

4 Digital Economy for SMEs

While digitalisation has proven to be a tool for resilience, notably during the COVID-19 crisis, SMEs still have not fully tapped into its potential. The 2024 SBA assessment therefore introduces a new section dedicated to the digital transformation of SMEs. This chapter measures EaP countries' progress in supporting SME digitalisation, looking at 1) selected framework conditions for the digital transformation – policy frameworks, such as national digital strategies; broadband connectivity; and digital skills – and 2) specific policy instruments to support SME digitalisation. It presents resulting composite scores for SME digitalisation policies. It depicts the region's advancement regarding the selected framework conditions, formulating recommendations for each of these aspects to address remaining challenges and bridge digital divides. In addition, this chapter summarises of the key findings reported for digitalisation-oriented sub-dimensions across other thematic chapters, assessing the presence and implementation of instruments that support SME digitalisation in all five EaP countries.

Introduction

The process of digitalisation and the digital economy are closely intertwined, as they work in synergy, driving each other's growth. Digitalisation involves “the use of digital technologies, data and interconnectedness that result in new activities or existing ones” (OECD, 2021^[1]). Adopting digital technologies enables companies to operate more efficiently, reach wider audiences, and offer more innovative digital products and services, fuelling the growth of the digital economy (OECD, 2022^[2]). In turn, the digital economy accelerates digitalisation by creating the right incentives for businesses to further embrace digital technologies to stay competitive and capitalise on the digital market's potential.

The outbreak of the COVID-19 crisis increased the stakes around digital access and engagement, reinforcing the importance of communications infrastructure and the use of digital technologies to enhance small and medium-sized enterprises' (SMEs) resilience (OECD, 2020^[3]). Embracing digital technologies brings several benefits to SMEs, offsetting some size-related structural limitations and improving firm performance in terms of growth, innovation, and internationalisation, as well as competitiveness:

- **Digitalisation enables SMEs to expand their customer reach and access global markets through e-commerce platforms**, reducing transport costs and making services internationally tradeable (OECD, 2021^[4]). This leads to increased customer bases, revenues, and productivity and lowers marginal costs.
- **Digital technologies allow SMEs access to strategic resources**, such as financing through peer-to-peer lending and borrowing platforms (OECD, 2021^[4]). They also allow SMEs to broaden their recruitment channels and facilitate access to online training and digital government services.
- **Digital platforms help SMEs capitalise on network effects** by outsourcing business functions, enhancing collaboration, information sharing and communication within and between organisations (OECD, 2021^[1]).
- **Digital technologies enhance decision making** by providing real-time data and predictive analytics (Devops, 2021^[5]). Using digital tools, such as predictive modelling software and dashboards, allows for data-driven decision making, experimentation and further innovation.
- **Digital tools increase agility and resilience**, enabling businesses to gain a competitive advantage and better weather crises. As products continuously evolve and customer demands shift while reliable revenue streams diminish, businesses that have adopted digital technologies can swiftly adapt.

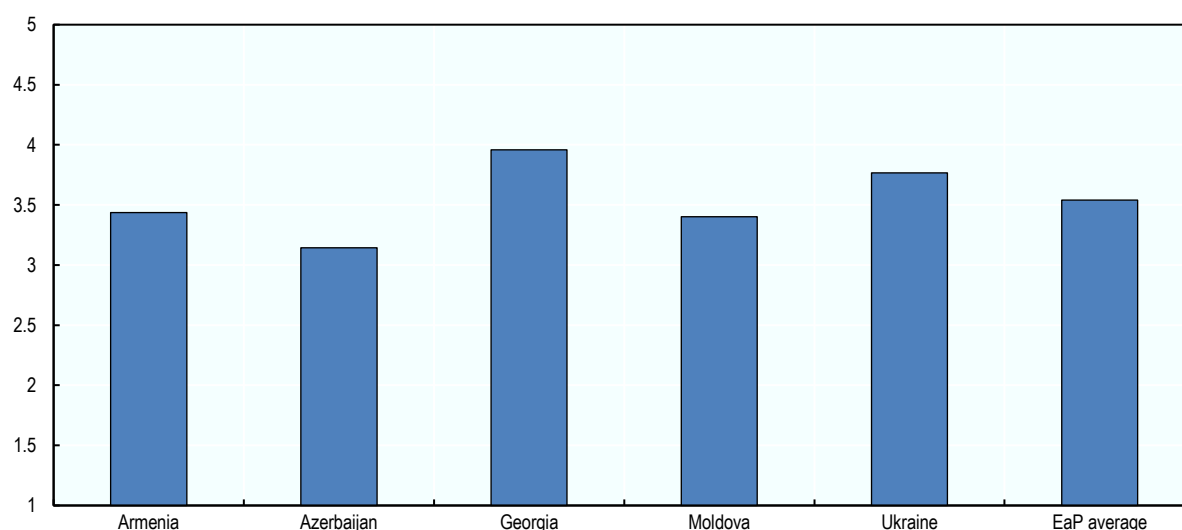
Despite this potential, SMEs in the Eastern Partner (EaP) region have yet to fully harness the benefits offered by digital solutions and, as in other regions, lag behind large firms in this regard. However, governments across the region have been working on addressing this issue and fostering further digitalisation. To support this impetus, the OECD has developed an encompassing analytical framework for supporting the digital transformation of SMEs, considering both technology adoption and digital culture (OECD, 2021^[1]). The framework consists of a twofold approach, focusing on i) improving framework conditions for the digital economy and ii) implementing specific policy instruments to support SME digitalisation.

On the one hand, the framework conditions correspond to the prerequisites for a successful digital transformation – notably, broadband connectivity and physical infrastructure, as well as digital literacy across citizens. Indeed, ensuring an accessible, affordable and dependable Internet connection is vital to promoting the broader participation of individuals and businesses in the digital economy and preventing digital divides between urban and rural areas, as well as between SMEs and larger firms. As for digital literacy, enabling the acquisition of digital skills at all stages of life – through well-designed school curricula and lifelong learning opportunities for adult skills development – is necessary to equip both present and future employees with the skills required to embark on digital transformation, create tech-savvy consumers and develop a talent pool of IT specialists.

On the other hand, beyond these fundamental enablers, SMEs also need targeted policy measures to encourage them in their digitalisation journey, for example, through specific business support services, digital financial services, and help to tap into the potential of e-commerce.

