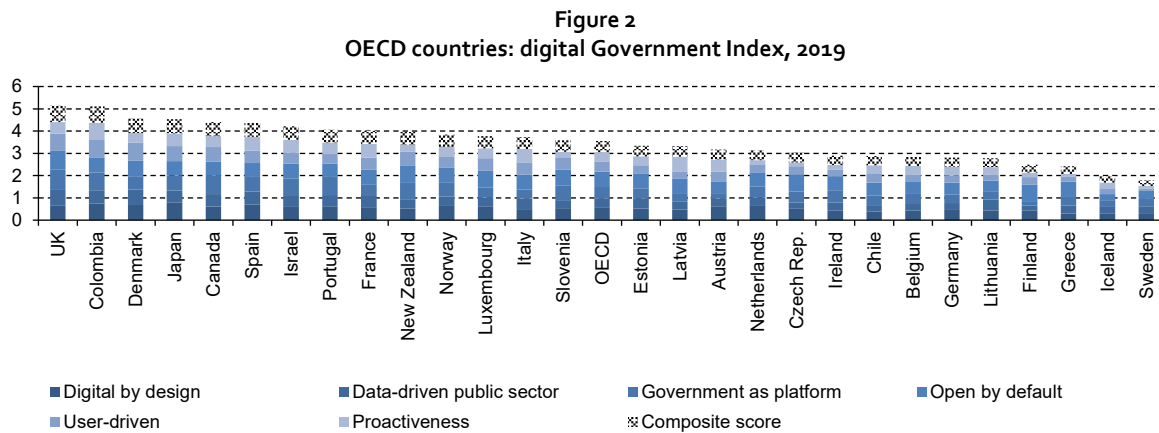
<sup>1</sup> The Korean Ministry of SMEs and Startups (MSS) defines a micro-enterprise as "a firm employing nine or fewer workers (in the service industry, four or less)"; a small-sized enterprise as "one with annual sales between 1 to 12 billion Korean Won (0.76 million to 9.1 million USD) (threshold varies with industry)" and includes micro-enterprises; and a medium-sized enterprise as "one bigger than small-sized enterprises with annual sales revenue between 40 to 150 billion Korean Won (30.3 million to 113.9 million USD) (threshold varies with industry)" (Ministry of SMEs and Startups, n.d.).

**Figure 1**  
**Korea and other OECD countries: mobile and fixed broadband connection**



Source: Elaboration by the authors based on Speedtest Global Index [online] <https://www.speedtest.net/global-index/south-korea> (accessed on 3 May 2023); OECD (2023), OECD Broadband Portal [online] <https://www.oecd.org/sti/broadband/broadband-statistics/> (accessed on October 7<sup>th</sup>, 2023).

Korea has a supportive regulatory environment for adopting digital technologies in the public and private sectors. It leads the OECD’s ranking of the Digital Government Index (see figure 2). Another example is the current administration's innovation strategy, the "Digital Platform Government," launched in September 2022. This version updates previous efforts to build a secure e-government platform. The strategy aims to provide integrated and personalized public services through collaboration and data sharing among ministries (Koh, 2023). Moreover, it aligns public support with private-sector digitalization efforts through public-private cooperation. The government subcontracts private services through Open API. This public-private strategy is a test bed for various experiments and innovations (ibid).



Source: Elaboration by the authors based on OECD (2021a) Harnessing digitalisation to build resilient SMEs in Korea.

Despite Korea's solid digital infrastructure and supportive regulatory environment, there is room for improvement. For example, the Korea Institute for International Economic Policy (KIEP, 2021)'s survey of 1,029 businesses involved in digital trade revealed several challenges to leveraging digital technologies for cross-border trade and e-commerce. Regardless of their size and sector, many businesses found the electronic authentication and signature process time-consuming, with unnecessary documents required for customs clearance (see table 1). In retail and product intermediation services, product returns and reverse logistics are a significant challenge, calling for international coordination on regulations governing returns and exchanges, which vary across countries (ibid.).

**Table 1**  
**Korea: barriers to leveraging digital technologies for cross-border trade and e-commerce**

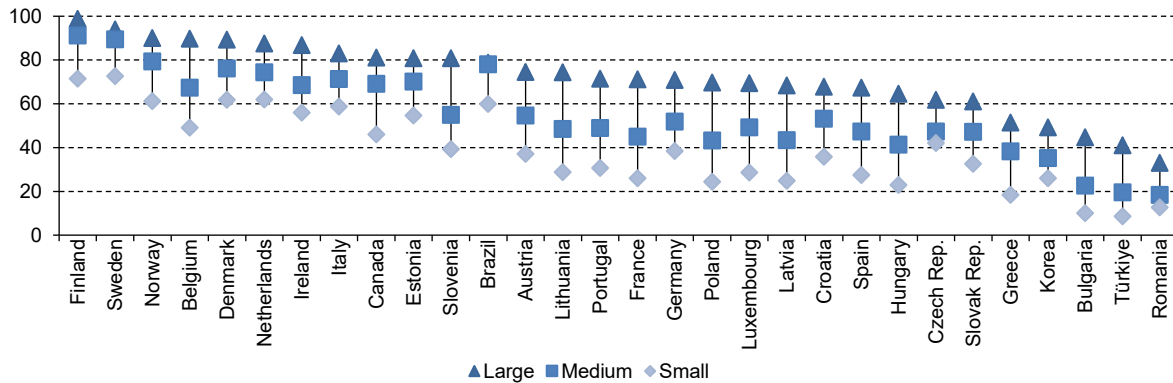
Topic industry	Digital trade facilitation	Percentage	Data restrictions	Percentage
Information, communication, and broadcasting services	Lack of an electronic payment system	34.8	Restrictions on cross-border movement of data	24.0
	Demand for unnecessary customs documents	30.4	Request for disclosure/modification of software source code	24.0
	Strict electronic certification and signature requirements	17.4	Requirement for the use/installation of domestic computing equipment in exporting country	16.0
Professional, scientific, and technical services	Strict electronic certification and signature requirements	21.4	Stringent regulations on personal information protection of local users	37.5
	Lack of an electronic payment system	21.4	Restrictions on cross-border movement of data	31.3
	Demand for unnecessary customs documents	21.4	Requirement for the use/installation of domestic computing equipment in exporting country	12.5
Retail, product intermediation services	Complex processes and high costs caused by product return procedures	40.0	Restrictions on cross-border movement of data	42.9
	Strict electronic certification and signature requirements	20.0	Stringent regulations on personal information protection of local users	21.4
	Demand for unnecessary customs documents	20.0	Request for disclosure/modification of software source code	21.4

Source: Elaboration by the authors based on the Korea Institute for International Economic Policy (2021), A Study on Digital Trade Policy in the Era of Digital Transformation, p.81.

Note: 'Percentage' indicates the share of 1,029 surveyed firms. Among these, 14.3% indicated annual revenues below 1 billion won (about USD 0.75 million), and 8.6% had revenues between 1 billion won and 5 billion won (about USD 0.75 million and USD 3.7 million). Following the MSS's definition, the sum of both (22.9%) refers to SMEs.

Korean SMEs still need to reap the benefits of digital transformation (OECD, 2021a). They need to catch up to the average of OECD member states using these key digital technologies, like cloud computing services (figure 3). Moreover, a relatively low share of Korean SMEs receive orders over computer networks (figure 4) despite the country's large volume of e-commerce transactions.

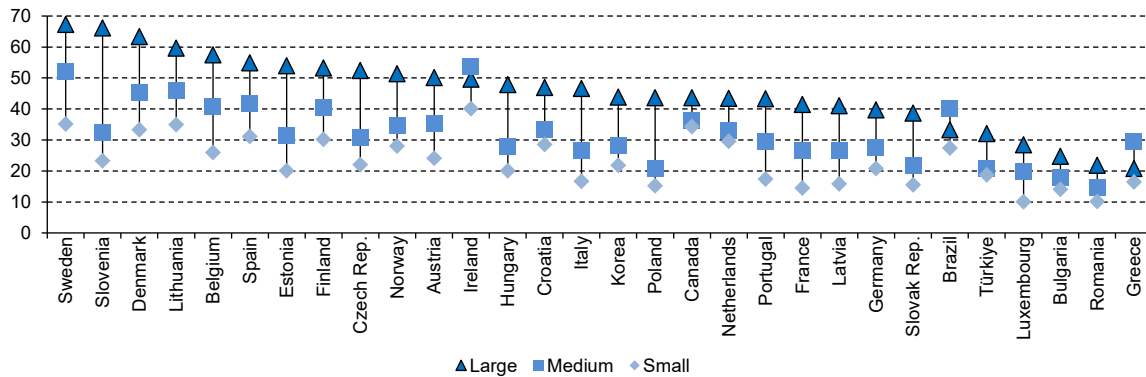
**Figure 3**  
**OECD countries: share of businesses with ten or more employees purchasing cloud computing services, 2021**  
*(Percentage)*



Source: Elaboration by the authors based on OECD (2023), ICT Access and Usage by Businesses [online], <http://oe.cd/bus> (accessed October 7th, 2023).

Note: Small enterprises have 10 to 49 workers, medium-sized ones between 50 and 249 employees, and large firms have more than 250 employees. Japan has no data for small enterprises.

**Figure 4**  
**OECD countries: share of businesses receiving orders over computer networks, 2021**  
*(Percentage)*



Source: Elaboration by the authors based on OECD (2023), ICT Access and Usage by Businesses [online], <http://oe.cd/bus> (accessed October 7th, 2023).

Note: Small-sized enterprises employ between 10 and 49 people, medium-sized firms between 50 and 249 employees, and large firms with more than 250 employees. Data for small enterprises in Japan has yet to be made available.

## II. The Korean experience: supporting the digital transformation of SMEs

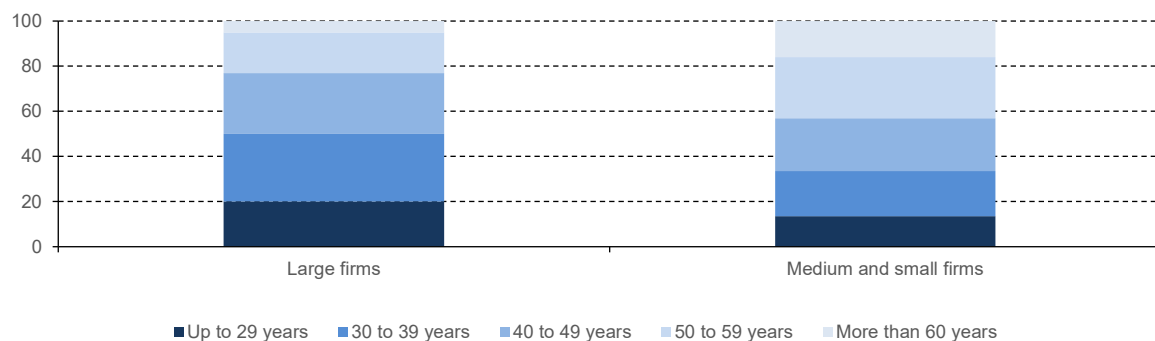
### A. Challenges in leveraging digital technologies

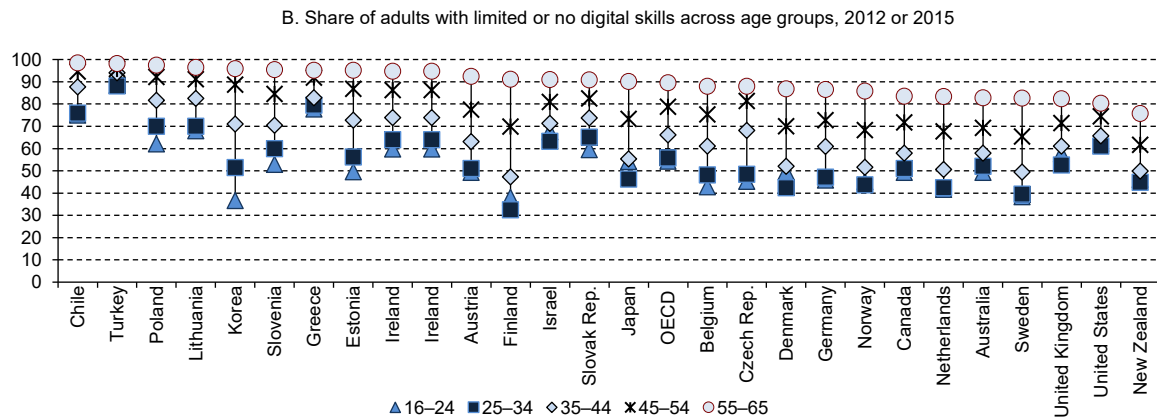
Despite the available digital infrastructure, Korean SMEs require support to adopt digital technologies, mainly because they lack workers with digital skills and have difficulties accessing credit (OECD, 2021a; Lee, 2021). Korea has an unbalanced distribution of digital skills between different age groups and enterprise sizes (see figure 5). As young people predominantly work in larger enterprises, SMEs have proportionally more older workers with fewer capacities to use complex digital technologies. Consequently, many SMEs lack proactive engagement in ICT and data security. Although the share of firms with formal ICT security policies in Korea is above the EU average, smaller businesses have a low adoption rate (see figure 6).

