



# Enhancing Resilience by Boosting Digital Business Transformation in Ukraine



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# Foreword

Amidst the unprecedented challenges brought by Russia's full-scale invasion, Ukraine's commitment to reforms remains unwavering. The government has notably continued implementing substantial policy efforts to foster economic growth, cultivating an environment conducive to private sector development and entrepreneurship. The OECD has been supporting this impetus through steadily increasing co-operation, including *via* a number of regional and country-level projects carried out in close co-operation with public and private stakeholders under the EU4Business Initiative to support the growth of small and medium-sized enterprises (SMEs) and their digital transformation. Most recently, the *OECD SME Policy Index: Eastern Partner countries 2024* highlighted the country's considerable improvements in SME policies, with the country improving its scores in all twelve dimensions of the assessment.

Building on this longstanding co-operation, the OECD launched, in early 2022, a project in co-operation with the Ministry of Digital Transformation of Ukraine (MDTU) and the Entrepreneurship and Export Promotion Office (EEPO) to promote the digital transformation of SMEs. The project was put on hold after the outbreak of the war, but, as Ukraine seeks to step up policy efforts, activities resumed in early 2023 with a new focus on enhancing resilience by boosting digital business transformation.

Throughout 2023, the OECD provided tailored guidance to Ukraine on how to accelerate the digital transformation of businesses and further leverage the potential of digital tools for resilience. To this end, the OECD carried out desk research, fact-finding exercises, benchmarking against OECD good practices, and targeted capacity building activities to analyse the state of play and suggest concrete policy options. Three working group meetings were organised, combining panel discussions about Ukraine and case studies of the best practices identified. They gathered senior policymakers from Ukraine, private sector representatives, international practitioners and experts from OECD countries, as well as EU and OECD officials. The project also benefitted from very valuable inputs from a designated expert in SME development and innovation policy, Veronika Špírková, from the Ministry of Industry and Trade of Czechia, Prague University of Economics and Business, as lead reviewer.

This report summarises the main findings and suggests actionable policy options for the short-, medium- and long-term to 1) build an ecosystem conducive to SME digitalisation at national and sub-national level, 2) develop comprehensive support services for SME digitalisation, and 3) introduce specific measures to help firms tap into the potential of digital tools to tackle war-related challenges, increase their resilience, and weather recent economic shocks. The results and recommendations can feed into upcoming policy initiatives and documents, such as the next SME Strategy, and help bring Ukraine closer to OECD and EU standards.

This project was implemented within the framework of "EU4Business: From Policies to Action – Phase 2" in the Eastern Partnership, with the financial support of the European Union (EU). The project was co-financed by Czechia.

Initial findings were discussed at a Peer Review of Ukraine at the OECD Eurasia Competitiveness Roundtable that took place on 14 December 2023, as part of OECD Eurasia Week 2023 in Paris. Prior to finalisation, the report was then circulated for further comments to the Roundtable in April 2024.

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Representatives of several Ukrainian Ministries, government agencies, private sector associations, non-governmental organisations and other stakeholders should be acknowledged for their active participation and their availability to exchange with the OECD team. The very valuable insights they shared have been instrumental for the development of this report.

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The report, as well as working group discussions, benefitted from very insightful inputs from representatives of the private sector, notably Anna Derevyanko (Executive Director, European Business Association), Alexandre Yurchak (Head of Ukrainian Cluster Alliance / CEO of Association of Industrial Automation of Ukraine), Andrii Zaikin (Founder and CEO, YEP StartUp Accelerator), Kateryna Glazkova (Executive Director, Union of Ukrainian Entrepreneurs) and her team, Tetyana Prokopchuk and Veronika Aliksieienko (Vice President and Chief Policy Officer for Banking & Financial Issues, respectively, American Chamber of Commerce in Ukraine), Anna Liubyma (Director of International Cooperation Department, Ukrainian Chamber of Commerce and Industry) and Svetlana Kutseva (Director of International Relations Department, Ukrainian League of Industrialists and Entrepreneurs).

A number of international experts shared valuable insights and experience that fed into the report and working group discussions, including Olesya Zaluska (Chief of Party, USAID/Chemronics Competitive Economy Program), Anton Waschuk (Director of Innovation, Education and Entrepreneurship, Western NIS Enterprise Fund), Veronika Špírková and Lucie Jarešová (expert in SME development and innovation policy and investment incentives, respectively, at the Ministry of Industry and Trade of Czechia and Prague University of Economics and Business), Mikheil Khidureli (CEO, Enterprise Georgia), Nurlan Kulbatyrov

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This report was written under the guidance of Andreas Schaal, Director of the OECD Directorate for Global Relations and Co-operation, and William Tompson, Head of the OECD Eurasia Division.

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# Acronyms and abbreviations

|          |   |
|----------|---|
| AA       | Association Agreement   |
| ACC      | American Chamber of Commerce Ukraine  |
| AI       | Artificial intelligence   |
| B2C      | Business-to-consumer  |
| BDF      | Business Development Fund   |
| BMWK     | Bundesministerium für Wirtschaft und Klimaschutz [Federal Ministry for Economic Affairs and Climate Action] |
| CDTO     | Chief Digital Transformation Officer  |
| CEP      | Competitive Economy Program   |
| CEPIS    | Council of European Professional Informatics Societies  |
| CERT     | Computer Emergency Response Team  |
| CIT      | Corporate Income Tax  |
| COVID-19 | Coronavirus disease 2019  |
| CRM      | Customer Relationship Management  |
| CSIRT    | Computer Security Incident Response Team(s)   |
| DMA      | Digital Maturity Assessment   |
| DNRP     | Draft National Recovery Plan  |
| DREAM    | Digital Restoration Ecosystem for Accountable Management  |
| DREAMY   | Digital Readiness Assessment Maturity model   |
| EaP      | Eastern Partnership   |
| EBRD     | European Bank for Reconstruction and Development  |
| EC       | European Commission   |
| EDIH     | European Digital Innovation Hubs  |
| EEC      | European Economic Community   |
| EEPO     | Entrepreneurship and Export Promotion Agency  |
| eIDAS    | Electronic Identification and Trust Services  |
| ENISA    | EU Agency for Cyber Security  |
| ERDF     | Multi-regional Operational Programme of Spain   |

|       |   |
|-------|---|
| ERP   | Enterprise Resource Planning  |
| EU    | European Union  |
| EUR   | Euro  |
| FDI   | Foreign Direct Investment   |
| GDP   | Gross Domestic Product  |
| GIS   | Geoinformation System for Regional Development  |
| GIZ   | Deutsche Gesellschaft für Internationale Zusammenarbeit [German Corporation for International Co-operation] |
| IAMPM | Laboratory for non-technical IT online education  |
| ICT   | Information and Communication Technology  |
| ID    | Identification  |
| IDP   | Internally Displaced Persons  |
| IfW   | Kiel Institute for the world economy  |
| IMD   | International Institute for Management Development  |
| IMF   | International Monetary Fund   |
| IO    | International Organizations   |
| IoT   | Internet of Things  |
| ISACs | Information Sharing and Analysis Centres  |
| ISO   | International Organization for Standardization  |
| ISP   | Internet Service Provider   |
| ISSP  | Information Systems Security Partners   |
| IT    | Information Technology  |
| ITU   | International Telecommunication Union   |
| IUC   | Industrial Development Centres (Sweden)   |
| KPI   | Key Performance Indicator   |
| LIKTA | Latvian Information and Communication Technology Association  |
| MDTU  | Ministry of Digital Transformation of Ukraine   |
| NATO  | The North Atlantic Treaty Organization  |
| NCCC  | Ukraine's National Cybersecurity Coordination Centre  |
| NCEK  | National Telecom Regulator  |
| NES   | National Economic Strategy  |
| NGO   | Non-governmental Organization   |
| NIS   | Network and Information Systems   |
| NIST  | National Institute of Standards and Technology  |
| NRI   | Network Readiness Index   |

|        |   |
|--------|---|
| OECD   | Organisation for Economic Co-operation and Development                |
| PIT    | Personal Income Tax   |
| PTSD   | Post-traumatic stress disorder  |
| R&D    | Research and development  |
| RISE   | Ukraine's Reconstruction, Integrity, Sustainability and Efficiency    |
| SDG    | Sustainable Development Goals   |
| SME    | Small and Medium-sized Enterprises                                    |
| SMM    | Social media marketing  |
| UAH    | Ukrainian Hryvnia   |
| UCA    | Ukrainian Cluster Alliance  |
| U-LEAD | Ukraine – Local Empowerment, Accountability and Development Programme |
| UN     | United Nations  |
| UPU    | Universal Postal Union  |
| US     | United States   |
| USAID  | US Agency for International Development                               |
| USC    | Unified Social Contribution   |
| USD    | United States Dollars   |
| USEBE  | United State Electronic Database on Education                         |
| USECS  | Unified State Electronic System of Construction                       |
| WNISEF | Western NIS Enterprise Fund   |