Considering the increasing and strategic importance of the topic, this new round of the Small Business Act (SBA) assessment grants particular attention to digitalisation, reflecting the OECD's twofold approach in its analysis: a pillar on selected framework conditions for the digital transformation has been added, assessing national digital strategies, measures for broadband connectivity and digital skills, while new sub-dimensions have been incorporated to pre-existing pillars to provide for an in-depth study of SME digitalisation policies. The OECD calculated a weighted average of the scores from the pillar on selected framework conditions for the digital transformation and cross-cutting sub-dimensions in other parts of the SME Policy Index, resulting in overall composite scores for SME digitalisation policies (Figure 4.1, Table 4.1)

Figure 4.1. Composite scores for SME digitalisation policies in EaP countries



Note: See the "Policy framework, structure of the report and assessment process" chapter and Annex A for information on the assessment methodology.

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Table 4.1. Policy frameworks for SME digitalisation, scores by component

	Armenia	Azerbaijan	Georgia	Moldova	Ukraine	EaP average
Composite scores for SME digitalisation policies	3.44	3.14	3.96	3.40	3.77	3.54
Selected framework conditions for the digital transformation	3.92	2.96	4.02	3.22	3.93	3.61
3.4 Institutional framework for SME digitalisation	3.50	4.05	4.54	4.20	4.40	4.14
4.1 E-government services	4.00	4.25	4.29	4.34	4.66	4.31
5a.3 Support services for digital transformation of SMEs	3.11	2.91	3.59	3.51	3.53	3.33
6.6 Digital financial services	3.52	3.05	3.94	3.02	3.81	3.47
7.4 Digitalisation of standards and technical regulations	1.50	2.13	3.63	2.50	2.50	2.45
10.4 Use of e-commerce	2.25	3.44	4.00	3.31	2.89	3.18

Note: See the "Policy framework, structure of the report and assessment process" chapter and Annex A for information on the assessment methodology.

Assessment framework

The composite scores for the SME digitalisation policies presented above reflect the assessment of selected framework conditions for the digital transformation and cross-cutting, digitalisation-oriented sub-dimensions integrated into other pillars of the SME Policy Index.

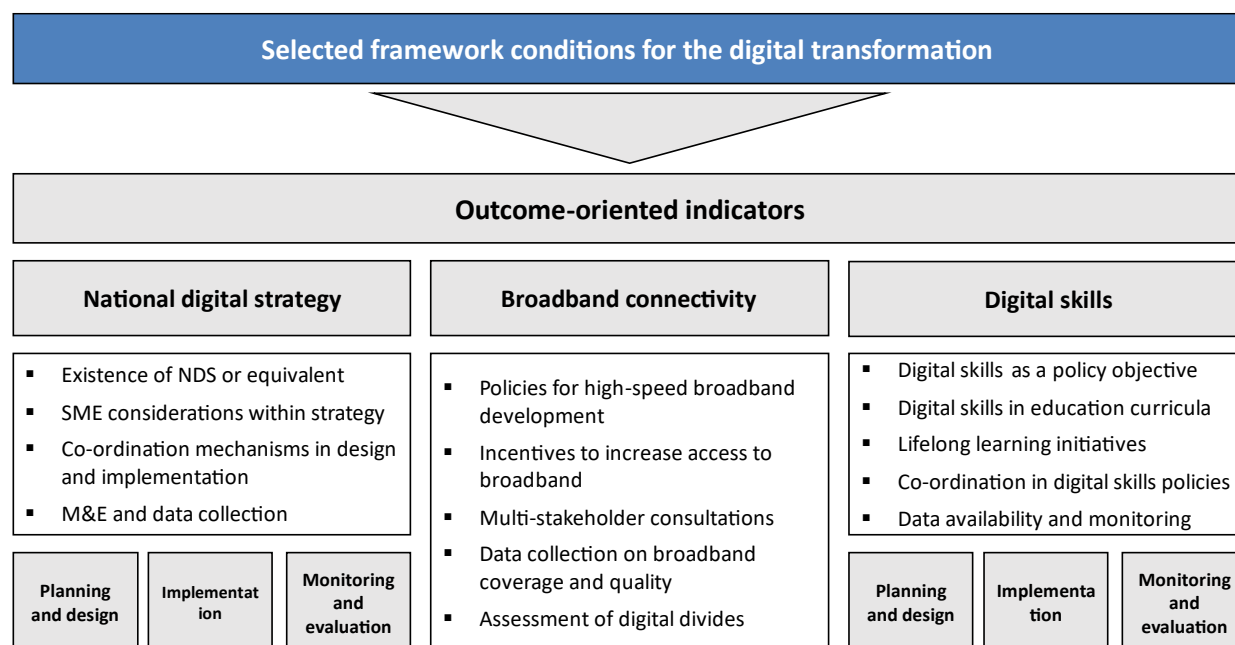
Selected framework conditions for the digital transformation

This new pillar assesses the state of selected framework conditions for the digital transformation in EaP countries, looking at i) the overall policy framework (the national digital strategy or equivalent), ii) broadband connectivity and iii) digital skills.

As a result, the assessment framework is composed of the following elements:

- **National digital strategy** looks at the existence of a national digital strategy and/or other policy document designed to accelerate the digital transformation. It considers the measures planned, including for SMEs; budget, targets and monitoring practices; and the co-ordination mechanisms introduced among public and private bodies/actors for policy design and implementation.
- **Broadband connectivity** takes stock of efforts to increase access to high-speed Internet across individuals and firms, including dedicated policies; government investment in infrastructure; incentives for households, businesses, and broadband providers; and 5G provisions. Emphasis is also placed on data collection and an assessment of digital divides.
- The section on **digital skills** focuses on policies to help citizens of all ages become digitally literate. It assesses policy documents, the involvement and co-ordination of relevant stakeholders, and measures to both include digital competence in school curricula and introduce lifelong learning opportunities for digital skills development. It also pays particular attention to data collection on digital skills levels, monitoring and evaluation, skills anticipation exercises, and steps taken to respond to the European Union's (EU) digital competence framework (DigComp).
- The section on **outcome-oriented indicators** considers countries' ability to regularly collect statistical information about the following indicators: i) fixed broadband subscriptions per 100 inhabitants; ii) mobile broadband subscriptions per 100 inhabitants; iii) share of households with broadband connections; iv) share of businesses with broadband contracted speed of 30 Mbps or more; v) disparity in broadband uptake between urban and rural households; vi) share of individuals using the internet to interact with public authorities; vii) new tertiary graduates in science, technology, engineering and mathematics, as a percentage of new graduates; viii) ICT skills (basic, standard, advanced); and ix) students' (15-year -old) performance in reading, mathematics, and science.