Figure 5

Korea and other OECD countries: shares of employees in businesses and of adults with limited or no digital skills

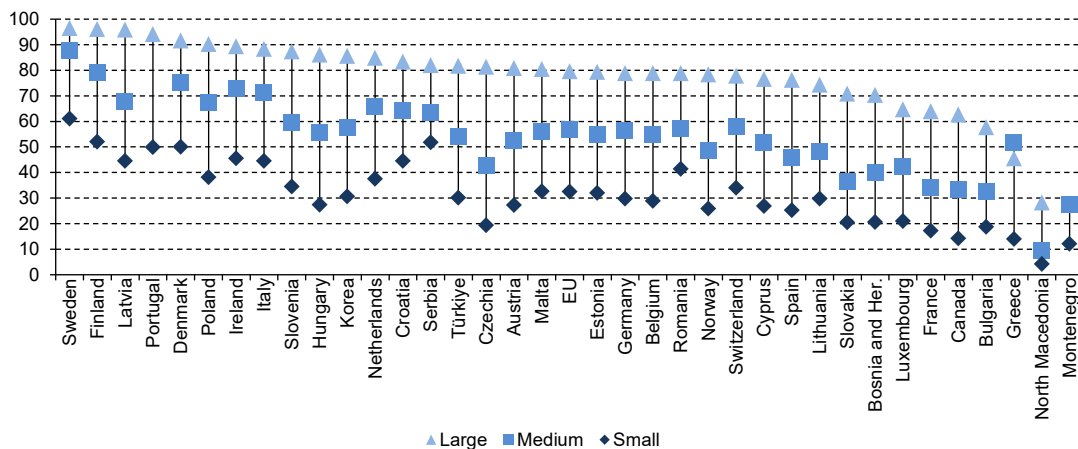
A. Percentage of age of employees by size of business, 2019





Source: Elaboration by the authors based on OECD (2021a) Harnessing digitalisation to build resilient SMEs in Korea.  
 Note: For (b), “no digital skills” includes adults with no computer experience who failed the ICT core test or opted out of taking the test. “Limited digital skills” include adults scoring below or at level 1 of problem-solving proficiency in technology-rich environments—calculation based on the OECD Survey of Adult Skills (PIAAC).

**Figure 6**  
**OECD countries: share of businesses with a formal ICT security policy, 2021-2022**  
 (Percentage)



Source: Elaboration by the authors based on OECD (2023) ICT Access and Usage by Businesses [online], <http://oe.cd/bus> (accessed October 7th, 2023) y EUROSTAT (2023), ICT usage in enterprises [online] <https://ec.europa.eu/eurostat/web/main/data/database> accessed October 8th, 2023).

Note: The 2021 data on Canada, Korea and Switzerland are from the OECD ICT Access and Usage by Business dataset, indicating “Businesses with formal policies to manage ICT privacy risks.” The 2022 data on Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, and the United Kingdom are from the Eurostat ICT usage in enterprises dataset, with an indicator on “Enterprises have document(s) on measures, practices, or procedures on ICT security”. Data on medium-sized businesses in Portugal is not available.

Another challenge for the digital transformation of SMEs—involving investment of different types—is access to finance. As shown in figure 7, 44% of surveyed SMEs in Korea reported that securing financing for their business is a challenge. This challenge may have been exacerbated by the current economic crisis after the COVID-19 pandemic, as banks and other lenders prefer large enterprises with a lower risk of default and more solid financial reporting.

**Figure 7**  
**Korea: the main difficulties faced by SMEs, April 2018**  
 (Percentage)



Source: Yoon (2021), Important business challenges for SMEs in South Korea 2018.

Lee (2021) identifies four broad challenges for SMEs engaged in e-commerce. Firstly, the current automatic trade processing system may not effectively benefit SMEs in their efforts to start or expand their exports. Second, due to limited resources and complex requirements, e-commerce platforms, particularly those managed by foreign entities, may be less accessible to SMEs. Thirdly, support initiatives of export promotion agencies and other entities often overlap, resulting in confusion and wasted resources. Finally, many SMEs are unfamiliar with public tools, such as Uni-Pass and U-Trade Hub, available to assist them in engaging in commerce.

In this context, the following sections will focus on how the Korean government has addressed the challenges SMEs face in leveraging digital technologies for cross-border trade and e-commerce. Specifically, it will examine the government's efforts to build strong legal and institutional foundations for the digital economy. Building upon that, it presents other policy initiatives to tackle cross-border trade and e-commerce challenges, such as R&D, human capacity building, and access to financing.

## B. Addressing the challenges

The four priority areas are as follows: (i) laying the legal and institutional groundwork for a whole-of-economy strategy; (ii) addressing cross-sectoral difficulties; (iii) translating trade promotion policies into operations; and (iv) monitoring and assessing progress and results.

## 1. Focus I. Building legal and institutional foundations for a whole-of-economy approach<sup>2</sup>

### a) Legal foundations

The Electronic Trade Facilitation Act, enacted in 2005 and amended in 2015, has been instrumental to Korea's success in cross-border e-commerce and trade, providing a legal framework for electronic trade documents. Other laws and frameworks, such as the Framework Act on Electronic Transaction, the Digital Signature Act, and the Act on Promotion of Information and Communications Network, among others have complemented this Act.

The surge in digital trade required updating several existing laws to reflect this new reality. For example, the Foreign Trade Act has been modified to incorporate digital technologies in the contract process. Also, the Customs Act has been revised to accommodate digital customs clearance. The Issuance and Distribution of Electronic Bills Act has also been introduced to address e-payment. Amendments to existing data-related laws, such as the Personal Protection Act of 2011, the Credit Information Act of 2008, and the Information and Communication Network Act of 2001, have also been made to cover better issues such as data security and personal information protection. Table 2 summarizes three laws being considered or amended to leverage digital technologies for cross-border trade and e-commerce.

**Table 2**  
**Korea: laws being amended linked to digital trade, December 2021**

Name of law	Main content	Key issue
2021 Electronic Commerce Act	Reinforcing the responsibility of online platform operators.	Whether the broker is imposing excessive liability on par with the seller.
	Provision of business information in case of consumer dispute.	Whether the provision of personal seller identity information is an infringement of personal information.
	Consumer choices about receiving tailored advertising.	Whether business costs, necessity, convenience, etc., should be considered.
Data industry law	Define data assets.	If the definition of data assets is broadened, there is concern that companies will use it to strangle employees who leave the company.
	Prohibition of illegal use of data assets.	Whether the contents of illegal use and the Unfair Competition Prevention Act, which entrusted remedies, apply to platform data.
Data 119 project	My data service.	Need for specific measures to protect and safely utilize data.
	Special Committee on Data Formation.	More than 2/3 of the ad hoc data committee members should be from the private sector.

Source: Elaboration by the authors based on Korea Institute for International Economic Policy (2021) A Study on Digital Trade Policy in the Era of Digital Transformation.

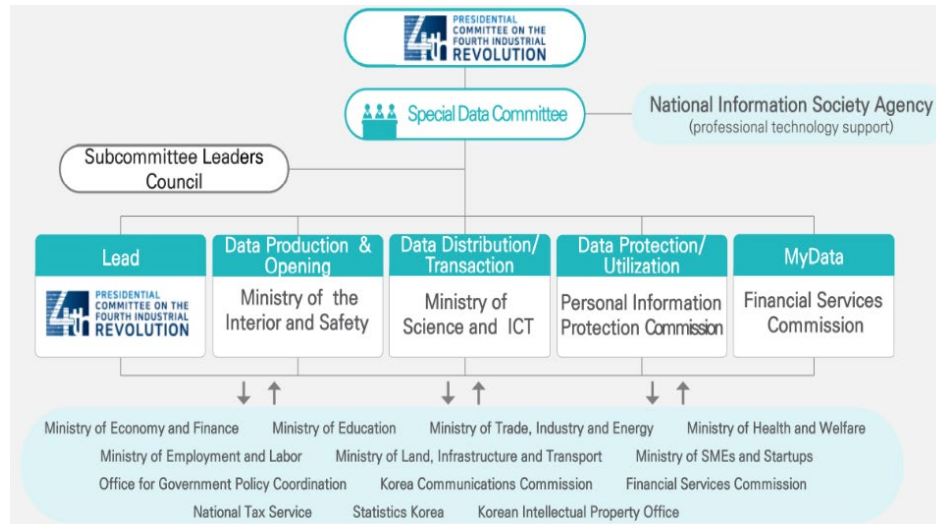
### b) Institutional foundations

Korea has developed comprehensive institutional structures, generally led by the Presidential Office, to accelerate the digital transformation of its economy and promote cross-border trade and e-commerce. Over the years, different administrations implemented similar strategies with other names. The section below focuses on efforts by President Moon's administration (2017–2022) and the government in place.

<sup>2</sup> A government-wide approach refers to joint activities performed by multiple ministries and affiliated institutions to provide a common solution to common challenges.

Under the 2017–2022 administration, digital transformation policies were concentrated in the Presidential Committee on the Fourth Industrial Revolution.<sup>3</sup> This Committee, chaired by the Prime Minister, included 12 ministers and 20 members from academia and the business sector (see diagram 1). The Committee had two goals. First, develop national strategies that incorporate the private sector needs to accelerate progress towards the country's data goal through 11 practical tasks<sup>4</sup> and nine services.<sup>5</sup> Second, provide an institutional mechanism for monitoring advances made in digital transformation.

**Diagram 1**  
Korea: structure of the Presidential Committee on the Fourth Industrial Revolution



Source: Policy Information (n.d.) Korea Data 119 Project.

The digital transformation focus is a vital part of President Moon's launch of the Korean New Deal in July 2020. This Deal aimed to transform the economy from a carbon-dependent economy to a green economy through a "2+1" policy approach: (i) the Digital New Deal, (ii) the Green New Deal, and (iii) stronger safety nets. For these goals, 6.3 trillion won (about USD 4.7 billion) was planned to be invested in 2020, reaching an accumulated amount of 160 trillion won (USD 121 billion) by 2025 (Ministry of Economy and Finance, 2020). The Digital New Deal would receive 58.2 trillion won (about USD 44 billion) and create 903 thousand new jobs; the Green New Deal 73.4 trillion won (about USD 55 billion) and 659 thousand jobs; and the stronger safety nets 28.4 trillion won (about USD 21 billion) and 339 thousand jobs (ibid.).

The Digital New Deal aimed to enhance the country's competitive edge in ICT, promote innovation, and drive growth through three projects focusing on data dams (see box 1), AI government, and smart

<sup>3</sup> This Committee has been canceled after the change of governments.

<sup>4</sup> The 11 tasks included: (i) Providing unopened core data; (ii) securing the level of data quality desired by consumers; (iii) using specialized private companies and supporting data purchases; (iv) linking data platforms and activating exchanges; (v) overhauling the national data management system; (vi) redesigning government tasks to be data-centered; (vii) implementing new data utilization systems; (viii) engaging in preemptive response to risks across the data ecosystem; (ix) establishing a data-based scientific disaster management system; (x) promoting the COVID-19 time capsule project; and (xi) establishing a water management data integration system.

<sup>5</sup> The 9 services included: (i) [Medical treatment] My Health Information at a glance; (ii) [Medical treatment] Automatic claim of loss insurance; (iii) [Everyday life] Supporting sustainable consumption patterns; (iv) [Everyday life] Stopping pirating of intellectual goods and services; (v) [Welfare] Uninterrupted meal support for students and people in need; (vi) [Welfare] Assisting learning about artificial intelligence; (vii) [Core strategies] Artificial intelligence in Korean; (viii) [Core strategies]K-image project; and (ix) [Core strategies] Smart ports.

healthcare infrastructure. The Green New Deal aimed to speed up the transition to a low-carbon and green economy, achieve net-zero emissions, and build eco-friendly energy infrastructures that promote energy-saving and increase renewable energy sources. The Green New Deal projects prioritized green remodeling, green energy, and eco-friendly vehicles. Four projects focused on converging digital and green industries, including green and smart schools, digital social overhead capital, and smart and green industrial complexes. The table below illustrates the allocated budget for each project.

**Table 3**  
**Korean New Deal: budget allocations for ten projects, 2020**

A. Digital New Deal (3 projects)			
Projects	Total investment ( <i>Billion USD</i> )		Job creation ( <i>Thousands</i> )
	2020–2022	2020–2025	2020–2025
Data dam	6.40	13.6	389
AI government	1.80	7.3	91
Smart healthcare	0.07	0.1	2

B. Green New Deal (3 projects)			
Projects	Total investment ( <i>Billion USD</i> )		Job creation ( <i>Thousands</i> )
	2020–2022	2020–2025	2020–2025
Green remodeling	2.3	4.00	124
Green energy production	3.4	8.50	38
Eco-friendly vehicles	6.5	15.30	151

C. Digital-Green Industrial Convergence (4 projects)			
Projects	Total investment ( <i>Billion USD</i> )		Job creation ( <i>Thousands</i> )
	2020–2022	2020–2025	2020–2025
Green and smart schools	4.0	11.5	124
Digital twins	0.3	1.3	16
Make social overhead capital digital	6.2	11.1	143
Smart and green industrial complexes	1.5	3.0	33

Source: Elaboration by the authors based on Ministry of Economy and Finance (2020) Government Announces Korean New Deal.

Note: All figures above are accumulated.

**Box 1**  
**Leveraging Data Dams for the inclusive use of public data**

The Ministry of Science and ICT prioritized “data dams” as a critical component of Korea’s Digital New Deal. As water dams, data dams are designed to collect data from various sources in the public and private sectors to disseminate this data across all industries. Through collecting and standardizing data, the Data Dam also aims to leverage technologies such as AI to drive innovation.