# Key economic indicators: Ukraine

**Table 1. Key macroeconomic indicators for Ukraine, 2017-2024**

| Indicators                          | Unit of measurement              | 2017  | 2018  | 2019  | 2020  | 2021  | 2022  | 2023 <sup>1</sup> | 2024 <sup>1</sup> |
|-------------------------------------|----------------------------------|-------|-------|-------|-------|-------|-------|-------------------|-------------------|
| GDP Growth*                         | Percentage y-o-y                 | 2.4   | 3.5   | 3.2   | -3.8  | 3.4   | -29.1 | 5.0               | 3.2               |
| Inflation*                          | Percentage average               | 14.4  | 10.9  | 7.9   | 2.7   | 9.4   | 20.2  | 12.9              | 6.4               |
| Government balance <sup>2*</sup>    | Percentage of GDP                | -2.4  | -2.1  | -2.1  | -5.9  | -4    | -15.7 | -19.7             | -13.7             |
| Current account balance*            | Percentage of GDP                | -2.2  | -3.3  | -2.7  | 3.3   | -1.9  | 5.0   | -5.5              | -5.7              |
| Exports of goods and services**     | Percentage of GDP                | 48.1  | 45.2  | 41.2  | 38.8  | 40.7  | 35.5  | -                 | -                 |
| Imports of goods and services**     | Percentage of GDP                | 55.9  | 54.0  | 49.3  | 40.3  | 42.0  | 52.3  | -                 | -                 |
| FDI net inflows**                   | Percentage of GDP                | 3.3   | 3.8   | 3.8   | 0.2   | 4.0   | 0.2   | -                 | -                 |
| General government gross debt**     | Percentage of GDP                | 71.6  | 60.3  | 50.4  | 60.5  | 48.9  | 78.5  | 88.1              | 98.6              |
| Domestic credit to private sector** | Percentage of GDP                | 38.3  | 34.5  | 30.0  | 28.2  | 23.6  | 23.5  | -                 | -                 |
| Unemployment*                       | Percentage of total labour force | 9.7   | 9     | 8.5   | 9.2   | 9.8   | 24.5  | 19.1              | 14.5              |
| Nominal GDP*                        | USD billion                      | 112.1 | 130.9 | 153.9 | 156.6 | 199.8 | 160.5 | 177.2             | 188.9             |

Note: <sup>1</sup>latest forecasts available; <sup>2</sup>General government net lending/borrowing (Percent of GDP).

Source: \* (IMF, 2024<sup>[1]</sup>) \*\* (The World Bank, 2024<sup>[2]</sup>).

# Executive summary

Small and medium-sized enterprises (SMEs) are the backbone of Ukraine's economy, making up 99.9% of all enterprises, accounting for 81.6% of total business employment and generating 70.2% of value added – exceeding Eastern Partnership (EaP) and EU levels. However, they remain concentrated in low-value-added sectors, with about 40% of them operating in wholesale and retail trade, despite a decrease in recent years.

Russia's full-scale invasion has inflicted severe damage to Ukraine's economy and society. Economic challenges include the destruction of infrastructure and property, losses of human capital through internal and external migration, disruption of supply chains, difficulties with logistics, cuts in export earnings and compression of fiscal revenues. With regards to the business environment, 64% of SMEs have temporarily suspended or closed their activities since the start of the war. While 84% of suspended companies managed to resume working within six months, constant attacks on critical infrastructure, power shortages, and blackouts, still hinder SMEs' economic recovery. Firms continue to face various challenges including, *inter alia*, a decrease in demand and labour productivity, cost increases, supply chains disruptions, as well as from forced relocation to more secure regions.

Against this backdrop, Ukraine's information and communication technology (ICT) sector has been flourishing, fostering economic growth, and providing avenues for increased resilience and recovery, thanks to dedicated policy measures taken by the government. Digitalisation and a well-developed ICT sector can contribute to economic development and growth. Digital technologies not only offer a vast potential to enhance firm productivity but can also help enhance resilience and recovery in times of crisis. Well aware of the potential benefits, the Ukrainian authorities have increased their digitalisation efforts and made great advancements since February 2022, ranging from providing new administrative services online, e.g., through the expansion of the Diia ecosystem, to facilitating reconstruction with the e-Construction initiative. Beyond short-term policy responses, digitalisation also bears the potential of enhancing Ukraine's overall recovery and long-term modernisation.

The digital transformation can particularly benefit SMEs' resilience, as their limited financial and human capacities make them highly vulnerable to shocks. However, Ukrainian SMEs are yet to tap into the full potential of digitalisation. They show limited uptake of digital tools, lagging larger firms. For instance, close to 70% of Ukraine's large firms have a website, as compared to only around half of medium-sized (47%) and less than a third of small businesses (30%). Tech adoption levels remain below OECD levels.

Looking ahead, the Ukrainian government is committed to further improve the SME sector and to enhance SME digitalisation, including through the upcoming SME Strategy 2024-27. The OECD supported the country in designing policies to help SMEs tap into the full potential of digitalisation for economic growth and recovery, providing policy analysis and recommendations to feed into policy documents and initiatives. This report summarises the findings, organised around three main components:

- **Building an effective ecosystem for SME digitalisation at the national and sub-national level:** Digital transformation is a policy priority for the government, which has adopted several national documents and strategies addressing the topic (e.g., National Economic Strategy 2030,

Global Innovation Vision 2030). SME-related digitalisation provisions, however, are scarce. Moving forward, Ukraine should streamline measures for SME digitalisation into one policy document, such as the upcoming SME Strategy or a dedicated National Digital Strategy, associated with clear measures, targets, and dedicated budget reflective of Ukraine's long-term budgetary capacity and recovery needs. Ukraine has made significant efforts to build a strong institutional framework for SME digitalisation at national and subnational levels, especially by establishing the Ministry of Digital Transformation (MDTU) in 2019, as well as through the development of Diia.Business (including offline Diia.Business support Centres across Ukraine and in Warsaw). Policy co-ordination was enhanced, notably through Chief Digital Transformation Officers (CDTOs) tasked with implementing digitalisation policy and acting as focal points across layers of government; yet more could be done at the local level, better defining CDTOs' role in SME digitalisation and ensuring regular public-private exchanges. Moreover, awareness-raising of the benefits of digitalisation and support services in smaller cities and villages, as well as peer learning between SME managers, would help strengthen the approach and bridge territorial gaps.

- **Developing comprehensive support services for SME digitalisation:** While the government is already taking several measures to enhance SME digitalisation, small firms are still facing a variety of challenges: they are often unaware which digital tools exist, how these can benefit them, which digital skills their workforce needs, or which support services are available. SMEs often lack the financial means to invest into digital technologies. To help them overcome these challenges, the Entrepreneurship and Export Promotion Office (EEPO) provides several online support services through Diia. Still, SMEs lag behind regarding the uptake of digital tools and lack programmes tailored to their specific needs. To support SMEs with different levels of digital maturity and in different sectors, the Ukrainian government could hence consider developing a comprehensive support programme, including an online digital maturity self-assessment tool for SMEs, sector-specific digitalisation support, and connecting SMEs with independent, private consulting service providers for in-depth consultations. Regarding financial support for digitalisation, while the government's budget goes towards defence and current circumstances do not allow to dedicate extensive funding to SMEs' digital transformation, certain co-financing mechanisms might still be viable, especially looking towards Ukraine's recovery and reconstruction. The government could further consider introducing post-war incentives for SMEs to invest into their digital transformation in the long-term, e.g., through vouchers, loans and (co-financed) grants.
- **Leveraging digitalisation to tackle war-related challenges and plan for the recovery:** Focusing on some of the war-related challenges, this section delves deeper into e-commerce as a way to alleviate the impact of trade disruptions, and digital security for SMEs to better manage risks and foster overall cyber resilience. On the one hand, Ukraine's e-commerce market has been growing, fostered by policy measures and increasing alignment with EU standards; but data reveal that SMEs' use of e-commerce remains limited, with only 4.2% of small ones making online sales, vs. 10.5% of large companies. Targeted support, notably to help them reduce shipping costs and time, raising awareness of market opportunities and keeping track of changing laws and regulations would be beneficial. On the other hand, while Ukraine has shown cyber resilience, limited strategy implementation and stakeholder co-operation has impeded the effectiveness of digital security policies. SMEs remain particularly exposed to digital security risks, and their overreliance on Russian software such as 1C increases their vulnerability, in a context where the country has been facing increasing Russian and suspected Belarusian cyberattacks. Ukraine could therefore consider measures to help small firms better manage digital security risks, while increasing stakeholder co-operation and strengthening the policy framework in the longer term.

Table 2. Summary of policy recommendations: Way forward

| Policy area                     | Recommendation   | Proposed measures  |  |  |
|---------------------------------|--|--|--|--|
|                                 |  | Short-term   | Medium-term  | Long-term  |
| Ecosystem                       | Refine the policy framework to foster the digital transformation of (non-IT) SMEs              | Streamline measures for SME digitalisation into the new national SME Strategy                    |  |  |
|                                 |  |  | Consider addressing digitalisation, including that of SMEs, in regional development strategies |  |
|                                 | Strengthen the institutional framework for SME digitalisation across levels of government      | Strengthen co-ordination mechanisms to design and implement policies at all levels, esp. locally |  |  |
|                                 |  |  | Foster peer learning and integrate SMEs in digitalisation networks                             |  |
|                                 | Raise awareness of digitalisation benefits and support services in villages and smaller cities |  |  |  |
| Digitalisation support services | Account for SMEs' diverse digitalisation needs in terms of digital maturity and sectors        | Develop a digital maturity self-assessment tool for SMEs   |  |  |
|                                 |  | Adopt a sector-specific digitalisation approach  |  |  |
|                                 |  |  |  | Connect SMEs with independent, private consulting service providers for in-depth consultations |
|                                 | Consider financial support services for SME digitalisation                                     |  | Consider co-financing tools to incentivise SMEs to go digital                                  | Consider additional incentives in post-war Ukraine (vouchers/ loans/ grants)                   |
| Wartime challenges              | Help SMEs tap into the potential of e-commerce   | Help SMEs reduce shipping costs & time (e.g., warehouses in target markets)                      | Step up direct support for SMEs  | Raise stakeholders' awareness of new laws and regulations                                      |
|                                 | Equip SMEs with the necessary tools to tackle digital security challenges                      | Help SMEs protect themselves from digital security risks   | Step up co-operation across all stakeholders to enhance capacity                               | Strengthen policy framework on cyber / digital security  |



# 1 Setting the scene

---

This chapter provides a brief overview of Ukraine's economic context and SME sector. It takes stock of the country's efforts and achievements in accelerating the digital transformation in recent years, while highlighting that smaller firms have not yet fully reaped the benefits of digitalisation. Digitalisation could be further leveraged to enhance resilience and recovery.