Figure 4.2. Assessment framework – selected framework conditions for the digital transformation



Note: NDS: National digital strategy. M&E: monitoring and evaluation.

Digitalisation-oriented sub-dimensions

Beyond these selected framework conditions, the composite scores for SME digitalisation policies also include results from digitalisation-oriented sub-dimensions included in other parts of the SBA assessment, namely:

- The **Institutional framework for SME digitalisation** sub-dimension analyses whether and how support for SME digitalisation is embedded in SME policies. For more information, see the Pillar A chapter.
- The **E-government services** sub-dimension assesses governments' strategy for providing e-services, the range of services provided, the level of interoperability among the different data banks run by the public administration, and action taken to implement an open data approach. For more information, see the Pillar A chapter.
- The **Business support services for the digital transformation of SMEs** sub-dimension looks at government-led initiatives to support the digital transformation of SMEs – e.g. information support, training, financial instruments and advisory services to better understand company needs, procure digital technologies and develop tailored digital roadmaps. For more information, see the Pillar E chapter.
- The **Digital financial services** sub-dimension covers the existence of a regulatory and supervisory framework for a range of digital financial services. For more information, see the Pillar C chapter.
- The **Digitalisation of standards and technical regulations** sub-dimension evaluates support and training offered to SMEs on standards and technical regulations for their integration into the EU Digital Single Market; the digitalisation of processes within authorities responsible for technical regulation, national standards and accreditation bodies, metrology institutes and market surveillance authorities; and the introduction by accreditation bodies, conformity assessment bodies and surveillance authorities of remote audit and inspection activities. For more information, see the Pillar D chapter.

- The **Use of e-commerce** sub-dimension investigates efforts to encourage more widespread use of e-commerce as a sales channel by SMEs, considering both regulatory aspects and government policies to promote SMEs' access to digital platforms and the provision of support services to remove barriers that prevent SMEs from benefitting from growing trade digitalisation. For more information, see the Pillar D chapter.

The following sections outline the main findings and policy options for selected framework conditions for the digital transformation, followed by a summary of the assessment of the digitalisation-oriented sub-dimensions. A detailed analysis of the sub-dimensions can be found in the respective pillars.

Selected framework conditions for the digital transformation

National digital strategy

National digital strategies appear as a key tool for countries to accelerate the digital transformation of their economy and society. They usually appear as a comprehensive tool outlining the government's overall approach to the topic, entailing the main policy priorities and objectives in this regard, and facilitating coherence and stakeholder co-ordination (Gierten and Lesher, 2022^[6]).

Analysis

All EaP countries have made digitalisation a policy priority. They have been developing policy frameworks to this end, although these differ in nature and scope: so far, Armenia is the only country in the region to have adopted a national digital strategy (NDS), the *Digitalisation Strategy of Armenia for 2021-2025*, which aims at ensuring a data-driven public administration, modernising the economy and increasing competitiveness through digital solutions, and fostering digital skills development. Azerbaijan, Georgia and Moldova have prepared multi-year strategies that are currently awaiting approval and should be adopted by the end of 2023. Policy objectives are currently scattered across different policy documents, whether they be overarching country strategies as in Azerbaijan and Georgia, or innovation strategy as in Moldova. Georgia also has digitalisation-related provisions in its ongoing broadband and SME strategies. In the case of Ukraine, the country's strategic vision for the digital transformation has been embedded in several government documents¹, including the *National Economic Strategy 2030*, and further plans to step up policy efforts for post-war recovery are reflected in the Draft Recovery Plan.

However, existing policy documents for the digital transformation pay only limited attention to the digitalisation of SMEs in non-IT sectors. Armenia's NDS includes provisions to accelerate SME digitalisation, notably by raising private sector awareness of digital tools, increasing businesses' use of new technologies, and further developing e-commerce and innovative solutions. Other EaP countries have planned a few measures in their strategies, but these remain scarcer and often limited to digital skills. However, implementation has sometimes happened outside policy strategies – Georgia and Moldova, for instance, have launched dedicated programmes to support SME digitalisation (for the first time in 2023 and 2020, respectively), although these are not part of ongoing policy documents².

In terms of policy governance, all EaP countries have been working to develop multi-stakeholder approaches. The design of strategic policy documents for digitalisation has benefitted from the involvement and contributions of a wide range of actors, most often through the establishment of dedicated working groups encompassing ministries, public agencies, international experts (consulting firms and/or international organisations) and sometimes businesses and business associations. These mechanisms, along with the clear mandates given to one stakeholder to lead the NDS, have also allowed for co-ordination among actors. Moving forward, countries should pursue a continued multi-stakeholder approach to policy implementation, which is not yet systematic across the region. While some countries, such as Armenia and Moldova, have taken steps in that direction with their digitalisation councils and public-private

working groups planned for specific topics in their respective ongoing and draft NDSs, policy makers across the region should ensure that all concerned parties are involved— including Ministries of Labour and employment agencies, actors that may be newer to digitalisation policies (such as tax offices), and the business community. These are essential for the comprehensiveness and successful implementation of the NDS (Gierten and Leshner, 2022^[6]).

One of the main weaknesses for most EaP countries remains data collection on the digital transformation, which is essential for monitoring and evaluation. Apart from insights into broadband connectivity (further detailed in the following section national statistical offices collect only a limited number of indicators, and rarely on businesses' uptake and use of digital tools. Georgia and Ukraine appear as frontrunners in this regard, while Azerbaijan has recently achieved considerable progress, but more could be done to align with OECD and EU methodologies. As a result, current policy documents lack targets to assess progress, e.g. on digital skills development and SME digitalisation.

The way forward

Moving forward, EaP countries could complement and strengthen their policy frameworks for the digital transformation by:

- **Consolidating policy approaches to digitalisation and ensuring co-ordination throughout strategy implementation:** Each EaP country should adopt a comprehensive NDS encompassing all relevant domains for the digital transformation, setting clear objectives associated with measurable targets, and a corresponding budget. The involvement and co-ordination of all concerned public and private stakeholders should be ensured throughout implementation to allow for successful execution and feedback. The OECD recently published a methodology for assessing NDSs and their governance across member countries, based on the OECD Going Digital Integrated Policy Framework, which can serve as a useful reference (Box 4.1).
- **Including provisions for SME digitalisation in overarching policy documents:** More attention should be paid to the digital transformation of small businesses in non-IT sectors. Policy makers should adopt a comprehensive approach to foster this transition, considering both technology adoption and digital culture.
- **Improving monitoring and evaluation by setting result-oriented key performance indicators and collecting internationally comparable data:** Countries should make further efforts to collect data on the digital transformation, including that of businesses, by size, in line with OECD/EU methodologies. Table 4.2 provides an overview of the key indicators underpinning the OECD Going Digital Integrated Policy Framework. The OECD database on ICT Access and Usage by Businesses, as well as the EU Digital Economy and Society Index (DESI), offer additional useful references for firms' digitalisation specifically.