In mid-2021, the Ministry and the National Information Society Agency launched the Data Dam project by releasing 170 data types for AI learning on an integrated platform called AI Hub. This release significantly increased the amount of content on AI across multiple sectors, including education, finance, healthcare, and transportation, with a total of 480 million data types on AI. The collected data included spoken dialects, which helped to improve the recognition rate of AI services for dialects by 12%.

This Data Dam project improved collaboration among stakeholders, including government officials, industry professionals, and citizens. The Ministry identified the data demand across sectors and engaged experts from business and academia to plan and establish the platform. Cloud sourcing was also employed to encourage citizen participation in data collection and processing. The Ministry established an advisory committee of over 80 experts to evaluate data quality and launched public-private cooperation channels to ensure data accessibility.

Source: Elaboration by the author based on the Ministry of Science and ICT (2021) and Born2Global Centre (2021).

In 2021, an updated version of the Korean New Deal, known as “Korean New Deal 2.0,” added two new pillars. These were the Human New Deal and the Local New Deal (Ministry of Economy and Finance, 2021a). The Human New Deal emphasized investing in human resource development through vocational training and updating the educational curriculum. It focused on human resource development in digital and green industries, such as software development and biohealth. Other expansions to domestic job and social security programs were support for housing and asset building, upgrades in childcare support for low-income households, the country’s caregiving system involving child and senior care, and disability assistance and single-parent support. The Local New Deal promoted a more balanced development of regions within Korea.

The Korean New Deal 2.0 received an additional planned public investment of 220 trillion won (about USD 166 billion), expected to create an other 600,000 jobs on top of the original 1.9 million jobs projected by the original plan (Ministry of Economy and Finance, 2021b; see table 4). The Digital New Deal would increase investment from 44.9 trillion won (about USD 34 billion) to 49 trillion won (about USD 37 billion) by 2025 to foster new growth engines in the digital economy (ibid.).

As part of the 2022 budget allocations, 33.7 trillion won (about USD 25.5 billion) would be invested in the Korean New Deal 2.0, with 9.3 trillion won (about USD 7 billion) invested in technologies for connectivity, including the metaverse, and 13.3 trillion won (about USD 10 billion) invested in smart and green cities (Ministry of Economy and Finance, 2021b). Additionally, 2 trillion won (about USD 1.5 billion) was allocated for training programs for 20 new technologies ranging from AI to software development to ‘system-on-a-chip (SOC)<sup>6</sup> and space exploration. Furthermore, 400 billion won (about USD 302 million) was allocated to advance industry-university cooperation (“Leaders in Industry-University Cooperation<sup>7</sup>”) and promote online offerings of university programs that meet the skillset demands of the industries. The Korean New Deal 2.0 also saw a notable increase in investment in R&D, with a budget increase of 48.1%, reaching a total of 3.6 trillion won (about USD 2.7 billion), of which 0.7 trillion won (about USD 0.5 billion) was allocated for satellite navigation, space exploration, quantum technology, 6G, and the development of other frontier technologies.

**Table 4**  
**The Korean New Deal 1.0 and 2.0: comparison of allocated investment per strategic pillar**  
*(Billion USD)*

	Investment from 2020 to 2025	
	New Deal 1.0	New Deal 2.0
<b>A. Digital New Deal (total)</b>	<b>33.8</b>	<b>37.0</b>
(1) Promote Data, Network, and AI	24.1	25.3
(2) Strengthen infrastructure for ‘intact’ business	2.1	2.4
(3) Promote metaverse and other ICT convergence services	-	1.9
(4) Make SOC smart	7.5	7.3
<b>B. Green New Deal (total)</b>	<b>32.2</b>	<b>46.1</b>
(1) Pursue carbon neutrality	-	3.6
(2) Transform urban infrastructure greener and cleaner	9.1	12.1
(3) Promote low-carbon, distributed energy	18.3	22.6
(4) Promote green industries	4.7	7.7

<sup>6</sup> A ‘system-on-a-chip’, or SOC, is an integrated circuit that takes the form of a single platform and integrates an entire electronic or computer system onto it, i.e., putting an entire system on a single chip (Anysilicon, n.d.).

<sup>7</sup> Since 2012, the RoK government has actively implemented the “Leaders Industry-University Cooperation (LINC) program to facilitate “practical training” via a technologically and innovation- focused program and a field-centered program.

	Investment from 2020 to 2025	
	New Deal 1.0	New Deal 2.0
C. Human New Deal (total)	20.1	37.8
(1) Develop human resources	3.0	7.0
(2) Strengthen employment security and social security	17.0	20.4
(3) Young adult packages	-	6.0
(4) Help bridge the gap	-	4.3
New Deal 2.0 Total	86.2	121
Local New Deal	32.2	46.8

Source: Elaboration by the authors based on Ministry of Economy and Finance (2020) Government Announces Korean New Deal.  
Note: The budget for the Local New Deal overlaps with other New Deal 2.0 spending.

As part of the 2022 budget, 3.9 trillion won (about USD 2.9 billion) would be invested in pandemic-hit small businesses, of which 1.4 trillion won (about USD 1 billion) for emergency funds, business consulting services, financial support for new business openings, and online sales opportunities (Ministry of Economy and Finance, 2021b). For labor market restructuring, the budget allocated for inter-ministerial cooperation increased by over 40%, reaching 14 trillion won (about USD 10.6 billion) (*ibid.*).

The current Yoon administration also aims to accelerate the digital transformation. It launched the “Digital Strategy of Korea” in September 2022, which includes five strategies<sup>8</sup> and 19 specific tasks to advance toward a digital economy (Ministry of Science and ICT, 2022a). This strategy consists of a set of ambitious goals, including enhancing the country’s ranking in the AI Index developed by the Stanford Institute for Human-Centered Artificial Intelligence (HAI)<sup>9</sup> (from 6th as of 2021 to 3rd by 2027), increasing the number of unicorn enterprises<sup>10</sup> (23 as of 2021 to 100 by 2027), improving the digital capabilities of small businesses, and expanding early-stage digital education in software development and AI (Government of the Republic of Korea, 2022).

One notable aspect of the Digital Strategy of Korea is the Digital Platform Government, which is intended to be launched as the country’s primary innovation platform, with the Presidential Committee on the Digital Platform Government supporting its development (Koh, 2023). President Yoon has expressed his plans to complete the framework of a government-wide digital platform that combines the capabilities of the public and private sectors within three years and to create a platform that will “lead the global market” within five years (Presidential Office, 2023). While one primary objective of this platform will be to provide AI-customized public services, businesses will also benefit from the platform by gaining access to high-quality data and leveraging the platform’s built-in technologies (*ibid.*).

In conclusion, the legal and institutional frameworks have been crucial to the economy’s digital transformation. These frameworks have provided the basis to support SMEs with fewer resources and promote collaboration across ministries, lowering silos between work areas and stakeholders and providing a basis for increased budget allocation for digital transformation. As a result, Korea can better address cross-sectoral challenges related to digital technologies for cross-border trade and e-commerce with additional support for SMEs.

<sup>8</sup> The five strategies include: (i) building the best digital capabilities; (ii) building the digital economy; (iii) promoting a digitally inclusive society; (iv) promoting an open digital platform government; and (v) promoting an innovative digital culture. For more information on the 19 specific tasks, see the Ministry of Science and ICT (2022).

<sup>9</sup> The AI Index is developed by the Stanford Institute for Human-Centered Artificial Intelligence (HAI) and led by the AI Index Steering Committee. Each annual report presents data relating to AI. To track progress, collaboration is sought with different organizations, including the Center for Security and Emerging Technology at Georgetown University, LinkedIn, and McKinsey (HAI, n.d.).

<sup>10</sup> A unicorn company is a startup valued at over USD 1 billion.

## 2. Focus II. Addressing cross-sectoral challenges<sup>11</sup>

Korea's comprehensive approach to leveraging digital technologies for cross-border trade and e-commerce aims to address challenges experienced by businesses, particularly SMEs. These challenges refer to regulations, R&D, human resource development, and access to finance. Each has been discussed based on the priorities set by the digital transformation policies, considering the need for additional support for those with conditions of vulnerability (see box 2). The government collaborates with the private sector to address some of these challenges, particularly in human capital development, by linking digital education with job opportunities.

Despite the advances shown by Korea, it is worth pointing out that Korea is still in the process of ensuring a fully inclusive digital business environment for all. Efforts are still required to provide better coordination across different ministries, government agencies, and other stakeholders, as there have been occasions where duplicated service provision and wasted public resources have surfaced.

### Box 2

#### Providing support for women-led enterprises

For an enterprise to be recognized as a 'women-led' enterprise, the designated representative for the business entity must be a woman. For corporations, a woman must be registered as the largest shareholder. In the case of co-representation, the female representative must possess enough shares to be the largest shareholder. Additionally, over 50% of members must be women. These requirements validate that women are influential representatives and possessors of management authority.

In Korea, women-owned businesses are entitled to three primary benefits. Firstly, under Article 9 of the Women-owned Business Support Law, public entities, including the government, local authorities, and other public institutions, must purchase a certain percentage of products from women-owned businesses in the domestic market. This can aid women-owned companies in expanding their market share. Secondly, under Article 10 of the Women-owned Business Support Law, women-owned businesses can receive slightly more favorable funding via guarantee systems from credit guarantee funds, technology guarantee funds, and credit guarantee foundations than general small and medium-sized enterprises. Lastly, under Article 11 of the Women-owned Business Support Law, women-owned businesses can receive support, such as management support education, promotion of smart factory construction and upgrading, digital competency training for women-owned business employees, and consulting support for improving technological capabilities to enhance their business management abilities.

Source: Elaboration by the authors based on information from Small and Medium Business Public e-Procurement (n.d.).

### (a) Regulations

As part of the Digital New Deal of the previous administration (2017–2022), efforts were made to identify and remove regulatory barriers that may hinder the growth and efficient functioning of digital markets. To create an environment where businesses can more easily test their products and draw on the expertise of regulators, for example, regulatory sandboxes have been developed and employed. One example is the Financial Service Commission's financial regulatory sandbox program, which facilitated cooperation between the finance and information technology sectors and helped Korea's open banking system successfully launch in December 2019 (Financial Service Commission, 2019). This financial sandbox expands the National Assembly's Special Act on Financial Innovation Support, supporting the commercialization of cutting-edge fintech products and concepts.

<sup>11</sup> While new governmental activities are being planned and implemented under the current administration's digitization national strategy, the following sections will focus on the efforts that have been implemented either during the current or previous administrations due to data availability.

The current administration's Digital Strategy focuses on removing regulatory barriers that undermine innovation. Strategy 5 promotes an innovative digital culture and encourages the private sector to identify regulations to be improved in emerging digital industries, including the metaverse, in line with the existing governance mechanisms for regulatory improvement<sup>22</sup> (Ministry of Science and ICT, 2022a). For this goal, special permissions for pilot testing are granted to address conflicts between emerging and traditional industries, which may require creating a mediation task force under the ICT Strategy Committee (*ibid.*).

Despite multiple regulatory reforms to accelerate the digital economy, some legal silos and a lack of coverage remain. For example, no specific legal requirements exist for B2B e-commerce. Currently, this sector is regulated through the Act on Consumer Protection in Electronic Commerce, which focuses more on protecting consumers' interests than on doing business on digital platforms, despite the specific obligations of vendors (Hwang and Pyo, 2022). Additionally, various digital channels (including social media) do not have specific regulations. Currently, the Telecommunications Business Act covers the telecommunications business in general.

Certain emerging technologies are yet to be regulated. In the case of AI, this has caused incidents (see box 3), particularly when connected to commercial activities. Through its Digital Strategy, the current Yoon administration has emphasized expanding regulation to new technologies and building an AI ethics framework (Ministry of Science and ICT, 2022a).

### Box 3

#### The chatbot Lee Luda's impact on the need to regulate the use of AI

In early 2021, a Seoul-based startup called Scatter Lab launched an AI chatbot named "Lee Luda" that took the form of a 20-year-old female university student person. The chatbot gained immense popularity in Korea, with over 750,000 users within 20 days of its launch. However, the chatbot sparked controversy as it used offensive language about members of the LGBT community and people with disabilities. Additionally, the chatbot used personal conversations between young couples on KakaoTalk, Korea's most-used messaging app, without their consent to improve its responses' natural tone and depth.

This controversy also raised questions about how AI should be managed, as some online community boards allowed advice postings on how to engage the chatbot in conversations about sex. On this, Scatter Lab's CEO, Kim Jong-Yoon, acknowledged it was impossible to prevent inappropriate discussions simply by filtering out keywords, despite the company's attempts to avoid using language incompatible with Korean social norms and values. The Korea Artificial Intelligence Ethics Association commented the controversy originated from a lack of awareness about the importance of ethics in dealing with AI.

As a result of the controversy, the Personal Information Protection Commission of Korea imposed sanctions and a fine of about USD 92,900 for the eight violations of the Personal Information Protection Act, including the use of personal messages from KakaoTalk without consent. However, no additional sanctions were imposed regarding the content produced by AI, including hate speech during conversations with chatbot users. Despite calls from civil society organizations for a more stringent regulatory framework for data and AI, data management and AI regulations remain unclear, inadequate, or nonexistent, depending on the specific application area.

Source: Elaboration by the authors based on Kim, D. (2021), Park, J. (2021), and McCurry, J. (2021).