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## Introduction

Even in the context of Russia's full-scale invasion, Ukraine's government remains committed to helping small and medium-sized enterprises (SMEs) operate in wartime conditions and further enhancing their digital transformation. In line with the *OECD Declaration on Enhancing SMEs and Entrepreneurship Policies for Greater Resilience and Successful and Green Digital Transitions*, this paper aims to support these efforts and to help SMEs' tap into the full potential of digitalisation for economic growth and recovery. To this end, it analyses the current state of play of SME digitalisation in Ukraine, identifies remaining gaps and suggests policy options, building on Ukraine's existing efforts, to help SMEs leverage digitalisation for productivity, resilience and recovery. It also aims at helping Ukraine come closer to EU and OECD standards and to integrate into the EU's Digital Market.

Specifically, this paper outlines ways to accelerate Ukraine's digital business transformation by i) building an effective ecosystem for SME digitalisation at the national and sub-national level, to ensure a national coverage of support services, ii) strengthening the support services for SME digitalisation, including developing a self-assessment tool for businesses, and iii) developing specific measures to help firms tap into the potential of digital tools to tackle war-related challenges, increase their resilience, and recovery from recent economic shocks. This first chapter discusses the overall context in which SME policy is now delivered, while the subsequent three chapters look at each of these priorities in turn.

## Ukraine has withstood the Russian invasion and is operating as a war economy

### ***Ukraine's economy has faced successive shocks over recent years***

Russia's full-scale invasion of Ukraine has inflicted severe damage to the Ukrainian economy and caused a humanitarian catastrophe. Nonetheless, Ukraine has withstood unrelenting aggression and continues to manage a struggling war economy by building on achievements and lessons of previous years.

In 2013-2014, Ukraine's state and society were transformed by the Revolution of Dignity. Thereafter, Ukraine committed to an ambitious reform agenda closely monitored by international institutions and a vibrant and perseverant civil society. This, however, was not without setbacks, e.g., through challenges to democratic and governance reform or persistent corruption and shadow economies (Ash et al., 2017<sup>[1]</sup>). Simultaneously, the economy experienced a severe recession. Following Russia's illegal annexation of Crimea and its fomenting of armed conflict in Eastern Ukraine, Ukraine was on the brink of economic collapse. GDP contracted by 6.8% in 2014 and 9.9% in 2015. The hryvnia lost approximately 70% of its value. Industrial production plunged by 70%. With the war in Eastern Ukraine and disruptions of trade with Ukraine's former largest trading partner, Russia, the country faced a grim reality. To meet these challenges, IMF, World Bank, and EBRD support provided Ukraine with loans and aid packages that were contingent on reforms. This significantly encouraged progress and promoted the implementation of far-reaching structural reforms including, *inter alia*, decentralisation, anti-corruption, banking, energy, and public procurement. Still, progress was persistently threatened by the war in Donbas, by domestic resistance from powerful interest groups, and by a deep-rooted shadow economy.

Nevertheless, the various reforms implemented between 2015 and 2020 bore fruit, as reflected in macro-economic indicators and international rankings. For instance, Ukraine's performance on the Worldwide Governance Indicators improved, particularly in terms of political stability and regulatory quality (OECD, 2022<sup>[2]</sup>). Between 2015 and 2019, the share of the population living below the nationally defined subsistence income level fell by over half, from 52% to 23% (OECD, 2022<sup>[2]</sup>). This progress was sustained by Ukraine in the following years and enabled the country to emerge from the COVID-19 crisis in better shape than projected.

However, Russia's full-scale invasion of Ukraine in February 2022 ended the rebound. Real GDP shrank by 29.1% in 2022, while inflation reached 20.2%. The country and its business sector experienced calamitous destruction of infrastructure and property, significant losses of human capital through internal and external migration<sup>1</sup>, disruption of supply chains, difficulties with logistics, cuts in export earnings and compression of fiscal revenues. Aside from severe psychological trauma and both emotional and physical losses, the population experienced soaring unemployment rate. It has been estimated to have risen to 18.4% in 2022, with a forecast of 18.9% in 2023, affected by the loss of jobs due to further destruction of production facilities (Government of Ukraine, 2024<sup>[3]</sup>).

The battle to sustain Ukraine's economy is being fought on multiple fronts. With the introduction of martial law, the National Bank of Ukraine introduced a fixed exchange rate and capital controls, which proved essential to preserving macroeconomic and financial stability (German Economic Team, 2023<sup>[4]</sup>). Ukraine's economic situation has improved since July 2022. The contraction that year was shallower than initially expected (a 40 to 50% downfall was initially projected)<sup>2</sup>. After inflation peaked at 26.6% in December 2022, it dropped to 4.5% year-on-year in January-February 2024 (Ministry of Finance of Ukraine, National Bank of Ukraine, National Securities and Stock Market Commission, Deposit Guarantee Fund, n.d.<sup>[5]</sup>). Moreover, real GDP growth for 2023 has been estimated at 5.0%, far higher than expected at the start of the year, as households and businesses have adjusted to the challenging circumstances (IMF, 2023<sup>[6]</sup>; Betyly et al., 2023<sup>[7]</sup>; IMF, 2024<sup>[8]</sup>). Although the economy somewhat recovered in 2023 due to stronger fiscal stimulus, slowing inflation and international aid, real GDP is expected to recover to its 2021 level by 2027-2031 (EIU, 2024<sup>[9]</sup>).

This heightened growth bolstered external trade, as evidenced by the latest figures from the last quarter of 2023 showing a decrease in imports from EUR 7.9 billion to EUR 5.5 billion compared to the same quarter in 2022, while exports surged from EUR 8.8 billion to EUR 10 billion. This increase was notably driven by sunflower oil imports from the EU, which rose by 8 percentage points above the level recorded in December 2021 (Eurostat, 2024<sup>[10]</sup>). Furthermore, the current account deficit is expected to narrow down, from 5.5% of GDP in 2023 to 4.7% in 2024, before averaging 5% between 2025 and 2028 (EIU, 2024<sup>[9]</sup>).

Prior to the invasion, Ukraine held the position as the world's foremost exporter of sunflower oil, the third-largest maize and rapeseed exporter, the fourth-largest barley exporter, and the fifth-largest exporter of wheat (Kyiv School of Economics, 2022<sup>[11]</sup>). Current forecasts show that a portion of the agricultural losses experienced in 2022 is expected to be recuperated between 2024 and 2028, with the aim of reaching pre-war levels by 2028. This forthcoming growth is facilitated by initiatives geared towards enhancing trade, particularly through the seaports that were closed due to Russia's war. The "Black Sea Grain Initiative" unblocked key seaports and the EU mobilised EUR 1 billion for the "Solidarity Lanes" initiatives to increase global food security and support for Ukraine's economy between mid-2022 and mid-2023 (EU NeighboursEast, 2022<sup>[12]</sup>). Russia's failure to renew the grain deal in July 2023 led to further trade disruptions but by end-2023 volumes exported via the western Black Sea were overtaking pre-war levels. International aid has become more regular and more predictable in response to Russia's aggression (German Economic Team, 2023<sup>[4]</sup>). Foreign budget support commitments reached around EUR 39 billion in November 2023 (Government of Ukraine, 2023<sup>[13]</sup>). Ukraine's budget deficit has widened, with estimates for 2023 ranging between 19% and 26%, requiring substantial international financial support (German Economic Team, 2023<sup>[14]</sup>; IfW, 2023<sup>[15]</sup>; IMF, 2023<sup>[16]</sup>).

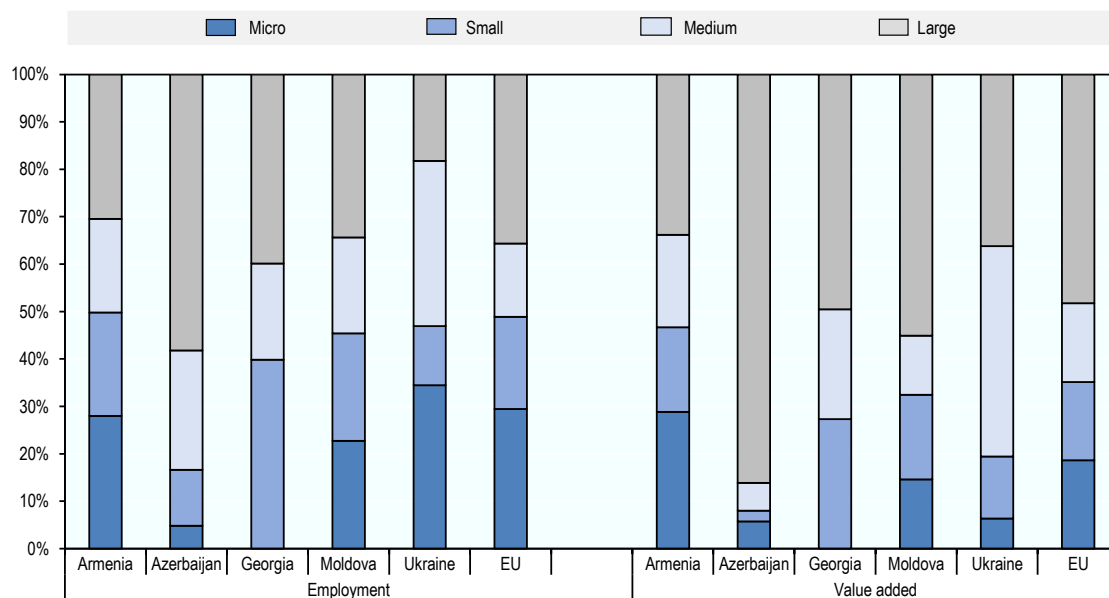
Financial support from international financial institutions and foreign partners has provided a lifeline for the government, assisting in managing the budget deficit and supporting the external position. Overall, the IMF and Ukrainian authorities estimate that Ukraine will require financial assistance ranging from USD 31.9 to USD 37.3 billion in 2024 (approx. EUR 29 to EUR 34 billion) to ensure macroeconomic stability, maintain key public services and restore critical infrastructure (Government of Ukraine, 2023<sup>[13]</sup>; IMF, 2023<sup>[17]</sup>).