Box 4.1. OECD methodology for assessing national digital strategies and their governance

The OECD Going Digital Integrated Policy Framework assists governments in developing coherent and resilient policies to realise the potential of digital transformation and address its challenges. The Framework evaluates NDS comprehensiveness across 38 policy domains, organised into seven overarching dimensions that collectively enhance growth and well-being:

- **Access** to communications infrastructures, services, and data
- Effective **use** of digital technologies and data
- Data-driven and digital **innovation**
- Good **jobs** for all
- **Social** prosperity and inclusion
- **Trust** in digital environments
- **Market openness** in digital business.

Policy makers can gain valuable insights by assessing their NDS strengths and weaknesses and understanding the comprehensiveness of other countries' NDSs to help identify policies for enhancing their own strategy. Successful NDS development and implementation requires effective governance. While governance is often country-specific and shaped by domestic factors, several aspects help distinguish different types of approaches and identify respective strengths:

Strategy responsibilities

A comprehensive NDS involves various stakeholders, both within and outside the government, requiring effective co-ordination. Strategic responsibility should be assigned to a high-level body or a dedicated Ministry for Digital Affairs to ensure success.

Co-ordination arrangements

Effective NDS co-ordination involves two main arrangements: 1) co-ordination groups/committees involving government actors during strategy development and implementation; and 2) one-off consultations with multiple stakeholders, often online, to address specific co-ordination tasks, especially during strategy development.

Funding implementation

NDS implementation requires funding, either explicitly attached or obtained from decentralised sources. An attached budget aids co-ordination and oversight for greater success of the strategy. Decentralised funding may impact accountability and the effectiveness of the strategy. In countries with an explicitly attached budget, strategic co-ordination is often allocated to a high-level body or a ministry dedicated to digital affairs.

Monitoring implementation

To oversee the progress of an NDS, countries must monitor its implementation by setting measurable targets, collecting data and using relevant indicators. Monitoring is typically carried out by the body responsible for NDS development, especially in countries with a dedicated Ministry for Digital Affairs. Alternatively, a co-ordination group of key actors involved in implementation may also oversee monitoring. Some countries integrate specific policy measures with indicators to measure their implementation and effects.

Source: (Gierten and Leshner, 2022^[6]).

Table 4.2. Key indicators underpinning the OECD Going Digital's seven policy dimensions

Policy dimension	Indicator	2022 OECD values
Access	Fixed broadband subscriptions per 100 inhabitants	34.9
	M2M (machine-to-machine) SIM cards per 100 inhabitants	36.1
	Mobile broadband subscriptions per 100 inhabitants	127.9
	Share of households with broadband connections	90.8%
	Share of businesses with broadband contracted speed of 30Mbps or more	79.3%
	Share of the population covered by at least a 4G mobile network	98.2%
	Disparity in broadband uptake between urban and rural households	3.83pp
Use	Internet users as a share of individuals	91.4%
	Share of individuals using the Internet to interact with public authorities	60%
	Share of Internet users who have purchased online	72%
	Share of small businesses making e-commerce sales	26.1%
	Share of businesses with a web presence	78.1%
	Share of businesses purchasing cloud services	45%
	Average monthly mobile data usage per mobile broadband subscriptions	10.4Gb
	Share of adults proficient at problem solving in technology-rich environments	30.6%
Innovation	ICT investment as a share of GDP	2.37%
	Business R&D expenditure in information industries as a share of GDP	0.433%
	Venture capital investment in the ICT sector as a share of GDP	0.09406%
	Start-up firms (up to 2 years old) in information industries as a share of all businesses	24.4%
	Top 10% most-cited documents in computer science, as a share of the top 10% ranked documents in all fields	6.52%
	Patents in ICT technologies, as a share of total IP5 patent families	31%
Jobs	Share of ICT task-intensive jobs	13.9%
	Digital-intensive sectors' share in total employment	49.4%
	Workers receiving employment-based training as a share of total employment	59.2%
	Share of individuals who use digital equipment at work that telework from home once a week or more	26.4%
	New tertiary graduates in science, technology, engineering, and mathematics as a share of new graduates	23.4%
	Public spending on active labour market policies as a share of GDP	0.832%
Society	Share of individuals aged 55-74 years using the Internet	78.8%
	Share of individuals who live in households with income in the lowest quintile who use the Internet	83.6%
	Women as a share of all 16-24-year-olds who can program	29.7%
	Disparity in Internet use between men and women	0.43pp
	Top-performing 15-16-year-old students in science, mathematics and reading	15.3%
	OECD Digital Government Index	0.51
	E-waste generated per capita	17.286kg
Trust	Share of Internet users experiencing abuse of personal information or privacy violations	3.99%
	Share of Internet users not buying online due to payment security concerns	22.5%
	Share of Internet users not buying online due to concerns about returning products	5.49%
	Share of enterprises in which own employees carry out ICT security related activities	42.8%
	Health data sharing intensity	65.2%
Market openness	Share of businesses making e-commerce sales that sell across borders	40.1%
	Digitally deliverable services as a share of commercial services trade	37.5%
	ICT goods and services as a share of international trade	12.2%
	Digital-intensive services value added embodied in manufacturing exports as a share of manufacturing export value	23.6%
	OECD Digital Services Trade Restrictiveness Index	0.14
	OECD Foreign Direct Investment Regulatory Restrictiveness Index	0.06

Notes: Mbps: megabits per second; GDP: gross domestic product; R&D: research and development; pp: percentage point; Gb: gigabyte; kg: kilogramme; IP5: patents filed in at least two offices worldwide, including one of the five largest IP offices. OECD values refer to the average for OECD countries for which data is available. Data is provided for 2022 or the most recent year available.

Source: (OECD, 2022^[7]).