<sup>22</sup> These include the Presidential Regulatory Improvement Strategy Meeting, the Regulation Deliberation Committee, and the Economy Regulation Innovation Task Force (Ministry of Science and ICT, 2022a).

## (b) Research & Development

The previous Moon administration prioritized public R&D investment, with funding reaching 27.4 trillion won (about USD 20.7 billion) in 2021 (Ministry of Science and ICT, 2021). This investment included R&D incentives depending on the size of the enterprises.<sup>13</sup> In 2022, R&D spending increased by 8.7% to 29.7 trillion won (about USD 22.5 billion), representing 4.9% of the government's total 2022 budget (Ministry of Science and ICT, 2022b). The R&D budget has been allocated to 38 government ministries and affiliated agencies, with the Ministry of Science and ICT receiving the most significant amount 9.4 trillion won (about USD 7.1 billion), followed by the Ministry of Trade, Industry, and Energy (5.5 trillion won, about USD 4.1 billion) (ibid.). In 2023, the Ministry of Science and ICT (2023) expects a 1.7% increase in the R&D budget, prioritizing strategic technology development, human resource development, and innovative business development.<sup>14</sup>

The Ministry of SMEs and Startups (MSS) promotes R&D through each stage of SME growth, from start-ups to medium-sized firms, facilitating product development, production upscaling, and expanding new markets (Ministry of SMEs and Startups, n.d.). For 2023, the MSS has announced that 1.8 trillion won (about USD 1.3 billion) is to be invested in R&D in SMEs, an increase of 100 billion won (about USD 75 million) compared to 2022 and a near duplication compared to 2019 levels (Kim, 2023). R&D projects in SMEs will be supported in three areas: 'business-led' with an investment of about 880 billion won (about USD 667 million) will be invested; 'cooperation,' with 351 billion won (about USD 266 million); and 'policy-linked'<sup>15</sup> with 610 billion won (about USD 462 million) will be invested (ibid.).

This R&D focus is also reflected in the current Yoon administration's Digital Strategy, mainly through Strategy 1, focusing on developing the "world's best digital capabilities." This strategy prioritizes six digital technologies: AI, AI semiconductors, 5G and 6G communications, quantum, the metaverse, and cybersecurity. Public investment in these areas totals 301.8 billion won (about USD 228 million) in next-generation AI during 2022–2026 and an additional 1.02 trillion won (about USD 773 billion) in core technologies for AI semiconductors. R&D in digital technologies should revitalize the local economy through 'local digital hubs,' such as the planned healthcare and robot hub in Daegu.

The Digital Strategy promotes innovative and digital technology-based SMEs but lacks details on specific measures. This is critical given the SMEs' poor performance in the context of substantial government support, also called the "Korean R&D paradox". Despite being the world's fifth-largest R&D spender (about USD 77.2 billion) in 2022, the successful commercialization of new products and services in Korea is only around 50% of the products developed using the invested R&D (Byun, 2023), which has raised questions about the effectiveness of R&D spending, particularly in terms of SME support.<sup>16</sup> In this context, the MSS announced plans to reform its R&D support schemes in January 2023, providing more opportunities for SMEs to engage in R&D. Its renewed policy seeks to gradually ease the financial requirements for participation and focus more on assessing whether proposed R&D projects demonstrate technological capacity and growth potential. This suggests that financially constrained SMEs may have a better chance of qualifying for support under the revised policy if they show tangible results from R&D subsidies.

<sup>13</sup> SMEs in RoK are eligible for a tax credit of (i) 50% of current year R&D expenses exceeding the average R&D expenses of the previous four years or (ii) 25% of the current year's R&D expenses. Moreover, corporate income tax benefits are also available through patent boxes, which entitle SMEs to a 50% exemption from corporate income tax on capital gains arising from IP transfers to the public sector or a 25% exemption on rental income (Deloitte, 2020).

<sup>14</sup> Information as of the date of drafting (mid-May of 2023).

<sup>15</sup> Refers to the government's prioritized policy areas projects.

<sup>16</sup> Byun (2023) recognizes that the successful commercialization of new products and services is not the only success measure of R&D investment. Lee (2023) reported that the R&D projects funded by the MSS from 2016 to 2020 have increased employment (+137 thousand), business revenues (15 trillion won, about 11.3 billion USD), and export value-added (3 billion won, about 2.2 million USD) of supported SMEs.

### (c) Human capacity building

Enhancing the workforce's skills is crucial for digital transformation, especially for small businesses with limited financial resources and technological capabilities. In this regard, the Korean New Deal 2.0's Human New Deal sub-pillar has laid the foundation for the Moon administration to develop programs to secure digital talent and nurture future generations with the necessary skills. The Digital Strategy prioritizes nurturing digital talent from the primary and secondary levels education level by improving and updating the curriculum to include skillsets such as software development and AI.

To nurture digital talent, the previous Moon administration planned to equip 1 million workers with digital skills. As such, the Ministry of Education and the Ministry of Science and ICT updated the curriculum of elementary and secondary schools, expanding courses on computer language, software development, and AI (Jo, 2022). In addition, the number of class hours for digital talent-linked subjects doubled, and boot camps focused on deepening students' understanding of software and AI were organized during school breaks. Science-focused high schools and schools for gifted children offered specialized software and AI curriculums, while the establishment of high schools specialized in digital talents was also considered. To ensure quality education, teachers and professors received financial and educational support to strengthen their expertise and create a digital-friendly learning environment for students. Higher education had also been targeted, with departments in cutting-edge fields being newly established or expanded, and graduate schools focused on these areas given flexibility regarding their student quota. Integrated undergraduate-master-doctoral courses have been designed to ensure continuity of studies in related fields, and the establishment of higher education institutions focused solely on digital areas has been positively considered, such as a "software-centered university" or a "new industry-specialized college" (ibid.).

Efforts have also been made to address the need for skilled digital talent in SMEs. For example, the Seoul Metropolitan Government and its affiliated SME support agency, Seoul Business Agency, have launched the 'Seoul Enterprise Youth Software Talent Scout Program.' This aims to match the digital talent demands of Seoul-based SMEs and startups with available labor supply specialized in software development (Seoul Business Agency, 2021). Other sectors have also linked education with employment opportunities. For example, continuous support is given to military personnel with digital skills. Universities also connect education with employment opportunities through the "DX-Academy," promoting retirees as digital transformation experts. Companies also organize digital education programs or open their internal programs for the public in exchange for additional points when applying for government R&D projects and tap into the nurtured digital talent pool for hiring. Examples of these digital education courses linked with companies include the "Campus Software Academy" (with Tmax Group) and the 'Software Academy for Youth' (with Samsung Group).

Different agencies promote the digital transformation of SMEs. In 2021, the Ministry of Employment and Labor designated private organizations such as the Korea Artificial Intelligence Association, the Korea Startup Forum, and Innobiz to establish SME Training Support Centers specialized in software development (Choi, 2021). These centers focus on analyzing the necessary workforce according to the SME context, developing company-tailored training courses based on prior consultations on training needs, and providing a one-stop support channel until training needs are satisfied.

The Korea Trade and Investment Promotion Agency (KOTRA) and the Korean SMEs and Startups Agency (KOSME) also provide online and on-site training courses on commercial trends and cultivate export capabilities for digital cross-border trade and e-commerce. For example, KOSME's GobizKOREA platform offers online training programs such as webinars to address SMEs' doubts and needs. The Big Data Academy, in collaboration with the Ministry of Science, Innovation, and Technology and the Korea Data Industry Promotion Agency, enhances the digital transformation capabilities of SMEs. The academy provides online training programs customized based on employees' job levels and other

factors. Additionally, publicly accessible platforms like “Data on Air” offer an open channel for accessing information on data technology and industry trends, focusing on SMEs eligible for preferential support under Article 12 of the Enforcement Decree of the Employment Insurance Act. Furthermore, KOTRA has online export marketing courses typically delivered in real-time to improve digital marketing capabilities.

#### (d) Financing

Various funds support the growth of SMEs at different stages of their development. For example, KOSME has six policy funds to provide financial assistance, including funds for high-tech startups, investment and loan hybrid financial assistance for high-tech startups, funds for growth-stage SMEs to develop new growth engines, funds for financially struggling SMEs to restructure and rebuild their businesses, funds to foster high-tech SMEs through the commercialization of their R&D outcomes, and funds to support SMEs in creating a stable business environment in response to disasters and other crises.

Several financial institutions, including public and private banks, expand SMEs' access to financing. For example, the Industrial Bank of Korea (public) has set three goals for 2023–2025 with more than 200 trillion won (about USD 151 billion) in funds for MSMEs over three years of age, reducing the financial cost of SMEs and micro business through its *Integrated Interest Rate Reduction Package*<sup>27</sup> that cuts a total of 1 trillion won (about USD 758 million) in interest rates, and supplying at least 2.5 trillion won (about USD 1.8 billion) of venture capital to technology-focused startups (Lee, 2023 and Go 2023). The bank also considers establishing a ‘venture subsidiary’ to support the continued growth of SMEs, particularly innovative companies facing bankruptcy due to a lack of funds and rising interest rates. The bank plans to support 1000 technology-focused SMEs financially and set up an M&A platform for SMEs, providing financial support for each phase through acquisition funds, mass production funds, and sales funds for companies that require technology transfer and protection (ibid.).

In March 2023, the MSS and the Small and Medium Venture Business Promotion Corporation announced a project to alleviate the financial burden of SMEs (MSS, 2023). The project complements commercial banks’ SME loans worth 800 billion won (about 607 million USD). These funds are supplied under the condition of a lump-sum repayment and a three-year grace period for working capital of up to 500 million won (about USD 0.38 million) per year per SME. The secondary compensation rate is 3% for SMEs focusing on innovative growth, green and regionally specialized industries and 2% for other companies. Both agencies have signed agreements with 13 commercial banks. Furthermore, the MSS has launched a refinancing loan program of 100 billion won (about USD 75 million) to support SMEs and startups with business and technological potential by tapping into loans with interest rates of 7% and higher from the secondary financial sector.

Financial support is also provided through tax incentives. In April 2023, for example, the Deputy Prime Minister amended the Restriction of a Special Taxation Act to increase tax credits on strategic technologies, including semiconductors, and reintroduce temporary investment tax credits to increase tax incentives for corporate investments (Lim, 2023). Additional incentives are given to SMEs recognized by the government as innovative enterprises,<sup>18</sup> including exemptions from heavy acquisition tax, deferment of a regular tax investigation, an extension of payment deadline, early payment of value-added tax refund, guarantee of financial support agreement, preferential support for technology guarantee, and reduction of a guarantee fee, among others (Innobiz, n.d.). These firms also receive R&D benefits and additional support in human resource development and overseas market expansion.

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<sup>27</sup> This package aims to ease the interest burden caused by rising interest rates by reducing the interest rates for SMEs by a total of 1 trillion won (about USD 758 million). The package is to be promoted for three years until 2025 (Go, 2023).

<sup>18</sup> This requires being certified as an “innobiz (innovation business)”.

### 3. Focus III. Converting trade promotion policies to operations

#### (a) Updating trade promotion policies

The Ministry of Trade, Industry, and Energy (MOTIE) has expanded its trade promotion strategies to reflect the new reality of the rapidly evolving digital economy. These updated strategies include e-commerce-related issues such as data usage and security and efforts to address challenges SMEs may face when applying digital technologies for their domestic and international business activities. The MOTIE collaborates with other ministries, such as the Ministry of Science and ICT and the MSS, on broader trade promotion strategies.

The MOTIE launched its Trade Digital Transformation Policy in November 2020. This policy addresses the need to respond to structural changes in global trade, such as digitization, carbon neutrality, and the spread of protectionism. It aims to double the current trade value (USD 1 trillion as of 2019) and the number of SMEs engaged in cross-border trade (95,000 SMEs as of 2019) before 2030 through digital transformation measures (see table 5). Several strategies are being implemented to achieve this goal, including promoting early-stage SMEs and startups interested in cross-border trade and encouraging 100,000 domestic MSMEs to participate through digital technologies. To emphasize the heightened focus on digital transformation, a complementary trade and innovation strategy was introduced in 2021 to achieve USD 700 billion in annual exports by 2025 and invest USD 3.7 billion in fostering trade areas such as bio-health while leveraging USD 15.1 billion to support trade financing (see diagram 2).