Looking ahead, the government remains committed to further reforms (German Economic Team, 2023<sup>[4]</sup>; Government of Ukraine, n.d.<sup>[18]</sup>). An initial Draft Recovery Plan was prepared in 2022. More recently, the Cabinet of Ministers of Ukraine granted approval for the Ukraine Plan in mid-March 2024, serving as the foundational framework for the utilization of financial assistance provided by the EU to Ukraine from 2024 to 2027. This plan delineates a strategy for implementing structural reforms within the public sector aimed at fostering a conducive business climate and promoting entrepreneurship. It outlines measures to prioritize sectors poised for rapid economic growth, with a comprehensive set of 150 indicators across 69 reform areas slated for implementation by 2027 – with a view to advancing Ukraine’s European integration efforts (Government of Ukraine, 2024<sup>[19]</sup>).

### ***SMEs bear a disproportionate impact of Russia’s invasion***

In 2022, SMEs made up 99.9% of all enterprises in Ukraine’s business sector, 96.5% of them being micro enterprises. They accounted for 81.7% of the total business employment and generated 67.5% of turnover in the business sector in 2022. These values exceed the contribution of the SME sector to total employment and value added in other Eastern Partner (EaP) countries and are also above EU levels (Figure 1.1). Ukrainian SMEs, however, remain concentrated in low-value-added sectors. Most still operate in wholesale and retail trade (38.2%), despite a decrease in recent years. Conversely, they play an increasing role in the ICT sector, which accounted for 17.1% of SMEs in 2022, a 7.6 percentage-point increase on 2018 (Figure 1.2).

**Figure 1.1. SMEs’ contribution to employment and value added, 2022**

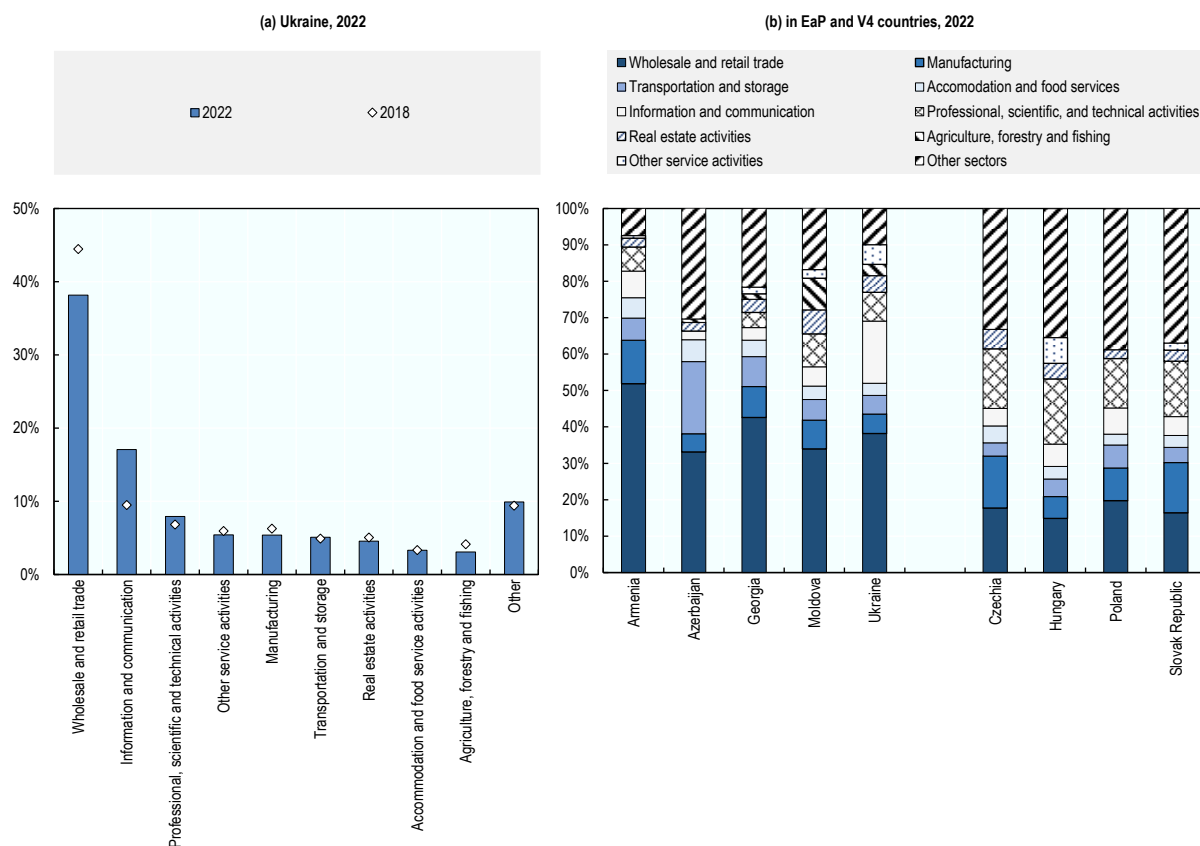


Note: The data presented for small enterprises in Georgia also encompasses information pertaining to microenterprises. Figures labelled as value added for Moldova and Ukraine represent turnover. Data attributed to employment denote the number of employees except for Georgia and Ukraine, which display the number of persons employed.

Source: National statistical offices for EaP countries, (Di Bella, Katsinis and Lagüera-González, 2023<sup>[20]</sup>).

Figure 1.2. Sectoral distribution of SMEs in Ukraine

Breakdown of SMEs by type of economic activity



Note: **Panel a:** The wholesale and retail trade sector also includes the repair of motor vehicles and motorcycles. The sector categorised as other service activities corresponds to the S section within the list of NACE codes. Other sectors include administrative and support service, construction, human health and social work, education, arts, entertainment, and recreation, financial and insurance, water supply, sewerage, waste management and remediation, electricity, gas, steam and air conditioning supply, mining, and quarrying activities. **Panel b:** Other sectors include the “other” sectors cited in the left chart and other service activities for Azerbaijan, Czechia, and Poland, as well as agriculture, forestry, and fisheries for Armenia and V4 countries, as the breakdown for these categories are not available.

Source: (State Statistics Service of Ukraine, n.d.<sup>[21]</sup>), OECD calculation based on data from National Bureau of Statistics of Eastern Partner Countries; Eurostat for V4 countries.

The growth of the SME sector has been supported by various policy interventions, including the dedicated SME Strategy 2018-2020 and related Action Plan, built around six strategic objectives: i) creating a favourable environment for SMEs, ii) improving access to finance for SMEs, iii) simplifying SME tax administration, iv) promoting entrepreneurship culture and developing entrepreneurial skills, v) promoting SME export/ internationalisation, and vi) improving competitiveness and developing innovation potential of SMEs. A dedicated SME agency was created, since transformed into the Entrepreneurship and Export Promotion Agency (EEPO). The support provided was considerably enhanced by the launch of Diia.Business<sup>3</sup> one-stop-shop, encompassing a myriad of resources for entrepreneurs, and Diia.Business support centres established in several regions across the territory. These achievements are reflected in the latest version of the OECD *SME Policy Index*, published end 2023 – with Ukraine increasing its scores on the 12 dimensions of the assessment since 2019/2020, albeit to varying degrees. Progress was made especially with regards to entrepreneurial learning, women’s entrepreneurship, SME skills, and SME internationalisation (Box 1.1). Public and private training initiatives for different target groups were

enhanced, while SMEs’ access to finance has been facilitated through the government’s “5-7-9%” loans programme.

**Box 1.1. The OECD SME Policy Index: Eastern Partner countries 2024 – Building resilience in challenging times**

**The Small Business Act for Europe and the SME Policy Index**

The SME Policy Index is a unique benchmarking tool to assess and monitor progress in the design and implementation of SME policies against EU and international best practices. It embraces the priorities laid out in the EU’s *SME Strategy for a sustainable and digital Europe* and in the *OECD Recommendation on SME and Entrepreneurship Policy*. It is structured around the ten principles of the Small Business Act for Europe.

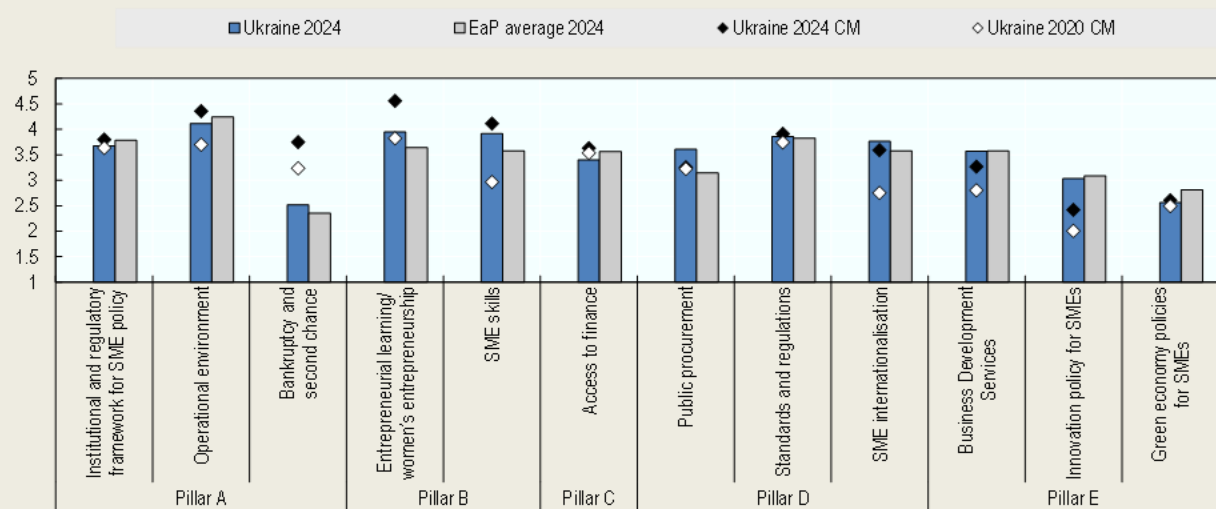
First created in 2012, it is conducted in the EaP countries every four years. The 2024 edition tracks the progress made since 2020 and offers the latest key findings on SME development and related policies in the EaP, identifying emerging challenges and providing recommendations to address them. The updated methodology includes a new pillar offering a deeper analysis of SME digitalisation policies.