Broadband connectivity

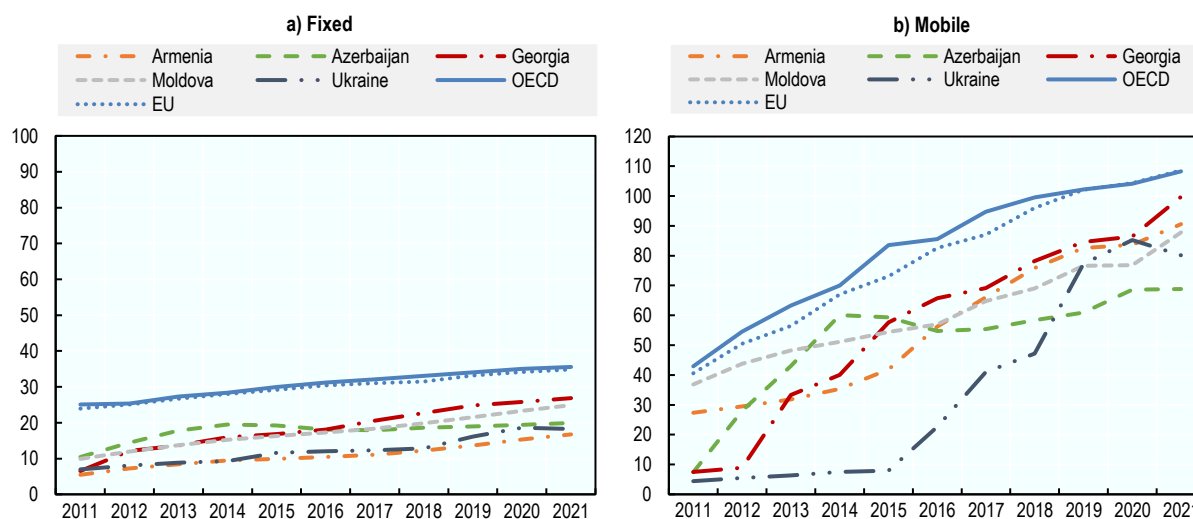
Guaranteeing efficient, affordable and reliable access to the Internet is a pre-requisite for economies and societies to tap into the potential of the digital transformation. Some OECD countries recognise it as a basic right, while “providing universal and affordable access to the Internet” is listed among the United Nations Sustainable Development Goals (SDGs).

Analysis

Broadband uptake has been steadily increasing in EaP countries over recent years, although significant disparities remain between countries. Georgia appears as the most connected EaP state, while Ukraine registers the fastest progress, with the number of fixed and active mobile subscriptions increasing by 52% and 254%, respectively, between 2016 and 2021. However, despite these advances, connectivity levels in the EaP region still lag OECD and EU values (Figure 4.3).

Figure 4.3. Broadband uptake in Eastern Partner, OECD and European Union countries, 2011-21

Fixed and active mobile subscriptions per 100 inhabitants



Note: OECD and EU correspond to median values.

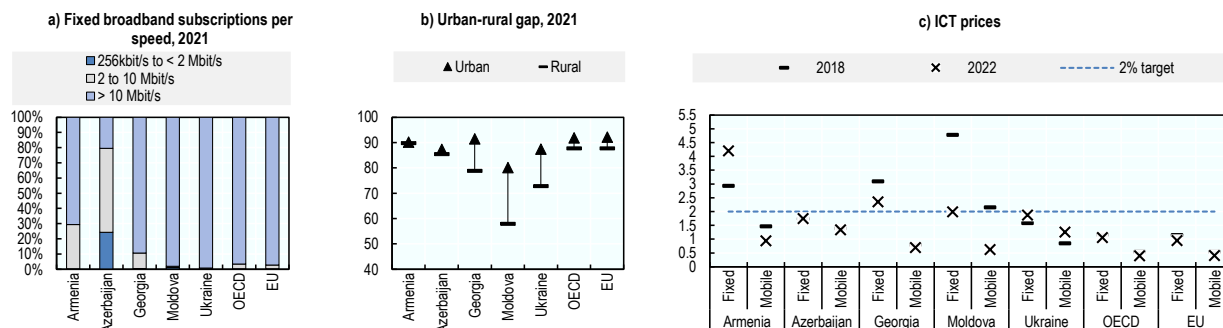
Source: Based on (ITU, 2022^[8]).

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Beyond uptake, access to quality broadband at affordable prices is essential for individuals and firms to reap the benefits of digitalisation. Recent data highlight persistent regional disparities across the EaP region: while almost all fixed broadband subscriptions in Moldova and Ukraine benefit from a good connection speed – i.e. above 10 Mbps, similar to OECD and EU levels – Internet speed still poses a challenge in Azerbaijan (Figure 4.4). Moreover, all countries have been working to foster equal access to the Internet across their respective territories, but digital divides remain, especially in Georgia, Moldova, and Ukraine. Overall, broadband uptake is challenged by prices: although ICT prices appear among the cheapest worldwide in absolute terms, tariffs expressed as a percentage of gross national income per capita show that Internet remains less affordable in the EaP region than in OECD and EU countries – especially for fixed broadband. Armenia and Georgia were still above the International Telecommunication Union’s target of 2% of monthly GNI per capita in 2022, while Moldova, after considerable improvements in recent years, reached 2%. This can hamper firms’ uptake, as businesses require strong, fast and reliable

connections to conduct online operations – a demand better matched by fixed broadband, which often offers a higher speed, e.g. for running software.

Figure 4.4. Broadband quality, coverage, and affordability in Eastern Partner, OECD and EU countries



Notes: Mbps: megabits per second; EU: European Union. OECD and EU values correspond to median values for member states for which 2021 data is available. EU-8 = Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia.

Source: OECD calculations based on (ITU, 2022^[8]).

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With regard to businesses' broadband uptake and speed, data remain scarce across EaP countries. Only Georgia and Ukraine collect such size-disaggregated indicators, which show that firms' connectivity lags behind that of OECD and EU countries. The gap between SMEs and large firms is also more significant: in Ukraine, for instance, 84.5% of small firms have access to the Internet (10 percentage points [p.p.] Internet compared to larger firms), vs. 96% in the OECD (-3 p.p. compared to larger firms). Moreover, most small Georgian companies do not have access to high-speed Internet (Geostat, 2022^[9]).

Policymakers across the EaP region have taken measures to address these remaining challenges and tackle digital divides. Georgia has made the development of high-speed Internet a priority, fostering it through a dedicated broadband strategy aiming at increasing competitive pressure, attracting investments, and building digital skills and demand. Armenia and Ukraine have been developing their own broadband plans, though they are yet to be finalised and adopted. Current national broadband policies in EaP countries most often include provisions to develop fibre and/or 5G and to further invest in infrastructure development.