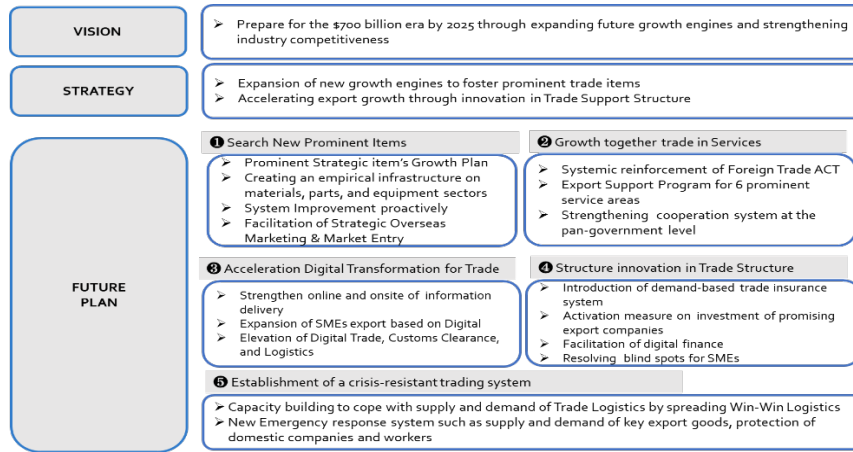
**Table 5**  
**Korean Digital Trade Transformation Policy: four stages of implementation**

1. Establish a Korean global online platform	Restructuring the three majors public B2B platforms: buyKorea (KOTRA), GobizKorea (KOSME), TradeKorea (KITA) Functional integration of the three major platforms Maximizing the utility of the three major platforms Facilitating the globalization of the three major platforms Action plan for integration & globalization of the three major platforms
2. Nurture Digital-based Global Exhibitions	Creating a world-leading online exhibition ecosystem Fostering global top tier O2O exhibitions in 7 industries; electronics, bio-health, future cars, ICT; Robots, offshore & shipbuilding
3. Promote 100,000 domestic MSMEs to participate in digital exports	Discovering promising global-oriented companies Nurturing intensively at the export beginner stage of SMEs Creating global startups
4. A complete overhaul of the export support system into a digital trade system	Developing an advanced digital trade support system Expanding contactless and Digital infrastructure Expanding logistics system Strengthening Digital R&D and talent development Reorganizing trade-related laws and statistics

Source: Elaboration by the authors based on the Ministry of Trade, Industry, and Energy (2020), Trade Digital Transformation Policy.

The MOTIE also promotes digital technology adoption in various sectors. For example, it offers tailored data-based services to boost the competitiveness of the domestic e-commerce industry, especially SMEs (see table 8). It has emphasized the need for a standardized database and a single public data platform (Goo, 2021). Additionally, the Ministry has recommended commercialized drones and robots to address last-mile delivery challenges and delivery guidelines. It also prioritizes cross-border e-commerce, which collaborates with Amazon through SK Planet. This leading Korean data and technology company is partnering with the renowned Korean digital retail platform, "11th Street." Moreover, it added policies unrelated to the trade sector, such as the Data Voucher Framework (see the next section).

**Diagram 2**  
**Korea: complementary trade and innovation strategy**



Source: Elaboration by the authors based on information from the Ministry of Trade, Industry and Energy.

**Table 6**  
**Korea: strategies to strengthen e-commerce**

Strategy	Details
Establish a retail data dam	Expand the standardized database of product information Establish a standardized database of around 3 million products Lay the foundation for the usage of retail data Establish and publicize the retail data platform Provide data and data analysis service
Foundation for delivery logistics innovation	Expand fulfillment service centers and spread a standard model Innovative contactless logistics and delivery service by exploiting drone and robot Commercialize drone and robot delivery by utilizing demonstration project and regulation sandbox
Stimulate Globalization of e-commerce	Expand overseas logistics for online export Expand overseas shared logistics center and bolster fulfillment service Cooperate globally on retail channels and enter the overseas market Expand promotion support for companies entering overseas retail channels Actively participate in the global trade rule-setting process

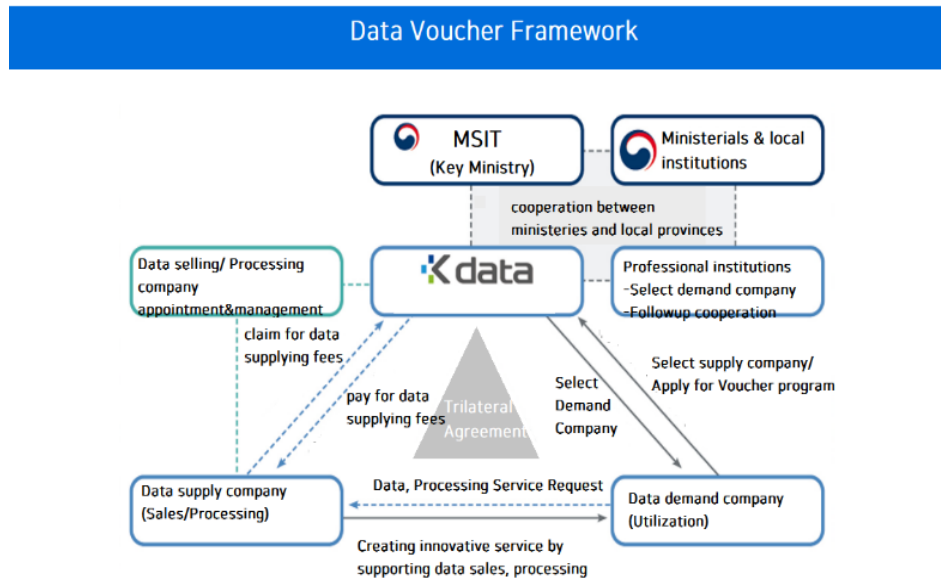
Source: Goo (2021), Measures to strengthen digital retail competitiveness.

**(b) Leveraging contributions from other ministries and organizations**

Considering the government's strategic push to transform into a digital economy, other efforts outside of the MOTIE have also contributed to international trade. For example, the Ministry of Science and ICT introduced a subsidy program called "Data Vouchers" in March 2021, with a budget of 123 billion won (USD 93 million). This program, implemented by the Korea Data Industry Promotion Agency, facilitates the use and processing of data from pre-selected suppliers rather than directly funding companies in need (see diagram 3). The voucher program is also aligned with a larger public initiative on big data aiming to address social challenges and businesses with data deficits.

The more intensive use of digital technologies in international trade is in line with the goals of the Trade Digital Transformation Policy. In export financing and insurance, for example, the Korea Trade Insurance Corporation, an export credit agency under the MTEI, has introduced its Online Direct Guarantee and Online Direct Insurance services to expand its range of online insurance services and automate the review process. Collaboration with the private sector also increased, for example, between the Industrial Bank of Korea and Samsung SDS to support SMEs engaged in cross-border e-commerce (see box 4). The Industrial Bank of Korea has expanded online payment services and offers additional support such as consulting and preferential exchange rates to businesses considering exploring overseas markets.

Diagram 3  
Korea: data Vouchers Framework



Source: Elaboration by the authors based on information from the Ministry of Science and ICT (n.d.), Data Vouchers.

#### Box 4

##### Samsung SDS's Cello Square 4.0: creating a digital single window for e-commerce facilitation

In May 2021, Samsung SDS unveiled Cello Square 4.0, an innovative digital platform designed to support Korean SMEs entering overseas markets. This platform offers optimized global transport and specialized services based on new digital technologies. It automatically recommends the optimal route based on the shipper's cargo details, requested departure and arrival locations, and available freight schedules. The service also offers real-time cargo location tracking and potential risk assessment. Once the transportation process is finalized, Cello Square 4.0 automatically settles the bill and suggests plans for cost reduction, along with a data analysis report of the used service.

Cello Square 4.0 is an incipient private-sector-led digital single window facilitating e-commerce by integrating different trade-related services into a single platform. By providing real-time tracking, optimizing routes, automating payments, and suggesting cost reductions, the platform streamlines the logistics process for SMEs. It improves their competitiveness in the fast global cross-border e-commerce.

Source: Elaboration by the authors based on Samsung SDS (2021).

#### (c) Applying policies to trade promotion efforts

Public agencies run trade promotion programs to speed up the trading SMEs' digital transformation. For example, KOTRA has a B2B platform, "BuyKorea," to simplify the SMEs' international payment and logistics processes and facilitate their participation in cross-border e-commerce platforms. Two other platforms are KOSME's "GobizKOREA" and Korea International Trade Association (KITA)'s "TradeKorea" (see box 5). Integrating these platforms through an open API aims to create a single online catalog for potential overseas buyers to view Korean products, especially those produced by SMEs. This coordination among three organizations aims to identify possible overlap in support services and develop new actions to help SMEs within a new single online catalog. By integrating the three platforms by 2025, the Trade Digital Transformation Policy aims to reach USD 10 billion in sales and become one of the world's top 5 digital B2B platforms (Ministry of Trade, Industry, and Energy, 2021).

**Box 5****The three leading Korean public B2B e-commerce export platforms**

The government has developed two B2B e-commerce export platforms, particularly for SMEs. Each B2B platform is created and maintained by different ministries and affiliated agencies. First, KOTRA, an agency under the responsibility of the MTEI, aims to connect overseas demand to Korean SMEs, in part through their B2B online public marketplace "BuyKorea". This marketplace offers an online, one-stop export marketing solution for Korean SMEs to promote their products overseas and receive offers from global buyers. Second, KOSME, an agency under the MSS, created "GobizKOREA," aiming to "connect international buyers to Korean suppliers." One difference between both platforms is that GobizKOREA also supports online transactions and shipping support via their platform. At the same time, KOTRA's BuyKorea is more centered around matching domestic supply with overseas demand.

Third, KITA, a private membership-based association, also promotes cross-border e-commerce using its online marketplace called "TradeKorea." This is open to members only compared to the public access of the two other marketplaces.

Source: Elaboration by the authors based on information from KOTRA (n.d.) About us, KOSME (n.d.) About us, and KITA (n.d.) tradeKorea.

Each agency promotes digital technologies for cross-border trade and e-commerce, following its strategic priorities and action areas. For example, KOTRA has recognized "Digital Transformation of Business Methods and Building a Digital Infrastructure for Trade and Investment" as one of its 16 strategic tasks. This implies the organization's dedication to promoting the use of digital technology and its readiness to restructure itself to achieve this goal and align its work with the direction set by the MTIE. One of KOTRA's efforts in this direction, for example, has been the establishment of "K-Studio," facilitating digital marketing for SMEs through video conferencing and features four zones. These include pitching products, conducting live commerce, displaying product photos, and taking 360-degree product photographs using VR/AR technology. Other public agencies, such as KOSME, have similar initiatives, which launched a metaverse online exhibition platform for SMEs in 2022 to overcome the limitations of physical presence. These online exhibitions provide a digital platform for showcasing products and services and encourage using digital tools such as 3D, AR/VR, and the metaverse while collecting relevant trading data.

**(d) Expanding considerations to trade-linked areas**

The government has also supported logistics, particularly in response to the challenges posed by the pandemic. To this end, the Ministry of Oceans and Fisheries has promoted innovation in logistics by implementing the National Logistics Basic Plan 2021–2030 and developing a smart maritime logistics system (see table 7). This system has three pillars: valuing safety, digitally transforming the marine and fishery industry, and strengthening eco-friendly and decarbonization policies. Private companies such as CJ Logistics have also implemented similar efforts through the "Smart Logistics Center Certification System," jointly introduced with the Ministry of Land, Infrastructure, and Transport, to facilitate private investment in developing safe and advanced smart logistic facilities. It's important to note that this certification system was introduced in 2019 after the partial amendment of the Act on the Promotion of Smart City Development and Industry to allow corporations established as public organizations and private company joint ventures to be included as implementers of smart city construction projects (Ministry of Land, Infrastructure, and Transport, n.d.).

**Table 7**  
**Korea: vision and strategy of the National Logistics Basic Plan, 2021-2030**

Category	Contents
Vision	Logistics Industry: Leap into world's leading logistics country through creation of win-win ecosystem and smart-digital innovative growth
Goal	<ul style="list-style-type: none"> <li>• Advanced and digitalized</li> <li>• People-centered/Decent Jobs</li> <li>• Shared/Connected convergence infrastructure</li> <li>• Sustainable environment</li> <li>• Secure global competitiveness</li> </ul>
Strategy	<ul style="list-style-type: none"> <li>• Strategy 1. Establish the advanced smart technology-based logistics system and work towards digital transition</li> <li>• Strategy 2. Establish shared/connected infrastructure and network for seamless logistics services</li> <li>• Strategy 3. Prepare people-centered decent Jobs and create high-quality logistics services from the perspective of demand</li> <li>• Strategy 4. Create sustainable logistics industry environment</li> <li>• Strategy 5. Strengthen the competitiveness and improve the fundamentals of the logistics industry in order to respond to new demand</li> <li>• Strategy 6. Strategic expansion to overseas market in line with changes in global economic map</li> </ul>

Source: Park, C. (2022), Evolution of Korea's Logistics Industry: Rapid Advance into Smart Logistics based on the announcement of the Ministry of Land, Infrastructure, and Transport (no. 2021-968, 1 July 2021).

Korea has also adapted its domestic trade standards and norms to those recognized globally. To this end, it has been developing its national standards by the International Organization for Standardization guidelines, the International Electrotechnical Commission, and the World Trade Organization Technical Barriers to Trade Agreement. As a member of the World Trade Organization, Korea is obliged to inform the organization's Committee on Technical Barriers to Trade about any changes in standards at least 60 days before their implementation, allowing for comments from the committee (International Trade Administration, 2022).

The Korean Agency for Technology and Standards (KATS) oversees the development of national standards, known as Korean Standards (KS), with inputs from both the public and private sectors through its technical committees. This approach has resulted in the development of over 20,000 KS. The KATS ensures that the country's standardization system is market-driven and bottom-up. This is evidenced by its collaboration with the Cooperating Organizations for Standards Development<sup>19</sup> to facilitate the participation of firms in developing national standards and strengthen their capability to expand their role in the standards development process.

Other organizations also participate in developing standards for specific products (ibid.). For example, the Ministry of Food and Drug Safety establishes standards for research, evaluation, testing, and monitoring of food, medical devices, and pharmaceuticals. The Telecommunications Technology Association is responsible for setting telecommunications and information technology industry standards and has played a crucial role in creating the current Korean Information and Communication Standards. These separate efforts also collaborate with international and national standards organizations, such as the International Telecommunication Union of the United Nations.