**2024 findings for Ukraine**

Despite successive shocks, Ukraine has achieved considerable improvements with regards to the business environment for SMEs. Scores have improved in all twelve dimensions, with particular strides in Pillar B, Entrepreneurial Human Capital, on the operational environment and SME internationalisation. Despite progress, Ukraine’s performance is lower on bankruptcy and second chance, innovation, and green policies, where more efforts should be made moving forward.

**Figure 1.3. SME Policy Index scores for Ukraine**

Country scores by dimension, 2024 and 2020 vs. 2024 comparable methodology



Note: CM stands for comparable methodology.  
Source: (OECD/EBRD, 2023<sup>[22]</sup>).

Nevertheless, SMEs have been severely affected by successive crises over the years – particularly the Russian invasion. Approximately 64% temporarily halted or ceased their business activities following the onset of the invasion. Constant attacks on critical infrastructure, power shortages, and blackouts, continue to hinder SMEs' economic recovery, and businesses are faced with, *inter alia*, a decrease in business activity, income, and the number of orders due to population movements, lower spending capacity; cost-cutting, labour outflows due to mobilisation and migration, damage to energy infrastructure and partial loss of equipment (Dolmatova, 2023<sup>[23]</sup>). In most cases, reported financial losses amount to up to USD 100,000, with disparities across sectors and regions – in Eastern and Southern regions of Ukraine, SMEs have experienced losses 1.5 times greater than those in the Western part of the country. Over 13% of firms have fully or partially relocated since February 2022 (Center for Economic Recovery, Advanter Group, 2024<sup>[24]</sup>).

However, SMEs have demonstrated resilience, with 84% of temporarily suspended businesses having successfully reinstated their operations within six months, and only 9.6% of suspended businesses are facing the risk of closure as of October 2023. SMEs' gradual recovery has notably been fostered by improvements in energy supply, external financial assistance, growth in construction, trade, agriculture, and the processing industry. Additionally, positive future growth forecasts are underpinned by strategic initiatives such as the opening of alternative trade corridors, leveraging international financial support, and a concerted effort toward economic revitalization and sustainable growth (Center for Economic Recovery, Advanter Group, 2024<sup>[24]</sup>).

Moreover, the authorities have quickly reacted to support SMEs, adopting specific policy measures to help them in these dire circumstances. Box 1.2 provides some selected examples.

Despite active hostilities, including ongoing Russian missile and drone attacks on infrastructure and other buildings and the occupation of around 16% of the country's territory, businesses continue to contribute positively to Ukraine's overall economic performance. Enterprises in the field of electronic communications, notably, continue to provide services to the population and have retained most of their jobs. The growing importance of Ukraine's Information and Communication Technology (ICT) sector is further outlined in the following section.

### Box 1.2. Selected examples of Ukraine's policy responses to support SMEs during the COVID-19 crisis and the full-scale invasion

In response to the crises of recent years, various policy measures were introduced to support SMEs.

#### Financial support

In May 2020, the government revised the Economic Stimulation Program to provide anti-crisis measures to facilitate access to finance for SMEs. Financial assistance has been provided *via* the Business Development Fund (BDF). Other initiatives have included:

- The “5-7-9” State Programme, with credit guarantees and partial compensation of interest on the loan being the main instruments. In 2020, the programme granted UAH 16.5 billion (approx. EUR 397 million) in credit and loans to 6,957 SMEs. The government provided grants via the Diia portal based on the number of employees hired: UAH 150 thousand (if +1 worker will be hired) or UAH 250 thousand (if +2 employees) (approx. EUR 3,600 or EUR 6,000, respectively). In 2022, there were 12 waves of micro-grant applications, each lasting 2 weeks. Over UAH 542 million of micro-grants were issued (approx. EUR 12.9 million).
- The special state support programme eAid launched in December 2021 with the two central purposes of promoting the anti-COVID vaccination campaign and to support businesses that were most impacted by quarantine measures. The government provided citizens with UAH 1,000 (~EUR 25) that they could spend only on businesses that were hit especially hard by the pandemic. New cashback and credit cards functioned in a similar way. With the beginning of Russia's invasion, eAid rewards can be spent on anything. In March 2022, an additional UAH 6,500 were added through the eAid system to every employee and entrepreneur in the most war-torn areas. This service has been used by over 9 million Ukrainian citizens. Today, eAid is also being used to foster the rebuilding process (Knight, 2022<sup>[25]</sup>).

#### Regulatory flexibility

The government introduced credit holidays, a special grace period for servicing loans during the period of the quarantine for the population and businesses; and tax reductions, exempting businesses from paying certain types of taxes during the quarantine period.

#### Workforce support

Support to SME employers and employees was provided through partial unemployment assistance. Quarantine-related changes were introduced to the Labour Code to regulate the new reality of remote work, flexible schedule, and salaries.

#### Market support and measures to improve access to digital infrastructures

The Diia.Business project was introduced at the beginning of 2020, right before the pandemic, providing online services and information on support programmes for SMEs. The project is further outlined below and provided over 5,650 free consultations to entrepreneurs by the end of 2021. These covered legal, tax, business planning and modelling, as well as business digitalisation issues.



## Against this backdrop, Ukraine’s ICT sector has been developing, fostering economic growth and providing avenues for increased resilience and recovery

Digital technologies not only offer a vast potential to enhance firm productivity, but they can also help enhance resilience and support economic recovery in times of war (OECD, 2021<sup>[26]</sup>). Digital tools provide better and quicker access to information and facilitate communication between staff, suppliers, and networks, hence reducing transaction costs. They can also support SMEs in integrating into global markets through facilitating transport and border operations and enhancing the overall scope of trade services. Moreover, they can facilitate access to resources, including finance (e.g., through peer-to-peer lending, training, and recruitment channels), foster innovation assets, and enable firms’ potential to analyse their own functioning to drive improved performance, e.g., through data collection (OECD, 2021<sup>[26]</sup>).

Beyond this, digitalisation can be a tool to promote good governance and to overcome corrupt practices. Specifically, it can improve the work of public governance institutions and can bring governments closer to citizens and business by improving public sector efficiency as well as the effectiveness of policies (OECD, 2014<sup>[27]</sup>). This is especially important for Ukraine’s post-war recovery, as well as for the country’s path towards EU accession (European Parliament, 2023<sup>[28]</sup>; European Parliament, 2023<sup>[29]</sup>).

### **Policy measures encouraged the growth of the ICT sector already before the war**

In recent years, the digital transformation has become a priority for the government. Already before the war, the MDTU was committed to, *inter alia*, developing e-government, increasing connectivity, and promoting digital skills. Ukraine has digitalised several of its public services, particularly following the launch of the “State-in-a-smartphone” initiative in 2019 (Bandura and Staguhn, 2023<sup>[30]</sup>; Aleksenko, 2022<sup>[31]</sup>). The new Ministry of Digital Transformation was also created in this regard (Bandura and Staguhn, 2023<sup>[30]</sup>). Considerable progress was made to advance digital literacy, with the goal of reaching 6 million Ukrainians with digital development programmes being achieved end 2023 (Siutkin, 2024<sup>[32]</sup>). Table 1.1 maps some of the concrete measures implemented to accelerate the digital transformation, broken down by the policy areas structuring the OECD Going Digital Framework.