However, broadband policies could benefit from more regular consultations with relevant stakeholders in some countries. Indeed, continued multi-stakeholder dialogue involving consumers, network operators, local governments and regulatory authorities can help to ensure that all parties' opinions are adequately taken into account (OECD, 2021^[10]).

The way forward

Moving forward, EaP countries could further enhance broadband connectivity across their respective territories and address remaining digital divides across individuals and firms, notably the affordability of fixed broadband. This could be promoted by:

- **Fostering competition**, for example by promoting co-investment, infrastructure sharing, and adequate legal and regulatory frameworks. The legal and regulatory frameworks should be reviewed regularly to ensure their continued adequacy. To this end, EaP countries should conduct

regular multi-stakeholder consultations on Internet connectivity, to provide for evidence-based policy making.

- **Increasing demand for quality broadband by fostering digital literacy among citizens and firms.** Countries could, *inter alia*, strengthen consumer rights and choice by eliminating information asymmetries and providing open and reliable data on subscriptions, coverage and quality of service, thereby helping consumers take informed decisions while incentivising Internet providers to enhance network quality.

Overall, EaP countries can refer to the OECD's *Recommendation of the Council on Broadband Connectivity* for further guidance (OECD, 2021^[10]).

Digital skills

Digital skills are at the core of the digital transformation. The swift development of digital technologies has been triggering changes in labour markets, with some skills becoming redundant due to automation while digital skills are increasingly in demand. Therefore, providing relevant education, along with lifelong learning opportunities is essential to help individuals meet evolving labour market requirements. Equipping employees with digital competences is also crucial for firms, as the availability of a digitally literate workforce and investment in skills training are associated with higher adoption levels of digital technologies.

The present analysis considers the three main categories of digital skills as outlined in previous OECD work³ – 1) ICT generic skills (i.e. the capacity for any working-age individual to make use of new technologies), 2) ICT advanced skills (i.e. the competences acquired by IT specialists), and 3) ICT complementary skills (“softer” skills, e.g. problem-solving, information processing, and communication).

Analysis

Digital skills are embedded in policy documents related to digitalisation across the EaP region. All countries have made good progress in including digital competence in education systems. It is now part of national education curricula, at least for one level of education. Armenia and Moldova have included it as a key competence for all education levels, with a core course on digital education/informatics and additional, optional modules on specific topics. Georgia has focused its digital literacy efforts in formal education on vocational education and training (VET) so far. Moreover, the COVID-19 pandemic has accelerated the development of online education for pupils and students, as containment measures forced educational institutions to move classes to dedicated web platforms. These measures have been accompanied in most countries by some teacher training.

EaP countries have also been working towards providing their citizens an increasing number of lifelong learning opportunities on digital skills development. Several projects have been carried out to this end, such as the Digital Academy and IT Hubs in Azerbaijan, or the wide range of online courses offered by Georgia's Innovation and Technology Agency. As a common feature appearing across the region, the active involvement of the private sector has been enhancing these training opportunities. Tekwill, for instance, is the flagship private initiative in Moldova in this regard (see Box 13.2 in the Moldova country chapter), while Armenia benefits from a growing number of educational centres and programmes, such as the TUMO Centre for Creative Technologies and the Armath educational programme (Box 4.2). However, support for digital skills development among small firms specifically remains limited across the region.

Box 4.2. Selected digital skills initiatives in Armenia

TUMO Centre for Creative Technologies

Armenia's TUMO Centre for Creative Technologies is a non-profit organisation providing free education in diverse creative and technological disciplines to youth aged 12-18. The TUMO programme employs a combination of guided self-learning and project-based learning, fostering real-world experiences for students and offering companies access to a pool of emerging talent. Sub-programmes include:

- **TUMO Labs** focuses on delivering advanced and in-depth training in technology, creative industries, and entrepreneurship. It nurtures young talent, offering resources, mentorship and real-world exposure in collaboration with industry professionals and companies.
- The **EU TUMO Convergence Centre** caters to university students and emerging professionals, fostering a collaborative environment and bringing together students, partners, local businesses, and universities to maximise opportunities for all stakeholders in the region.
- **42 Yerevan** is a tuition-free programming school for students over 18 that offers guided self-learning programmes in technology, applied science and engineering. It boasts a 95% job placement success rate for graduates.

In addition to offering free access to quality education, TUMO implements several good practices in its education approach, encompassing:

- project-based learning and interdisciplinary approach, with TUMO's curriculum revolving around hands-on projects; enriching students' skills across diverse disciplines; and encouraging the exploration and integration of programming, design, animation, robotics and more
- digital and creative skills, with the programme nurturing digital literacy and creativity to meet the demands of the digital era and creative industries
- state-of-the-art facilities with cutting-edge technology for innovative learning environments
- professional mentorship, with industry experts guiding students' learning and development
- collaboration with industry, offering real-world projects and career pathways
- social and cultural activities as TUMO facilitates community-building and collaboration
- lifelong learning, encouraging students to remain curious beyond their time at the centre.

Armath educational programme

Launched in 2014, Armath aims to promote science, technology, engineering and mathematics (STEM) education among schoolchildren, thereby cultivating a new generation of innovators in Armenia. The programme has yielded a range of significant outcomes by:

- stimulating technological education across the country
- promoting regional development and improving conditions in borderline communities
- fostering an entrepreneurial culture and boosting economic activity in high-tech sectors

strengthening the bond between the education system, the labour market and the universities. The Armath Engineering Laboratories programme had demonstrated promising outcomes by 2022, with 45% of Armath students admitted to regional and 3% to international universities, 11% finding employment in the IT sector and 1% founding start-ups.

Source: (TUMO Center for Creative Technologies, 2023^[11]), (TUMO Labs, 2023^[12]), (Armath, 2023^[13]).