For the interoperability of electronic trade documents, tools such as uTradeHub have been essential in ensuring these documents comply with national and internationally recognized standards (Lee, J., n.d.; see box 6 and diagram 4). This platform is a one-stop service window for international trade, offering services ranging from insurance, certification, customs, shipping, and transportation to

<sup>19</sup> The Korean Agency for Technology and Standards has designated these organizations. The objective of designating these organizations is to assist the private sector in increasing its capacity to develop standards and encourage participation in the process of standards development (Standards Portal, n.d.).

payment. The platform's success is generally attributed to its continuous communication with various industries and sectors involved in the trade process, including shipping lines and banks, to establish a defined and standardized trade flow (ibid).

#### Box 6

##### uTradeHub: Korea's national paperless trade platform

In 1989, the Ministry of Commerce, Industry, and Energy<sup>a</sup> adopted the "Basic Plan for Foreign Trade Process Automation" as the basis for paperless trade. Afterwards, there were four evolutionary stages. First, the Basic Plan and the Act on Promotion of Trade Business Automation Act was introduced in 1989–1993. The second stage, from 1994–2000, expanded the scope of electronic documents to cover major export and import-related tasks. The third stage, from 2001–2007, saw the development of the Internet Management System of Logistics and the establishment of the National e-Trade Committee. During the fourth stage, from 2008 to the present, the focus has been on upgrading and disseminating the services of the platform, including the inclusion of purchase confirmation services.

Legal and institutional frameworks have been continuously updated to facilitate paperless trade. The e-Trade Facilitation Act, revised in 2006, is now the underlying law for an online-based trading environment. Other regulations, including the Framework Act on Electronic Commerce (1999), the Signature Act (1999), and the Act on Promotion of Information and Communications Network Utilization and Information Protection (2001), have also supported paperless trade (see table below). Building upon these legal foundations, the National e-Trade Committee establishes and updates policies for paperless trade. In parallel, the e-Trade Facilitation Committee consolidates views and requirements from the private sector. At an operational level, the Korea Paperless Trade Office of KITA manages working groups related to the platform, legal framework, finance, logistics, and other themes. A 2006 study by the Hyundai Research Institute estimated that uTradeHub would generate economic benefits of around USD 3 billion through reduced labor costs, printing costs, warehousing costs, inventory management costs, and redundant investment in the IT sector.

##### Key acts for paperless trade

Act	Description
E-trade facilitation act	<ul style="list-style-type: none"> <li>• Fundamental act on paperless trade</li> <li>• Internet-based infrastructure for paperless trade</li> <li>• Duty to use paperless trading infrastructure</li> </ul>
Framework act on electronic commerce	<ul style="list-style-type: none"> <li>• Legal validity on electronic documents</li> <li>• Policies on promoting electronic transactions</li> </ul>
Digital signature act	<ul style="list-style-type: none"> <li>• Definition and legal validity of electronic documents and digital signature</li> <li>• Guideline for operating public certification authority</li> </ul>
Act on promotion of information and communication network utilization and information protection	<ul style="list-style-type: none"> <li>• Guideline for building and using information network</li> </ul>
Provision on electric bill lading in the commercial law	<ul style="list-style-type: none"> <li>• Legal validity on B/L</li> <li>• Logical basis for circulating electronic documents overseas (e.t.e-B/I)</li> <li>• Guideline for operating e-B/L registration authority</li> </ul>

Source: Own elaboration.

Source: Elaboration by the authors based on the United Nations Network of Experts for Paperless Trade in Asia and the Pacific (2010) Towards a Single Window Trading Environment: Case of Korea's National Paperless Trade Platform – uTradeHub.

<sup>a</sup> The Ministry of Trade, Industry, and Energy has absorbed most of its functions.

**Diagram 4**  
Korea: process within the uTradeHub



Source: Lee, J. (n.d.), Single Window and Standardization in case of Korea's uTradeHub.

#### 4. Focus IV. Monitoring and evaluating progress and results

Monitoring progress and evaluating results are critical in policymaking to check policies have their intended outcomes. It also allows for early identification of potential issues or challenges that may arise during the implementation process, enabling policymakers to take corrective action as required. Monitoring and evaluation facilitate the optimization of policy resources. Policymakers can use the information collected through monitoring and evaluation to adjust policies, programs, and interventions to ensure that resources are utilized most effectively and efficiently. This can result in cost savings and improved outcomes for the intended beneficiaries. Monitoring and evaluation can also provide critical information for stakeholders, including the public and private sectors, enhancing transparency and accountability. It can also provide valuable information for future policy development, enabling policymakers to make informed decisions and improve the quality of policies over time.

The government has established robust monitoring and evaluation systems to assess the impacts and advances of its policies and the resources invested in realizing and advancing them. One approach is a reporting system that includes reporting to higher levels of governance, such as the annual National Assembly's Audit of State Affairs. Government agencies helping SMEs, for example, must report to their ministries. Based on these reports, the ministries regularly report achievements, including the number of SMEs benefiting from the government's programs, provided funds, and impact on job creation. In parallel, achievements are often linked to labor benefits, the organization's evolving role, and the associated budget for business support. For example, KOTRA's Key Performance Index (KPI) is connected to the number of SMEs the organization has successfully supported in exporting and additional amounts of exports (Lee et al., 2011). Such an organization's evaluation refers to individual assessments, leading to differentiated annual financial incentives (ibid.).

The government has established a client feedback system to evaluate the effectiveness of its policies. For example, the Korea Trade Network (KTNET), a government-operated platform providing businesses with paperless trade services, has a feedback system enabling users to submit comments and suggestions about the platform's services. It uses this feedback to improve the platform's functionality and usability for businesses (Korea Trade Network, n.d.). On a larger scale, all public

organizations can participate in the Korea Development Institute (KDI)'s Public Client Satisfaction Index (PCSI), an annual client survey conducted since 2003 (see box 7). This survey measures client satisfaction with public services in various sectors, including healthcare, education, transportation, and social welfare. It uses a sample of clients who have utilized public services in the past year, making the study a critical tool for assessing the performance of public services. The survey results enable policymakers to identify improvement areas and evaluate policies' effectiveness to enhance public service delivery. Furthermore, the survey allows for benchmarking against other countries and tracks trends over time.

**Box 7****Korea's Public Client Satisfaction Index (PCSI)**

The Public Client Satisfaction Index (PCSI) survey evaluates various aspects of a client's experience, such as service accessibility, responsiveness, and quality. The survey has questions about the client's socio-economic background, which enables policymakers to analyze the correlation between client satisfaction and socio-economic factors. The PCSI survey uses a standardized methodology, making it comparable across different sectors and countries. This allows policymakers to compare client satisfaction levels across sectors and identify best practices and areas for improvement. The PCSI survey offers a comprehensive view of the client's experience, encompassing the service delivery process and the client's interactions with public officials, the physical environment, and the quality of information provided.

Source: Elaboration by the authors based on Park, M. (2018).

Government entities supporting the capacity building of SMEs to use technologies also regularly conduct evaluations to assess their impact and identify areas for improvement. For example, the Ministry of Science and ICT performs an annual review of its policies related to the promotion of the ICT industry, which includes a review of the policies' effectiveness, an assessment of their impact on the industry, and recommendations for future policy development. Similarly, affiliated government agencies are obliged to conduct regular surveys and assessments to evaluate the impact of their services. These evaluations are compiled and reported to the annual National Assembly's Audit of State Affairs, where a thorough analysis of the policies' impact and the value of the resources invested is made.

These monitoring and evaluation efforts are part of a comprehensive policy cycle that includes retrospective views of achievements and resource usage from the past year. By regularly reviewing the impact of their policies and programs, the government ensures it meets the needs of businesses and contributes to the country's overall competitiveness while reflecting the different realities faced by businesses of different sizes and sectors in their national policies.



### III. Exploring cooperation between Korea and LAC

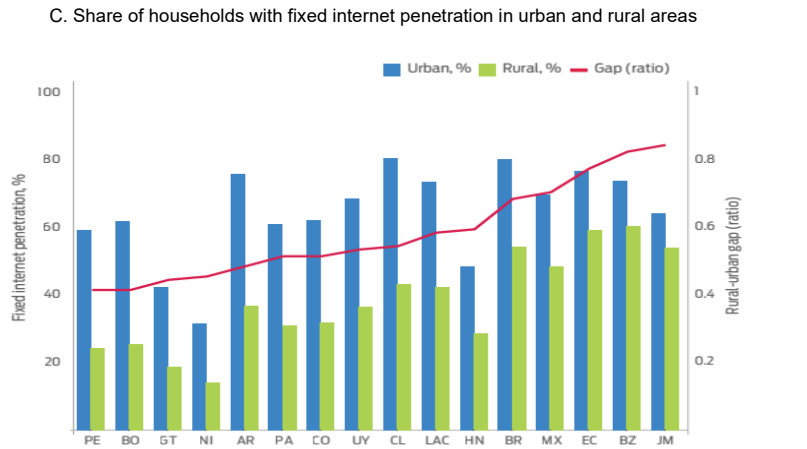
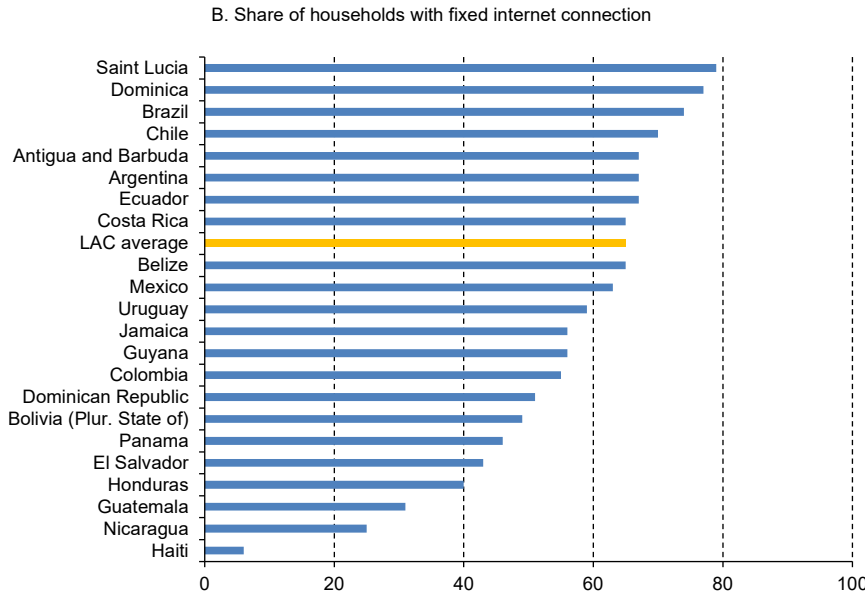
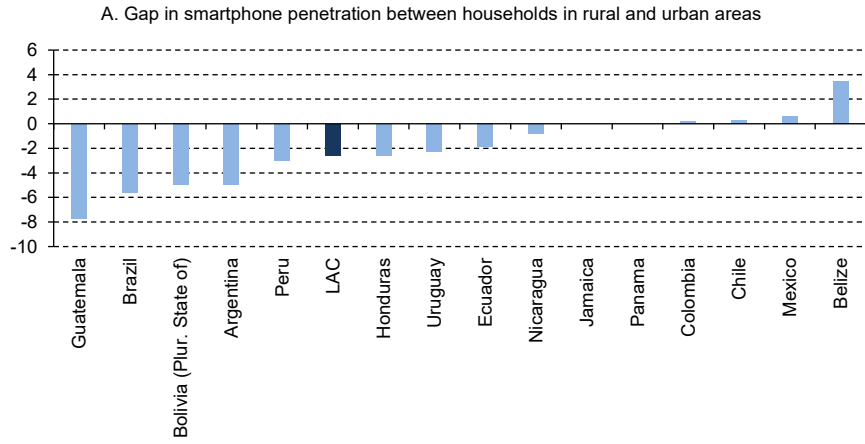
#### A. Digital transformation in LAC

According to the International Telecommunications Union (2021), a 10% increase in fixed broadband penetration could result in a 1.48% rise in regional GDP for LAC, while expanded and inclusive internet connections can increase labor force participation, job creation, and overall economic growth. Furthermore, it can improve access to essential public services such as healthcare and education, as well as remote work and training opportunities (World Bank Group and UNDP, 2022).

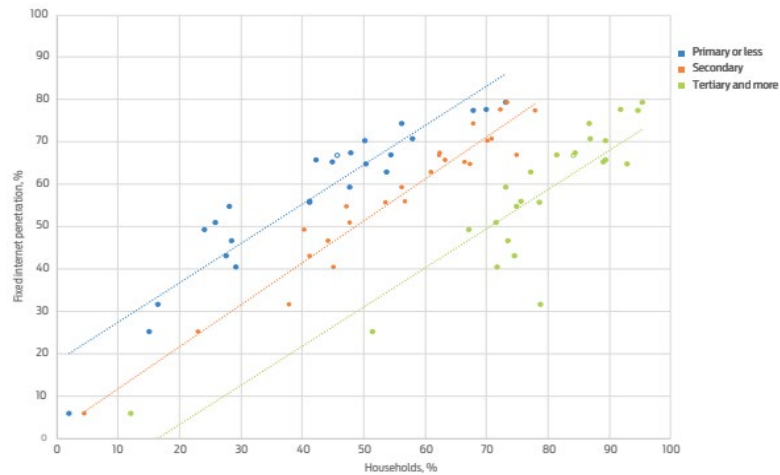
Two-fifths of LAC's population still has no access to the internet and misses the advantages of digital connectivity (International Telecommunications Union, 2021). Disparities within the region are noticeable between Mexico and Central America, on the one hand, and South America, on the other hand. The former are dominated by 3G technologies, with an average market penetration of 51%. In contrast, the latter has a market penetration of almost 77% in 4G technologies, nearly double the penetration rate in the former (ibid.). The region's digital divide is attributable to a complex combination of issues, including a lack of high-speed fixed broadband infrastructure, high costs of data and devices, and a lack of digital skills (ibid.).