**Table 1.1. Selected policy measures taken by Ukraine to accelerate the digital transformation, by policy areas of the OECD Going Digital Framework**

| Policy Area | Focus   | Selected examples of key policy measures  |
|-------------|---|---|
| Access      | Broadband connectivity  | MDTU’s subvention programme providing broadband to rural areas – as of 2023, approx. 3,000 villages and 7,500 social institutions were connected, providing nearly 1,000,000 Ukrainians with Internet access) Starlink, Satellite internet, and power generators are used to ensure internet access<br>In collaboration with mobile operators, the government launched a national roaming service allowing to easily switch between networks should signals be blocked; since March 2022, ISPs connected hundreds of bomb shelters to fixed Internet or Wi-Fi facilities and continued to expand their networks daily.<br>Free roaming allowing 4,5 million Ukrainians in the EU to call/use mobile internet at free/affordable rates |
| Use         | Use of internet and digital tools by businesses and individuals | Diia offers around 100 public services online (including both transactional and informational services) and allows to access 14 types of digital documents.<br>The goal of providing 6 million Ukrainian citizens with digital skills training to use digital tools has been achieved (end 2023) through the Diia.Digital Education initiative.<br>SpaceX-operated systems help soldiers coordinate military actions and stay in touch with their families.   |
| Innovation  | ICT investments, business, and R&D                              | Use of innovative technologies in urban development management systems (“Smart Cities”: Kyiv, Ivano-Frankivsk, Lviv, Mukachevo, Drohobych, Zaporizhzhia, Poltava, Ternopil, and Kharkiv)<br>Changes in the legal system enhance property rights further support innovation activity in Ukraine.<br>The High Court on Intellectual Property of Ukraine (2017) and a special intellectual property committee were established to advise the Cabinet of Ministers on policies and coordination of actions in this regard (since 2018).<br>Ukraine is a part of the Horizon Europe, CEF, Digital Europe and Euratom Programmes for innovation.  |

| Policy Area     | Focus  | Selected examples of key policy measures  |
|-----------------|--|---|
| Jobs            | ICT-intensive jobs, digital-intensive sectors  | Diia.City provides incentives and job opportunities in the IT sector (including, e.g., a preferential tax system).<br>MDTU launched the “IT Generation”-project (2022) providing free training on IT topics at IT schools across Ukraine. This project has encouraged 1,877 students to enhance their IT skills and helped them find employment in the IT sector.<br>MDTU and EEPO work towards increasing digital skills amongst citizens, according to type of employment.  |
| Society         | Citizens' use of internet and digital tools; Digital skills                                | Diia.Digital Education provides digital skills trainings and tests and promotes the use of digital tools; Measures taken to equip Ukrainian refugees abroad with digital skills, primarily by neighbouring countries (especially Poland and Slovakia) to enhance their employability either in the host country or in Ukraine. Ukraine provides different digital competence frameworks for skills assessment of entrepreneurs and youth (EntreComp4Youth, EntreGram4Youth, and DigComp4Entrepreneurs), enabling them to boost their competitiveness and allowing them to prove their skills on the labour market.  |
| Trust           | Safety of personal information and privacy; Digital security concerns; Consumer Protection | Efforts to align with EU standards (e.g., on identification, authentication and trust services).<br>Diia offers self-assessment tool on cyber security skills (Cybergram) and for entrepreneurs on data protection;<br>Ukraine's Consumer Protection Authority monitors that business entities provide accurate information on their websites, and can, in case of non-compliance, block the respective websites.<br>New law (signed in July 2023) ensures compliance with EU consumer protection rules and gives increased power to consumer advocacy groups;<br>International co-operation, e.g., with Google to provide 5,000 security keys to civil servants.   |
| Market openness | E-commerce; Digitally deliverable services   | Ukraine has made strides in approximating its regulatory framework and standards with that of the EU; internal market treatment in the telecommunication sector is a priority under the Association Agreement. Planned adoption of a “regulatory package for the single telecommunications market” with the EU; EEPO provides export readiness tests, advisory services, trainings, and business matchmaking/ networking services;<br>The Ukrainian IT company EVO with the support of MDTU launched <i>Made With Bravery</i> , an e-commerce marketplace for products made in Ukraine, by Ukrainian entrepreneurs.<br>The unified state information web portal “Single Window for International Trade” is available for registered traders and customs brokers through using digital keys. |

Source: (ITU, 2022<sup>[33]</sup>; The World Bank, 2020<sup>[34]</sup>; OECD, 2022<sup>[35]</sup>; European Commission, n.d.<sup>[36]</sup>; CSIS, 2023<sup>[37]</sup>; Zini, 2023<sup>[38]</sup>; Bandura and Staguhn, 2023<sup>[30]</sup>; OECD, 2022<sup>[39]</sup>; Freedom House, 2022<sup>[40]</sup>; American Chamber of Commerce, Ukraine, 2023<sup>[41]</sup>) (UNDP, 2023<sup>[42]</sup>; Udovyyk, Moskalenko and Kylmynyk, 2020<sup>[43]</sup>; WTO, 2024<sup>[44]</sup>; ITU, 2021<sup>[45]</sup>)

Diia is one of the main internationally recognised achievements of recent digitalisation efforts in Ukraine. As such, Ukraine is sharing its experience with Diia, for instance, with Estonia, which is currently developing its own version, “mRiik” (Ingram and Vora, 2024<sup>[46]</sup>). It was already developed before the Russian invasion to ensure service provision, and quickly expanded as illustrated in Box 1.3.

### Box 1.3. Ukraine's Diia flagship project

The Diia ecosystem offers e-government and online services via i) the Diia web portal; ii) the Diia mobile app; iii) Diia.Digital Education; iv) Diia.Business; v) Diia.Engine; vi) the Diia Open Data Portal; vii) offline Diia.Business Centres; and viii) the Diia.City preferential tax regime. The Diia application is part of the “state in a smartphone”-initiative and was launched in 2020. It builds on the interoperable, decentralised data exchange system, “Trembita”<sup>4</sup>. In 2022, more than 75% of SMEs and citizens used the Diia app and only 2% of businesses were unaware of it. As of September 2023, 19.5 million citizens use the app. It offers around 100 public services online, allows to access 14 types of digital documents (including digital ID, driving license, tax documents and tax number, and student IDs) as well as 30 public service. Table 1.2 provides an overview of some of Diia's components.

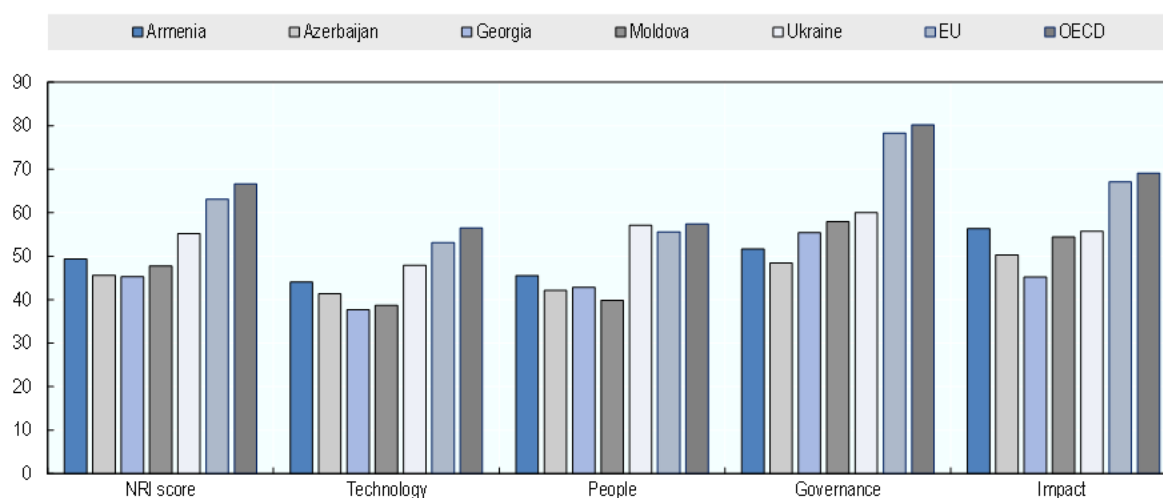
Table 1.2. The Diia ecosystem

| Diia  | Launch year   | Tools and KPIs  |
|---|---|---|
| Diia.gov  | 2020  | Diia.gov offers a wide variety of e-government services, including i) online services for families (e.g., eBaby, registrations of marriages); ii) Legal services; iii) Land, construction, and real estate services (e.g., declarations of damaged property); iv) Waste management and water services; v) e-government services (e.g., online identification documents, birth certificates); vi) Pension services (e.g., pensioners' income certificate); vii) Services for internally displaced persons (e.g., housing loans); viii) Transport services (e.g., licenses for road transport services); and ix) Health services (e.g., COVID-19 vaccination certificates, medical reports, etc.).  |
| Diia.Business (and Diia.Business Support Centres) | 2020  | Diia.Business provides 20 online consultants in 15 different categories; 14 support centres, 13 around Ukraine and one abroad in Warsaw, Poland) <sup>5</sup> . It helps to set up and manage a business, including initiatives tailored to the different stages of business growth, e.g., for aspiring entrepreneurs.<br>By 2023, more than 20,000 consultations were provided to entrepreneurs (covering legal, tax, business planning and modelling as well as business digitalisation issues). Diia.Business also provides information on exports; allows entrepreneurs to submit their tax declaration using Diia.Signature; helps create individual QR codes for entrepreneurs using Diia.QR; offers a test on personal data protection skills for entrepreneurs. The “Partnership Offers”-section provides an extensive overview of over 60 discounts, promotions, and free opportunities from private Diia.Business partners.<br>Further adjustments made during the war (see below).   |
| Diia.Digital Education                            | 2020<br><br>(updated version launched in May 2023 by the MDTU, with the support of Google and the East Europe Foundation) | One-stop-shop for digital skills training in an edutainment format; Features an interactive portal with over 320 lessons and 500 trainings; Offers a self-assessment tool for digital skills, “Digigrams” – national tests for citizens, healthcare workers, public servants, and teachers to assess their digital skills against the EU competencies, the DigComp UA frameworks, as well as the Cybergram and Entregram initiatives. It also includes 5,000+ Diia.Digital Education hubs. Over 165 educational series, 50+ simulators, enabling teachers, parents, and employers to develop the digital skills of their students, children, and employees. The updated version includes a section on reskilling and upskilling to match specific work requirements (offers career-oriented tests and standardised national digital literacy assessments through over 50 distinct, job-specific educational series, catering to diverse professions ranging from SMM specialists to bakers.<br>Approximately 900,000 users have made use of the digital literacy test and around 700,000 have received certification of their digital literacy levels. Overall, 2 million active students use Diia.Digital Education and 3 million certificates have been issued. |
| Diia.City   | 2022  | Offers a preferential tax regime for businesses in the IT sector; applies to all IT companies with Diia.City resident status, as well as their employees and IT specialists.<br>939 companies are Diia.City residents and more than 85% of these have joined Diia.City after the beginning of Russia's full-scale invasion; more than 45,000 personnel are employed through Diia.City.  |

Source: (Vovk, 2023<sup>[47]</sup>; Diia.Business, EEPO, 2022<sup>[48]</sup>; Aleksenko, 2022<sup>[31]</sup>; UNDP, 2023<sup>[49]</sup>; Ingram and Vora, 2024<sup>[46]</sup>), fact-finding exercises conducted in H1 2023.