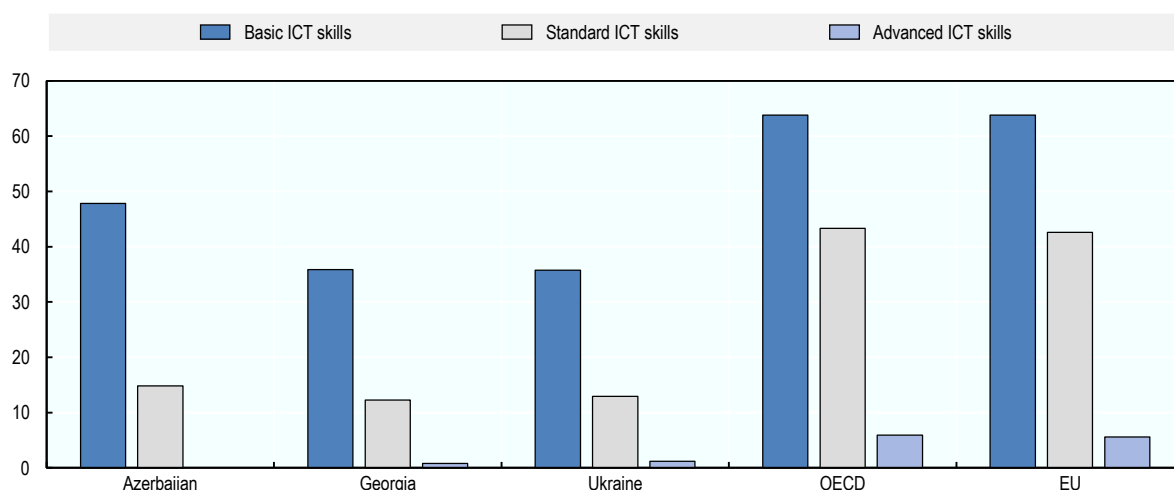
Overall, Ukraine comes out as the EaP leader in the field, having developed the most comprehensive policy approach to digital skills development. It has implemented a wide range of initiatives and tools to this end, most often in line with EU practices. It notably appears as the only country in the region to have implemented a self-assessment tool for individuals to evaluate their digital skills, as well as a digital competence framework to serve as a reference, following the example of EU's DigComp 2.1. Based on this framework, the online platform Diia.Digital Education offers a wide range of free digital literacy courses for citizens, and the National Online School for Entrepreneurs provides additional resources for small businesses.

Nevertheless, digital skills levels across the region remain below OECD and EU levels (Figure 4.5). Overall, data on digital literacy appears to be quite scarce – Armenia and Moldova do not collect such insights, and data on digital skills among firms are still very limited. This poses an issue for monitoring and evaluation purposes, and evidence-based policy making in general. Beyond data collection, skills assessment and anticipation exercises remain nascent in EaP countries: apart from Georgia, countries do not yet have a systemic approach. Labour market forecasts, when implemented, do not entail digital skills aspects – e.g. in Moldova. By and large, digital skills assessment and anticipation practices, such as surveys and/or sectoral studies, are most often conducted on an ad hoc basis, by donors/development partners.

Finally, while several ministries and governmental agencies are involved in elaborating digital skills policies, the policies would benefit from greater involvement of certain relevant yet often overlooked stakeholders: Ministries of Labour, national employment agencies, but also teachers and private sector representatives.

Figure 4.5. Individuals with ICT skills in Eastern Partner, OECD and European Union countries

Percentage of individuals with skills, 2021



Note: Data not available for Armenia and Azerbaijan. Data on advanced skills for Georgia refer to 2020, as 2021 data are not available. Data on advanced skills for Azerbaijan not available. OECD and EU values refer to the median values of countries for which 2021 data is available. Basic skills correspond to copying or moving a file or folder, using copy and paste tools, sending e-mails with attached files, and transferring files between a computer and other devices; standard skills to using basic arithmetic formula in a spreadsheet; connecting and installing new devices; creating electronic presentations with presentation software; and finding, downloading, installing and configuring software; and advanced skills to writing a computer program using a specialised programming language.

Source: Based on (ITU, 2022^[8]).

StatLink  <https://stat.link/a0c96n>

The way forward

Moving forward, EaP countries could step up their efforts towards building digitally literate societies by:

- **Strengthening multi-stakeholder approaches to digital skills development** by ensuring the participation of all relevant stakeholders in the policy making and implementation processes. Implementing national digital skills and jobs coalitions could be helpful in this regard.
- **Implementing digital skills as a key competence at all education levels** to ensure all citizens acquire ICT generic skills as part of their education. This should be accompanied by an assessment of learning outcomes.
- **Adopting a framework for digital competences to serve as a common reference**, following the example of DigComp 2.1 (Box 4.3). Such a framework will help the assessment and certification of the digital competences acquired while building a common understanding of digital skills across countries.
- **Developing digital skills assessment and anticipation tools** – e.g., improving data collection on levels of digital skills among the population and in firms; introducing self-assessment tools for individuals to evaluate their competences and identify their training needs; and conducting anticipation exercises to inform future policies and training – in line with EU methodology to ensure comparability.
- **Stepping up support for digital skills development among firms, especially small ones.**

Box 4.3. The Digital Competence Framework for Citizens (DigComp)

In response to the rapid technology advancements and the ever-growing significance of digital skills, the European Commission has introduced DigComp – a framework designed to shape and assess individuals' digital competences. It fosters digital literacy and empowers citizens to engage proficiently and responsibly in various contexts, including education, workforce training and policy development. DigComp is a comprehensive roadmap for assessing and developing digital competencies in individuals across age groups and professions. It surpasses technical expertise, embracing crucial abilities and attitudes for the effective use of digital tools in the complexities of the digital era.

The DigComp framework consists of 5 areas of digital competence, with 21 specific competences.

1. Information and data literacy

This area equips individuals to find, evaluate and manage digital information responsibly. Key aspects include information retrieval, evaluation, data management, privacy and copyright. It enables informed decision making and active digital participation while safeguarding privacy and digital identity.

2. Communication and collaboration

This competence area focuses on developing individuals' proficiency in using digital tools and platforms to effectively communicate, share information and collaborate with others. It emphasises clear and meaningful digital interactions, enabling collaborative and productive exchanges across various contexts and platforms.

3. Digital content creation

The DigComp's digital content creation is designed to empower individuals with the skills to proficiently produce, edit and share digital content across various formats, including text, images, audio, and video. It plays a pivotal role in enabling the effective expression of ideas and fostering valuable contributions to the digital landscape with professionalism and creativity.

4. Safety

The safety competence area encompasses the acquisition of essential knowledge and skills that enable individuals to ensure their security and privacy in the digital environment. This entails a comprehensive understanding of digital security measures, proficiently safeguarding personal data and adopting responsible online practices to effectively mitigate potential risks and threats.

5. Problem solving

Problem solving encompasses the acquisition of adept skills in analysing and resolving challenges proficiently via the use of digital tools and technologies. This proficiency enables individuals to identify issues, devise innovative solutions and take informed decisions in the digital landscape.