The World Bank Group and UNDP's (2022)'s High Frequency Phone Survey of 2021 on access to and use of the Internet across 24 countries in the region illustrates the region's disparities in household Internet access. Most households use smartphones to access the internet, but large discrepancies exist between urban and rural areas (see figure 8-a). Two-thirds of households have a fixed broadband connection, with important differences across countries (see figures 8-b and 8-c). The head of household's education level contributes to the digital divide across households in terms of fixed internet connections at home, with tertiary-educated heads of households being almost twice as likely to have a connection at home compared to those with only primary education (see figure 8-d).

**Figure 8**  
**LAC (selected countries): high Frequency, Phone Survey results, surface the region's digital divide, 2021**  
*(Percentage)*



D. Share of households with fixed internet penetration by head of household's education level

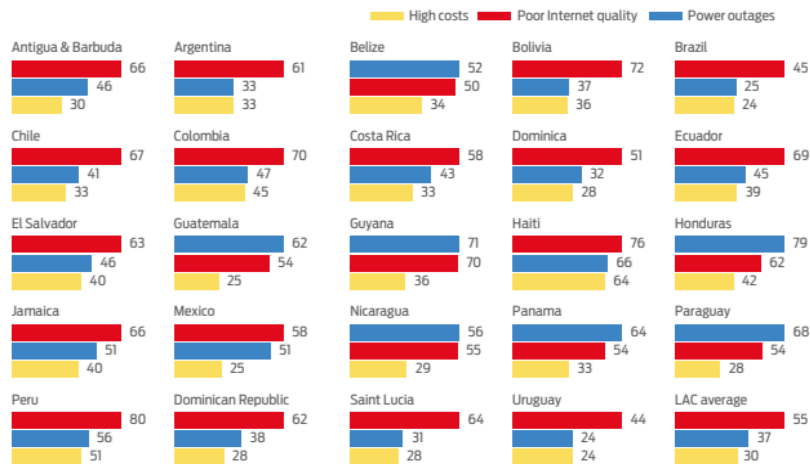


Source: World Bank Group and UNDP (2022), Internet access and use in Latin America and the Caribbean: From the LAC High Frequency Phone Surveys 2021 [online] <https://www.undp.org/sites/g/files/zskgke326/files/2022-09/undp-rblac-Digital-EN.pdf> (accessed on October 7th, 2023): p. 4 (Figure 8-A), p.5 (Figure 8-B), p. 6 (Figure 8-C) and p.7 (Figure 8-D).

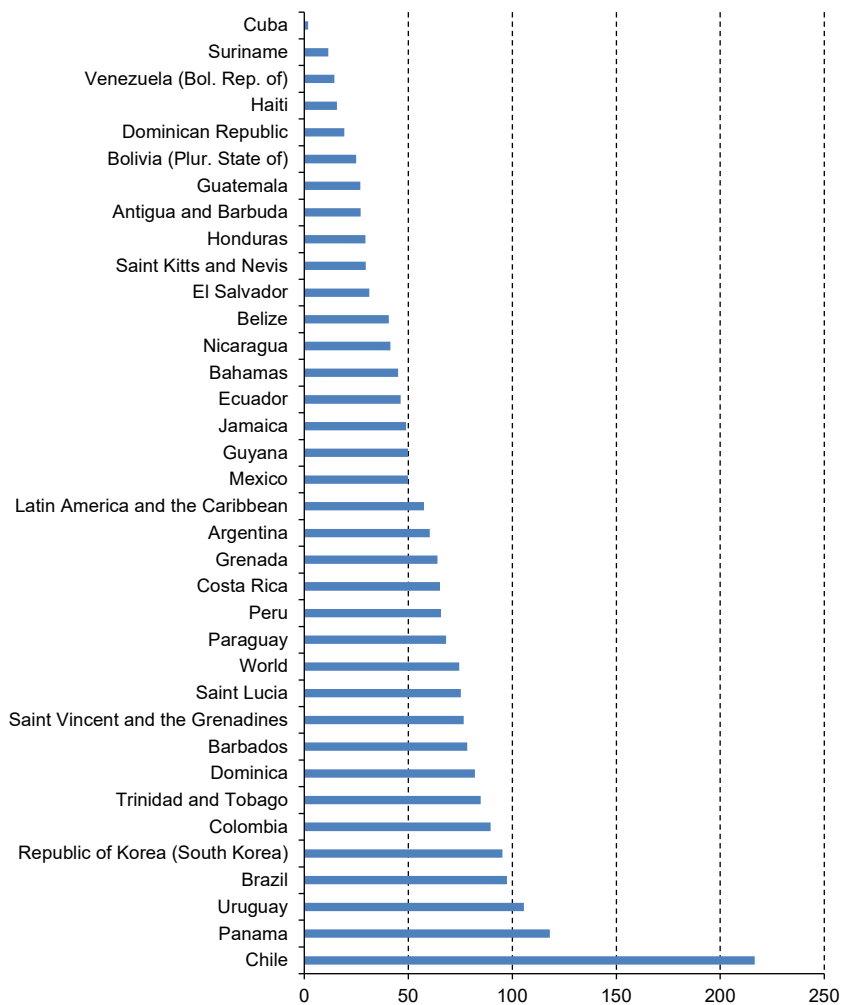
The quality of fixed and mobile internet connections also needs to be addressed, according to the World Bank and UNDP (2022)'s High-Frequency Phone Survey 2021, 55% of those using the internet face a significant challenge when using the internet (see figure 9-a). Countries in LAC show significant disparities in the average download fixed broadband speed (see figure 9-b), indicating the need to improve the internet connection quality alongside the access to the provided service.

**Figure 9**  
LAC: challenges faced by internet users

A. Overview of challenges faced by internet users  
(Percentage of respondents)



B. Median download fixed broadband speed as of November of 2022  
(Mbps)



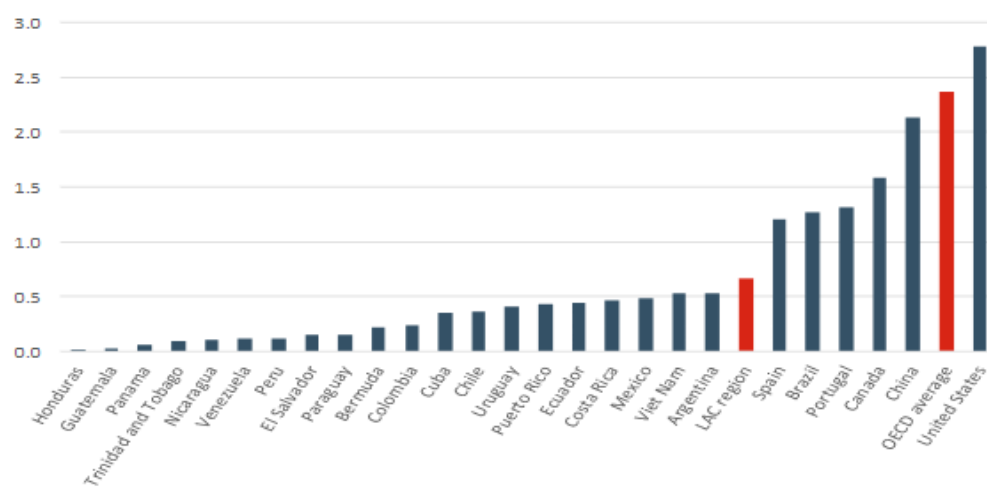
Source: World Bank and UNDP (2022), Internet access and use in Latin America and the Caribbean: From the LAC High Frequency Phone Surveys 2021, p.9 for part A and elaboration by the authors based on CEPALSTAT for part B.

Note: Figure A shows the results of High Frequency Phone Survey 2021.

Argentina, Brazil, and Chile are the leading countries in the region regarding firm-level use of digital technologies. However, most firms use basic digital technologies such as a fixed broadband connection, email, or a website (OECD, 2019). Fewer firms have adopted more advanced digital technologies and practices, such as e-commerce, cloud computing, or digital technologies for client management or enterprise resource planning. Little firms have also tapped into even more advanced technologies like big data or AI. SMEs lag far behind larger firms in adopting advanced technologies (ibid.).

The lack of government-wide approaches also hinders the region's ability to accelerate the digital transformation for firms. One deficiency in this area is its low investment in R&D, with Brazil being the only country spending more than 1% of its GDP in R&D (OECD, 2019; see figure 11). Most countries lack structural reforms and innovation-friendly regulations to promote new business models. In addition, the region's secondary and tertiary school enrollment rates and the average performance of 15-year-olds in science, reading, and mathematics remain far below OECD averages (see figure 12). This contributes to the low quality and productivity of jobs and the relatively high proportion of informal workers (ibid.).

**Figure 10**  
LAC (selected countries): expenditure on R&D as percentage of GDP, 2017 or latest year



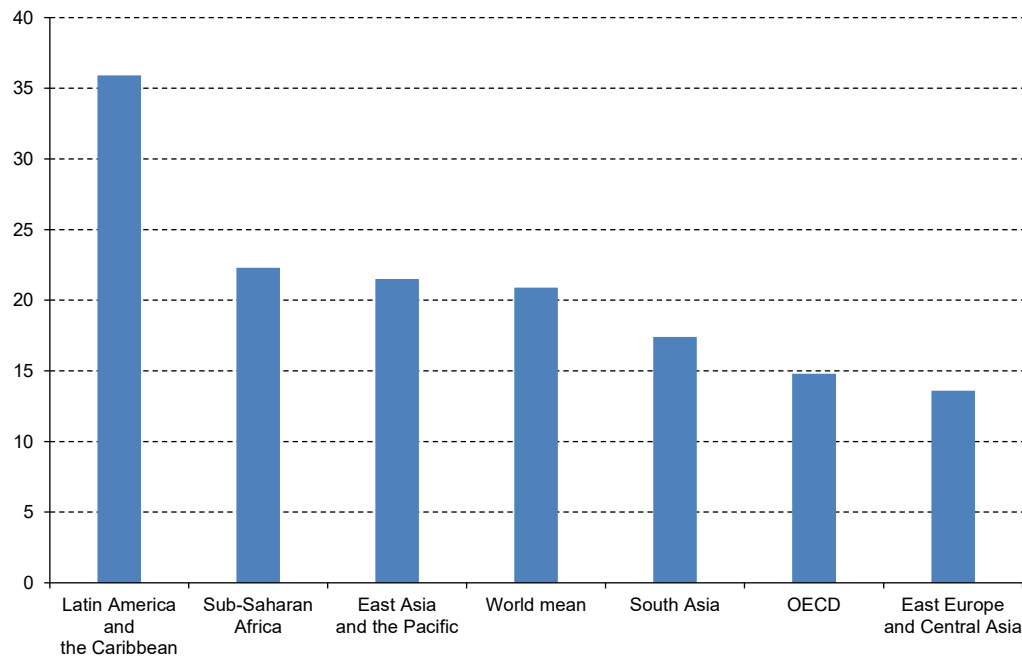
Source: OECD (2019), Shaping the Digital Transformation in Latin America: Strengthening Productivity, Improving Lives, p. 52.

**Table 8**  
LAC: performance in science, reading, and mathematics of selected countries, 2015

	Science		Reading		Mathematics		Science, reading & mathematics	
	Mean score in PISA	Rank across all countries (between)	Mean score in PISA	Rank across all countries (between)	Mean score in PISA	Rank across all countries (between)	Share of top performers in at least one subject ( <i>Percentages</i> )	Share of low achievers in all three subjects ( <i>Percentages</i> )
<b>OECD average</b>	493		493		490		15.3	13.0
Portugal	501	18–25	498	6–27	492	21–31	15.6	10.7
Spain	493	25–31	496	19–28	486	29–34	10.9	10.3
Chile	447	44–45	459	41–43	423	47–51	3.3	23.3
Uruguay	435	46–49	437	46–49	418	49–55	3.6	30.8
Costa Rica	420	53–57	427	49–55	400	58–61	0.9	33.0
Colombia	416	55–60	425	50–55	390	60–63	1.2	38.2
Mexico	416	55–59	423	51–55	408	55–57	0.6	33.8
Brazil	401	62–64	407	57–61	377	64–65	2.2	44.1
Peru	397	63–64	398	61–64	387	61–64	0.6	46.7
Dominican Republic	332	70	358	65–67	328	70	0.1	70.7

Source: OECD (2019), Shaping the Digital Transformation in Latin America: Strengthening Productivity, Improving Lives.

**Figure 11**  
**LAC: percentage of firms identifying an inadequately educated workforce as a major constraint**



Source: OECD (2019), *Shaping the Digital Transformation in Latin America: Strengthening Productivity, Improving Lives*.