Overall, these efforts have borne fruit, as reflected in international rankings, e.g., in the Network Readiness Index 2023, where Ukraine continues to lead its income group, appearing in the top 50 – with strong performance on digital literacy (Figure 1.4). It shows high tech-adoption rates among individuals and high adult literacy (which stands at 100), good integration of ICT skills into the education system and good internet access in schools. While these parameters enable Ukraine to demonstrate comparable results to OECD/EU levels on the people-related pillar, the country's scores remain lower than those of EU and OECD member states across most indicators of the index.

Figure 1.4. Network Readiness Index 2023 scores



Note: The NRI is a composite index building on three levels, with the primary level consisting of the four pillars (Technology, People, Governance, and Impact). Technology encompasses the sub-dimensions access, content, and future technologies; People measures the sub-dimensions for individuals, businesses, and governments and their use of and investment into ICT; Governance focuses on ICT outreach through covering the sub-dimensions of trust, regulation, and inclusion; Impact measures engagement with the network economy through the sub-dimensions of economy, quality of life, and SDG contribution. For each level of the NRI, the economy's ranking (out of 134 economies) and individual score (on a 0-to-100 scale) is shown. Source: (Portulans Institute, 2023<sup>[50]</sup>).

### ***Digitalisation not only acts as a driver for economic growth but can be a strong asset for resilience and recovery***

Digitalisation harbours great potential to enhance resilience and recovery in times of crisis. SMEs can especially benefit from this, as their limited financial and human capacities make them particularly vulnerable to shocks (OECD, 2021<sup>[26]</sup>). For instance, COVID-19 highlighted the importance of SME digitalisation and accelerated trends in ICT growth. It demonstrated that digitalised SMEs are more able to adapt to disruptions and to continue their operations during hardship (Bianchini and Kwon, 2021<sup>[51]</sup>; OECD, 2022<sup>[39]</sup>). Digital tools can enhance overall flexibility and adaptability, and they can increase firms' resilience:

- Online payment and marketing systems can help reach new, global customer bases.
- E-commerce allows SMEs to adapt to evolving customer behaviour and online channels can mitigate the loss of in-store shopping.
- Digitalisation can help SMEs strengthen long-term business models, e.g., by providing real-time data about supply chains, ease credit conditions through better credit risk assessment and enabling improvements in energy efficiency.

Russia's large-scale aggression has posed new challenges, generating damage to Internet infrastructure, disruptions in Internet access, impacting the quality of data transmissions and trade, posing increased cyber risks, and spreading disinformation about the war.

Consequently, Ukrainian authorities and businesses have increased their digitalisation efforts, contributing to the country's resilience in wartime (OECD, 2022<sup>[39]</sup>). The invasion has created, among other things, the need to provide internet access despite regular blackouts, as well as to provide new administrative services. A new law was signed during the war to provide government entities with cloud-based IT infrastructure and services reducing corruption risks and budget expenses by streamlining processes (Bandura and Staguhn, 2023<sup>[30]</sup>). Selected examples of measures taken since the start of Russia's full-scale invasion further include:

- **Efforts to ensure continued Internet access:** several measures were implemented to provide Internet access during war and blackouts (e.g., launch of national roaming, i.e., the possibility to switch between mobile operators, to ensure citizens' continued access to communications services). A joint statement was also signed between the EU and Ukraine mobile operators on accessible free roaming, enabling approx. 4.5 million Ukrainians roaming in the EU to call back home and use mobile internet at free or affordable rates.
- **The provision of (new) administrative services online.** The pre-existing e-government platform, Diia, was adapted during wartime. As of December 2023, usage of Diia has increased to 27% (19.8 million users) (Ingram and Vora, 2024<sup>[46]</sup>). With the war, Diia made it easier and quicker for citizens to apply for state benefits and to receive the official status of internally displaced person (IDP) as well as to receive temporary documents in case of lost ID (eDocument) (Horbenko, 2022<sup>[52]</sup>). It further launched a new service of issuing statements about destroyed housing, making it possible to record damage and to apply for financial support from the government directly through the app (Horbenko, 2022<sup>[52]</sup>; Government of Ukraine, 2023<sup>[53]</sup>). The new Diia.Engine low-code platform helps speed up the creation of digital public services and the digitalisation of registries, as it facilitates data exchange through "Trembita" (Ingram and Vora, 2024<sup>[46]</sup>).
- **Helping businesses:** Diia.Business considerably stepped up support, including by offering services (e.g., consulting) to help SMEs relocate to safer regions and to check businesses' connections to Russia and Belarus. Free consultations for relocated businesses were offered from May 2022 to June 2023. In total 20,600 consultations were provided in this timeframe. The new "e-Declaration"-tool further replaces 374 different permits and licenses, facilitating the running of businesses in wartime. Financial opportunities were also enhanced, e.g., with the launch, in summer 2022, of the government's business grant programme *eRobota* as well as a marketplace of financial opportunities - including information on available loans, factoring, government programmes, grant schemes, regional programmes, and international aid - for SMEs struggling financially due to the war (Diia.Business, n.d.<sup>[54]</sup>).
- **The mobilisation of support for the Ukrainian military through online tools.** Diia provides various support measures to the Ukrainian military, including the collection of donations for drones. As a result, tens of millions of UAH have been donated to the Ukrainian Armed Forces and territorial defence (Horbenko, 2022<sup>[52]</sup>). Moreover, the *eEnemy* chatbot plays an important role in gathering data on the location of Russian forces (Horbenko, 2022<sup>[52]</sup>). Beyond this, Diia.TV and Diia.Radio provide official and reliable information even in Ukraine's temporarily occupied regions and the educational series "To Be There" provides mental health support to children suffering from PTSD (Horbenko, 2022<sup>[52]</sup>).
- **Access to humanitarian aid and individual support with the help of online platforms.** The "eDopomoga" platform allows Ukrainians in need to connect to local aid organisations and access donations from people around the world (Leupe, 2022<sup>[55]</sup>; eDopomoga, 2024<sup>[56]</sup>). Ukrainians affected by the war can submit an application with a list of things they need, and benefactors can buy and provide these. Through the "Help Online" feature (launched in April 2022), users can also

pay for a social certificate for the necessary goods so that the application can buy them for themselves. That way, people from abroad can now use the site and provide direct help to Ukrainians (Leupe, 2022<sup>[55]</sup>).

- The **connection of Ukrainian refugees abroad through a phone application**. The “I am Ukrainian” mobile application was launched to unite Ukrainians who were forced to flee the country and offers information on different Ukrainian cultural events abroad as well as community gathering and meetups (Diia, n.d.<sup>[57]</sup>).
- The **register of damaged and destroyed property** in a single database online (eRecovery) (Ingram and Vora, 2024<sup>[46]</sup>). This was created by the Ministry for Communities, Territories and Infrastructure Development of Ukraine (“Ministry of Infrastructure” hereinafter) and contains information on all residential, transport and social infrastructure that was damaged as a result of Russian attacks (Dnipropetrovsk Investment Agency, 2022<sup>[58]</sup>). At the end of 2023, over 37,000 households received compensation for destroyed housing through this initiative and more than 1900 people received digital vouchers to buy a new house (Ingram and Vora, 2024<sup>[46]</sup>).
- **Co-ordinating the reconstruction while enhancing transparency**: a single web portal allows **tracking of the use of public funds** for reconstruction (Spending.gov.ua, 2024<sup>[59]</sup>). A new digital solution, DREAM (Digital Restoration Ecosystem for Accountable Management), was created as a collaborative endeavour of the Agency for reconstruction together with the Ministry of Infrastructure, the Open Contracting Partnership, Transparency International Ukraine, the Better Regulation Delivery Office, and pivotal NGOs within the RISE Ukraine coalition. DREAM’s role is to collect, organize and publish open data on all stages of restoration projects in real time. DREAM is to harmonise crucial statistical insights and project information from diverse digital repositories. By fostering efficiency, transparency, and accountability, DREAM aims to enhance trust among donors, citizens, financial institutions, and enterprises (German Economic Team, 2023<sup>[60]</sup>).
- **Supporting regional development** through the Geoinformation System for Regional Development (GIS). Digital maps that display data on various indicators of regions and communities (population, infrastructure, access to education and healthcare services) will help identify reconstruction priorities (DREAM, 2024<sup>[61]</sup>).
- **Facilitating the rebuilding of buildings** through an e-Cabinet (e-Construction) for Manufacturers of Construction Products as part of the Unified State Electronic System of Construction (USECS). This allows manufacturers to publicise the type of products they offer (e.g., windows, doors, fittings). It also allows the State Inspectorate for Architecture and Urban Planning to verify that manufacturers comply with legal requirements (Open4Business, 2023<sup>[62]</sup>).

These digital initiatives show that digital tools and Ukraine’s ICT sector are a strong force in the economy. The ICT industry remains the country’s only fully operational export sector and has shown steady growth in previous years. IT industry exports reached USD 3.7 billion (approx. EUR 3.4 billion) in the first six months of 2022, a 23% increase on the corresponding period in 2021 (Bandura and Staguhn, 2023<sup>[30]</sup>). This amounted to 47% of total service exports in 2022 (IT Ukraine Association, 2022<sup>[63]</sup>). Moreover, IT companies were able to maintain 95% of contracts and the amount of taxes and fees paid by the IT industry in the first half of the year amounted to UAH 32.6 billion (approx. EUR 7.7 billion) (Kontsevoi, 2022<sup>[64]</sup>). In 2022, export volume of the IT industry increased by USD 400 million (approx. EUR 365 million) compared to 2021 (Tech Ukraine, n.d.<sup>[65]</sup>). By March 2023, the IT export volume increased by 9.7% and brought USD 53 million (approx. EUR 48 million) more to the Ukrainian budget compared to February. This is 15% higher than in March 2022 (Lviv IT Cluster, 2023<sup>[66]</sup>). As of 1 January 2023, the amount of taxes and fees paid by the IT business to the consolidated budget of Ukraine was UAH 32.2 billion (approx. EUR 7.6 billion).