DigComp facilitates the development of essential digital skills, enhancing individuals' employability in a technologically driven job market. It promotes digital inclusion and bridging the digital divide and fosters responsible digital citizenship. The framework aids policy makers in designing effective digital literacy initiatives and policies, fostering a competent and productive society.

Source: (European Commission, 2023^[14]).

Digitalisation-oriented sub-dimensions

With regard to the digitalisation-oriented sub-dimensions, EaP countries have been advancing at different paces. They register strong performance in terms of e-government services, which have been steadily expanding in recent years and the institutional framework for SME digitalisation has been strengthened. Despite some welcome efforts, more could be done to develop targeted business support services for SME digitalisation, digital financial services, and e-commerce. The digitalisation of standards and technical regulations appears as the weakest area of the assessment.

Table 4.3 summarises the main findings and recommendations at the regional level for each of the sub-dimensions included in the composite scores for SME digitalisation policies. The detailed analysis for each of them, as well as country-level details, can be found in the relevant chapters.

Table 4.3. Summary of key findings – digitalisation-oriented sub-dimensions

Sub-dimension	EaP average	Main achievements	Shortcomings	Policy recommendations
3.4 Institutional framework for SME digitalisation	4.14	SME digitalisation mentioned in ARM, AZE and GEO strategic documents for SMEs Development of dedicated actors, e.g. UKR's Ministry of Digital Transformation and the effective Diia platform, while AZE established a dedicated agency under the Ministry of Digitalization and Transport.	The process is still in an early phase and the resources EaP countries allocate to SME digitalisation are relatively limited.	- Increase the human and financial resources allocated to programs for supporting the digital transformation of SMEs and make sure that the SME Development Agencies have the necessary competencies to manage those programmes
4.1 E-government services	4.31	EaP countries have significantly expanded e-government services, simplified accessibility and improved e-governance. All countries have approved multi-year strategic documents to guide further e-government service expansion.	Progress has been limited in monitoring and evaluation due to scarce data on e-government service use by SMEs based on enterprise typology and location.	- Systematically collect data on the use of e-government services by different categories of SME (by size, type of ownership and location) to identify the type of enterprises that encounter more difficulties in accessing and using e-government services and map e-government service utilisation by SMEs. - Improving data availability could lead to more targeted information campaigns and SME training, enhancing e-government utilization rates.
5a.3 Business support services for the digital transformation of SMEs	3.33	Prioritisation of trainings on digitalisation-related topics varies among EaP countries; Georgia and Moldova are pioneers in developing SME digitalisation programmes, offering individualised assessments, company-specific digitalisation roadmaps, and financial support for digital technologies and advisory services.	Trainings do not fully cater to individual SME needs, necessitating specialised consultant services for tailored analysis and recommendations.	- Include dedicated measures for business development services (BDS) delivery in strategic documents. - Ensure regional office sustainability. - Embed single information portals with BDS ecosystem actors on SME agencies' websites. - Develop dedicated SME support programs with focus on digital skills, roadmaps & financial aid for tech adoption. - Improve evaluation of support programs' impact on SME performance. - Expand collection of statistical indicators on tech adoption among firms.
6.6 Digital financial services	3.47	All financial authorities have a department with a dedicated mandate to cover digital financial services.	Regulatory frameworks still at a nascent stage. Lack of specific	- Develop strategic directions for digital financial service regulation and supervision and adopt a multi-disciplinary approach. First steps would be to adopt

Sub-dimension	EaP average	Main achievements	Shortcomings	Policy recommendations
		The topic is starting to be addressed in policy documents (dedicated digital finance strategy in Ukraine, part of Georgia's central bank's strategy, digital payment strategy in Azerbaijan). All countries have regulation in place around data protection and sharing as well as an operational resilience framework for financial service providers.	provisions for big tech solutions. No systematic implementation of a multi-disciplinary approach to digital finance supervision. Only Georgia has started working towards developing regulatory sandboxes.	a strategy document and equip regulators with the necessary human capital and tools to address looming challenges. Part of this process is a new, more open, approach to regulation in which both public and private stakeholders are regularly consulted.
7.4 Digitalisation of standards and technical regulations	2.45	Most countries offer support and training to SMEs on standards and technical regulations and have a strategy for digitalising processes within the authorities responsible for technical regulation. Remote participation in standardisation, audit and inspection is possible, except in Armenia and Azerbaijan.	Performance in this sub-dimension is overall relatively weak. Designated staff or special working groups for the digitalisation of processes and activities within the area of technical regulation are missing, except in GEO. No country provides remote audit and inspection for first-time accreditation. The digitalisation of market surveillance is still underdeveloped in the region except in Georgia.	<ul style="list-style-type: none"> - Improve market surveillance and differentiate it from inspection. - Seek international recognition for the quality infrastructure. - Develop SME-specific standards for education strategies. - Implement financial measures to support SME participation in standardisation. - Enhance digital maturity in technical regulation and conformity assessment. - Establish export platforms for SMEs. - Improve the regular evaluation of the technical regulation system and quality infrastructure. - Continue good practices from Twinning projects even after their completion.
10.4 Use of e-commerce	3.18	All EaP countries improved e-commerce policies, with basic regulatory frameworks for e-commerce being put in place, including provisions on hybrid retail, e-signatures, and electronic payments. Azerbaijan, Moldova and Ukraine adopted a regulatory framework on the commercial practices of paid advertisement.	EaP countries still do not align with EU frameworks in cross-border e-commerce. Issues remain in the e-commerce ecosystem, legal framework and standardisation aspects. Need for further strengthening of legislative frameworks related to platforms, parcel delivery and consumer protection. All countries except Georgia lack a monitoring mechanism and e-commerce Trustmark certification schemes.	<ul style="list-style-type: none"> - Improve monitoring and evaluation for export promotion agencies. - Support SME integration into global value chains through assessment, linkages with multinational corporations and foreign direct investment incentives. - Enhance the e-commerce regulatory framework and introduce Trustmark certification. - Simplify and automate trade procedures, improve broader agency co-operation, and harmonise trade-related documents.

Note: For more information, please see Pillar A for 3.4 Institutional framework for SME digitalisation and 4.1 Digital government for SMEs; Pillar C for 6.6 Digital financial services; Pillar D for 7.4 Digitalisation of Standards and Technical Regulations and 10.4 Use of E-commerce; and Pillar E for 5a.3 Business Support Services for the Digital Transformation of SMEs.

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Notes

¹ These documents are listed and detailed in the Ukraine country profile.

² These programmes are further detailed and analysed under Pillar E, business development services dimension.

³ See, for instance, (Grundke et al., 2018_[15]).



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