Some countries in the region have reformed institutions and support mechanisms to enhance the effectiveness of their pro-business and pro-startup policies, particularly those linked with digital transformation (OECD, 2019). Early signs of progress have been observed in the development of comprehensive national digital strategies that include SMEs, policies facilitating access to credit, knowledge networks, and skills, such as the cultivation of management expertise for the digital economy and SME engagement with competency centers and/or technology extensions services in conjunction with national digital security strategies (*ibid.*).

Much room for improvement remains, particularly in promoting SMEs' capacity to benefit from digital transformation. This entails expanding investment for innovation, strengthening structural reforms that support digital transformation, and developing, broadening, and updating comprehensive national digital strategies that promote the digital transformation of SMEs.

## B. Digital trade between Korea and LAC

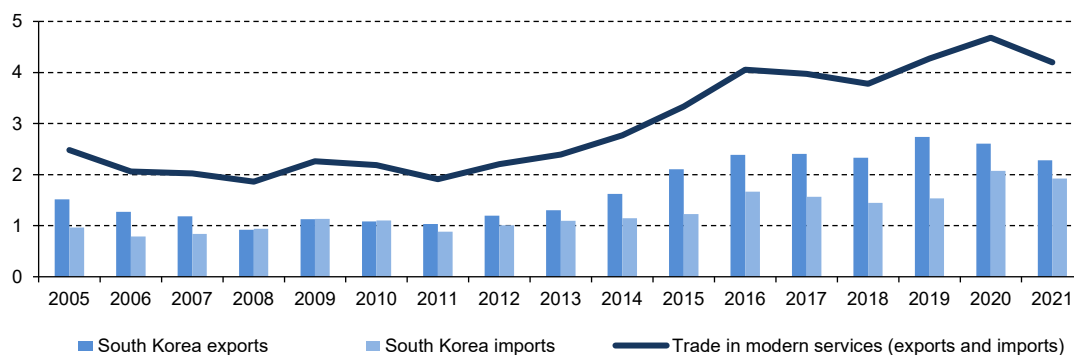
Trade and foreign direct investment (FDI) relations between Korea and LAC countries expanded rapidly. From 2000 to 2021, bilateral trade grew 11.5% per year on average, reaching USD 57 billion in 2021, and Korean firms invested USD 26 billion in the region since 2000 (Moreira and Dolabella, 2022). However, bilateral trade barriers continue to exist.

To promote bilateral trade and FDI, digital transformation presents a promising opportunity. Leveraging new technologies like AI and blockchain can help reduce transport and logistics costs and streamline customs and other trade procedures. Online platforms and digital marketplaces can lower information and communication costs, making it easier for businesses to enter foreign markets.

Furthermore, digitalizing services, especially those transmitted or linked to digital technologies, opens new avenues for expanding trade and FDI between countries.

Korea and LAC have a considerable potential to increase trade, particularly in modern services<sup>20</sup>. Services represent a small fraction of trade (13.8% in 2021). Among these services, modern services constitute an even smaller percentage at 4.2% (see figure 12). Given their limited digital capabilities, SMEs face significant challenges to engage in modern services trade; explain part of these small participations. To expand modern services trade, LAC requires substantial investment in ICT infrastructure, as inclusive access to and quality usage of ICT remains a challenge.

**Figure 12**  
Korea: trade in modern services with LAC as percentage of total trade (goods and services), 2005-2021



Source: Elaboration by the authors based on data from the World Trade Organization Stats and UNCOMTRADE.

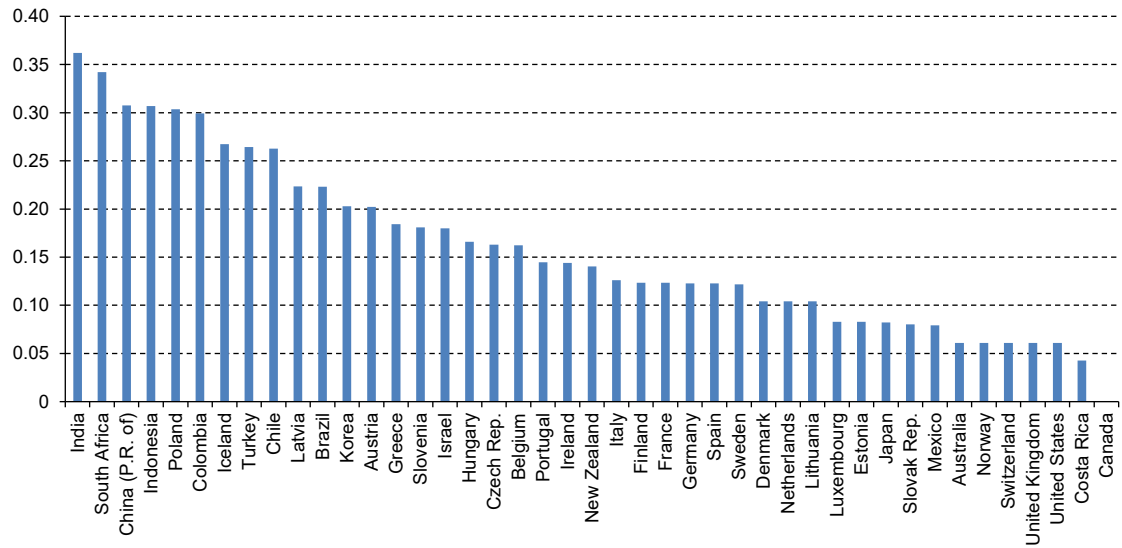
Note: Trade is the sum of exports and imports.

In growing digital trade, legal and regulatory policies need to be modernized to reduce costs and facilitate digital trade, specifically in services. Barriers to digitally traded goods and services, which are relatively high according to the OECD's Digital Services Trade Restrictiveness Index (see figure 13), should be addressed. Some restrictions apply to cross-border data flows, access to online content and technologies, and market access barriers, among other aspects (Moreira et al., 2022). According to the OECD data, Korea-LAC cooperation to lower barriers to digital trade is essential as both have significant restrictions.

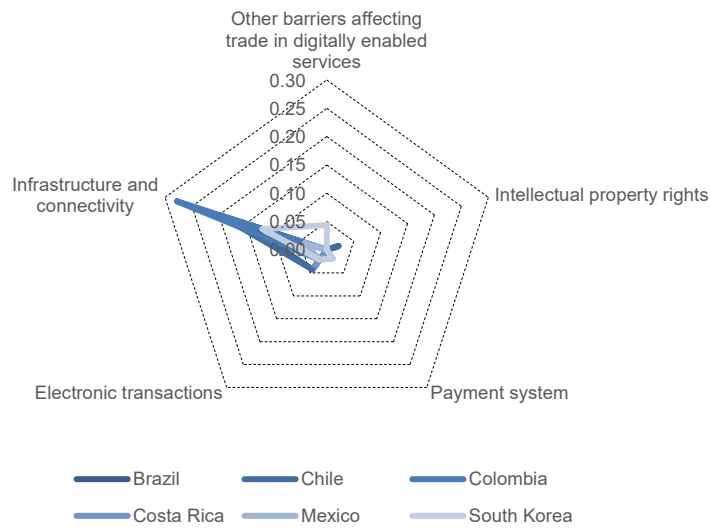
<sup>20</sup> 'Modern services' are those services that can be delivered digitally.

**Figure 13**  
**Korea and selected LAC countries: digital Services Trade Restrictiveness Index, 2022**

A. Comparison of Korea and selected LAC countries



B. Detailed analysis



Source: Elaboration by the authors based on the OECD's Digital Services Trade Restrictiveness Index data.

Note: The index varies between 0 and 1, where 0 indicates an open regulatory environment for digitally enabled trade, and 1 indicates a completely closed regime.

### C. Seeking cooperation between Korea and LAC

Korea and several LAC countries have actively cooperated through initiatives such as the Korea-LAC Business Summit, Korea-LAC Startup Pitch Day, and LAC-Korea Deep Tech Exchange Program, among others (Choi, 2021). Different organizations contributed to these partnerships, aiming to promote digitalization and improved bilateral economic ties.

Korea and some countries in LAC have also signed preferential trade agreements (PTAs), eliminating trade barriers and fostering mutual trust. Presently, there are four PTAs between Korea and Chile, Colombia, Peru, and Central America (see map 1), and four other bilateral negotiations in progress (with MERCOSUR, Mexico, Ecuador, and Guatemala) (Moreira and others., 2022). Korea is also seeking to become an Associate State of the Pacific Alliance, a regional PTA comprised of Chile, Colombia, Mexico, and Peru (ibid.).

Map 1  
Preferential trade agreements between Korea and LAC, 2022



Source: Moreira, M. et al (2022), Latin America and Korea: partners for sustainable trade and investment, Washington D.C., IDB, p. 28.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

The ongoing negotiations on PTAs between Korea and several LAC countries cover a broad range of policy areas, providing an opportunity to enhance cooperation in digital trade and services. However, the key challenge lies in utilizing these PTAs together with expanding cooperation to areas linked to the effective utilization of digital technologies in business, including data management, cybersecurity, and aligning business regulations with international standards and norms.

Moving forward, the following cooperation areas could be deepened between Korea and LAC to effectively and better leverage digital technologies for cross-border trade and e-commerce:

- Reinforcing leadership and commitment to digital transformation in businesses, particularly SMEs. Political uncertainties and resource constraints may hinder the development of new cooperation initiatives and impede progress. Hence, an explicit confirmation of sustained

leadership for bilateral cooperation and collaboration is crucial, in addition to the existence of PTAs.

- Prioritizing the expansion of access to ICT and enhancing its quality, particularly in LAC. This entails increasing investments in ICT infrastructure to improve the scope and quality of internet connectivity.
- Enhancing the workforce's digital skills: Efforts should be directed towards improving the digital skills of the labor force, especially in LAC. This involves vocational training opportunities and curriculum adjustments aligned with private sector needs, with the possible support of Korean firms interested in doing business in LAC. Reskilling may also be necessary, considering that the digital transformation requires new digital skill sets. Special attention is needed to vulnerable communities, including women, older generations, rural workers, and minorities.
- Addressing data usage and security considerations: Data collection, usage, and secure management are critical, particularly in the modern service trade. There is a need to establish data collection and usage agreements aligning with the legal and regulatory frameworks of Korea and LAC countries. Capacity-building programs on data management and cybersecurity may be necessary, depending on the capabilities of the countries and entities involved.
- Harmonizing standards and norms with international levels Divergent standards and norms across countries pose administrative challenges and additional costs when adapting goods and services to meet importing countries' requirements. It is essential to work towards aligning standards and norms, preferably with internationally recognized frameworks, particularly those identified by the World Trade Organization. Cooperation between national standardization entities and sectors could be sought to acknowledge and address the differences encountered across borders, aiming to reduce the gaps between them.
- Expanding trade in modern services Leveraging digital technologies, Korea and LAC countries can explore expanded trade opportunities in modern services as a critical longer-term objective of their digital cooperation. With the digital economy expanding, harnessing modern services could contribute to the growth and increased trade between Korea and LAC.

## IV. Conclusion

Korea has gained global recognition as a frontrunner in leveraging digital technologies for its economy and trade. The government has consistently promoted digital transformation initiatives for an inclusive and efficient digital business environment in recent years. In parallel, it has supported SMEs in using digital technologies for cross-border trade and e-commerce. This support addresses common SME challenges across various sectors, such as limited R&D capabilities, human resource development, and access to information on foreign markets. These efforts have been bolstered by continuously adapting the legal and institutional frameworks in tandem with the rapidly evolving digital economy.

LAC countries would benefit from expanding and deepening their cooperation and collaboration with Korea in digital transformation. Korea and (selected) LAC countries have signed several PTAs and organized many events and cooperation projects. However, there is potential to expand these efforts further. For example, LAC countries may seek enhanced bilateral collaboration to address cross-sectoral challenges, including ensuring inclusive ICT access and improving the labor force's digital capacities. Discussions on aligning legal and technical standards and norms may facilitate modern services trade. LAC countries could also tap into the knowledge base of Korea regarding data collection and management.

To facilitate their digital transformation, LAC countries must strengthen their legal and institutional frameworks while considering the diverse realities and challenges faced by enterprises of different sizes across sectors. This requires a comprehensive examination of the domestic landscape, identifying existing shortcomings, and adopting a government-wide approach to address these issues domestically before engaging in international cooperation. Ultimately, domestic legal and institutional frameworks will enhance businesses' trust in the government's actions and serve as the foundation for successful partnership and collaboration across borders and sectors in the digital realm. Undertaking such an exercise will also help to identify areas of closer cooperation with Korea.



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The rapid evolution of digital technologies has reshaped global business, forcing not only large but also small and medium-sized enterprises (SMEs) to embrace digital trade. Nevertheless, many SMEs are struggling to fully implement digital technologies. Against this backdrop, the Republic of Korea has bolstered its support for SMEs, with a focus on human capital development, financing, and research and development. Furthermore, the country has revised its trade regulations and frameworks, placing significant emphasis on digital capacity-building and the alignment of regulations with international standards. Despite the disparities in digital infrastructure and skills, the experience of the Republic of Korea is a useful model for Latin America and the Caribbean, offering invaluable insights for policymakers, businesses and stakeholders seeking to navigate the evolving digital landscape and facilitate SME growth and internationalization. In addition, deeper collaboration could be pursued between the Republic of Korea and the region, in particular in the realms of expanding and enhancing access to information and communications technologies (ICTs), upskilling the workforce, strengthening data protection and broadening the scope of trade to include digital services.