However, since the end of 2023 and throughout 2024, continuing wartime challenges (e.g., difficulties operating in the global market, military drafts, and consequent scarcity of qualified personnel) have taken their toll on IT exports, which have started declining (Visit Ukraine, 2023<sup>[67]</sup>; The New Voice of Ukraine,



2024<sup>[68]</sup>). While the IT sector remains Ukraine's largest exporting industry (The New Voice of Ukraine, 2024<sup>[68]</sup>), much of its perseverance can be traced to many ICT companies delivering from abroad, with their staff having relocated and the company still being registered in Ukraine. As such, throughout 2023, around 25% of employees of Ukraine's main IT companies worked from abroad (Interfax, 2023<sup>[69]</sup>).

Nonetheless, while the devastating consequences of Russia's full-scale invasion reach all corners of society, the government still considers its end to be an opportunity for large-scale reforms and plans a variety of ambitious measures to leverage this and to speed up the post-war recovery through digital progress (Etulian, 2022<sup>[70]</sup>). Digitalisation therefore features prominently in official state strategies and documents, such as MDTU's "Digital4Freedom"-initiative, the initial Draft Recovery Plan (DNRP) prepared in 2022, and the Ukraine Plan superseding the DNRP (Motkin, 2022<sup>[71]</sup>; Ukraine Facility, 2024<sup>[72]</sup>).

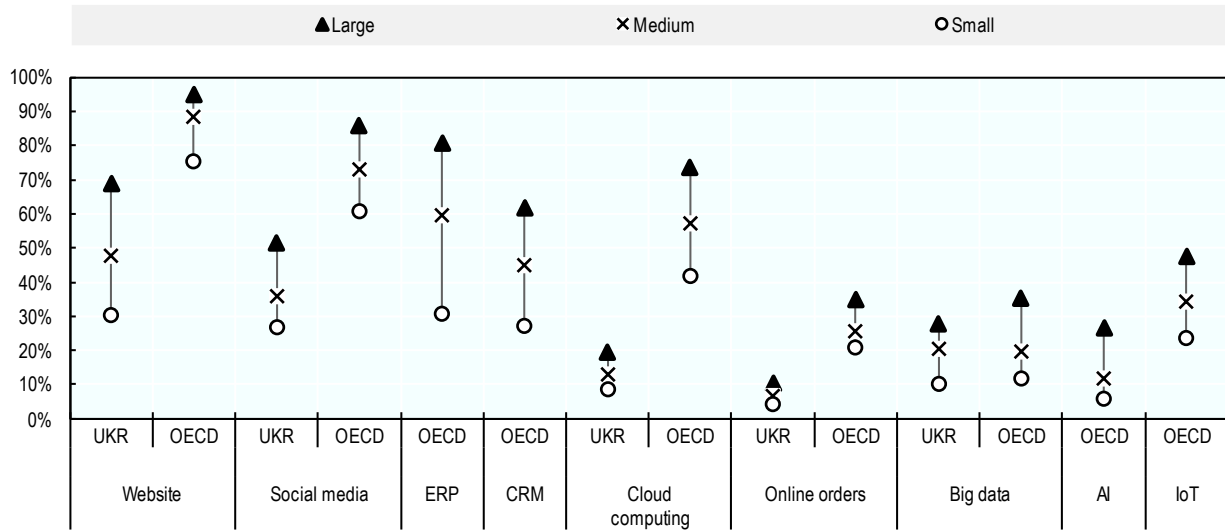
## **Digitalisation could be further leveraged to help Ukrainian businesses increase their productivity and weather crises**

Digitalisation can support the development and recovery of SMEs, in particular. The COVID-19 pandemic has already induced a significant shift towards digitalising Ukrainian SMEs, and digital tools and services have been helping SMEs cope with the impact of the war, as seen above. Some 54% of Ukrainian companies reported that they have invested in digitalisation in 2020-2021, with the highest share being reported by medium-sized firms (Knuth, Saha and Poluschkin, 2021<sup>[73]</sup>).

While digitalisation has proven to be a useful tool that can help firms increase their resilience and weather shocks, its potential has not been fully tapped by SMEs (Bianchini and Kwon, 2021<sup>[51]</sup>; OECD, 2021<sup>[74]</sup>). Data reveal that, while Ukraine's IT sector is advancing rapidly, SMEs in non-IT sectors show limited uptake of digital tools. Significant gaps persist between SMEs and larger firms. For instance, close to 70% of large firms in Ukraine have a website, as compared to only around half of medium-sized (48%) and less than a third of small businesses (30%). Similarly, 52% of large firms use social media, but only around 36% and 27% of medium and small enterprises (respectively) do so. Uptake of more advanced technologies, such as cloud computing, remains rather low among firms of all sizes. Ukrainian SMEs appear to lag OECD peers in technology adoption – apart from big data, where Ukraine and OECD peers show comparable adoption levels (Figure 1.5). Ukraine is the only EaP country offering that range of data insights on businesses' uptake of digital tools, with a methodology comparable to that of the OECD – collecting data on Enterprise Resource Planning (ERP), Customer Relationship Management (CRM) and Artificial Intelligence (AI) use, for instance, could complement the current approach.

**Figure 1.5. Diffusion rates of digital technologies, by technology and enterprise size class**

Percentage of enterprises using the technology, 2022 or latest year available



Note: Data not available for Ukraine on use of ERP and CRM systems, as well as AI and IoT. Data refer to enterprises with 10 persons employed or more. 2022 data for social media, cloud computing, and online sales for Ukraine; 2021 for websites and big data for Ukraine. 2021 data for OECD values. Adapted from OECD (2021), The Digital Transformation of SMEs.  
 Source: OECD ICT Access and Usage by Businesses Database, Ukrstat.

SMEs have not yet fully reaped the benefits offered by digital tools. Accelerating their digitalisation would help them become not only more productive but also more resilient, and it would further prepare them for post-war developments. SMEs have great potential to be drivers of innovation and are key for Ukraine to “build back better”. In this sense, fostering digitalisation bears the potential of achieving the short-term goal of post-war recovery as well as long-term business modernisation. Moreover, if left unaddressed, persisting digital divides between SMEs and larger firms risk further harming economic growth and widening inequalities.



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## Notes

<sup>1</sup> At the end of 2023, 14 million Ukrainians had fled their homes – 5.1 internally, and 6.2 million across Europe (Ingram and Vora, 2024<sup>[46]</sup>).

<sup>2</sup> Information retrieved through fact-finding exercises conducted in H1 2023.

<sup>3</sup> Diia comes from the Ukrainian “Derzhava i Ya”, which translates to “the State and Me”

<sup>4</sup> “Trembita” is a single interoperable system of public registries. It was established by Cabinet Decree in 2018 and underpins seamless e-government services as well as prevents the duplication of registries.

<sup>5</sup> The number is currently reduced to 12 following the temporary closure of the Kharkiv and Mykolaiv Centres due to the war.





# **2** **Building an effective ecosystem for SME digitalisation at the national and sub-national level**

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This chapter analyses the institutional and policy framework implemented by Ukraine at the national and subnational level to support SME digitalisation, looking at 1) the strategic policy approach Ukraine has been developing over the past years, and 2) the different stakeholders involved in digitalisation policies across the Ukrainian territory and co-ordination efforts.

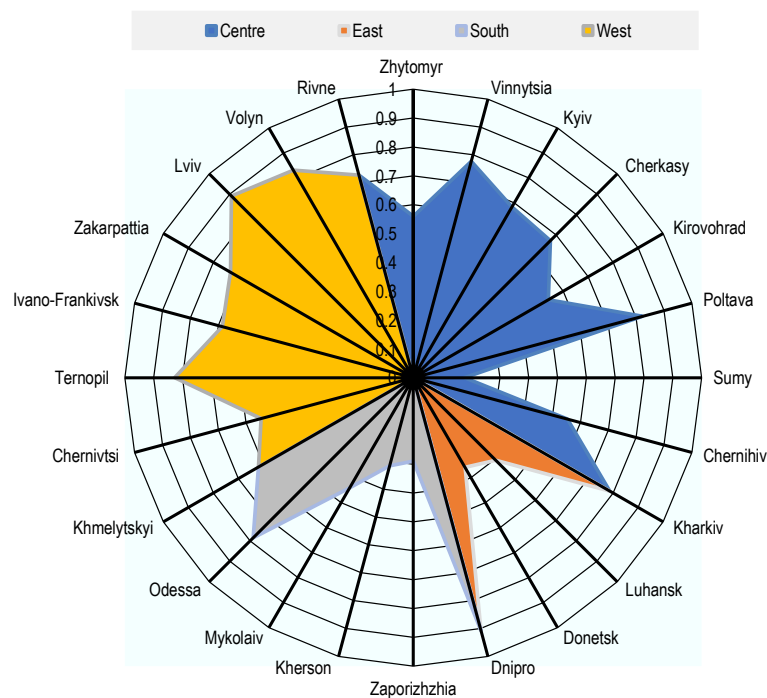
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## Introduction

The digital transformation is characterised by its nuanced complexity and diverse effects on economies and societies. Its repercussions are cross-cutting and call for a comprehensive and synchronised approach to policymaking. Policy frameworks, exemplified by national digital strategies, emerge as important tools in this context, translating the government's vision into tangible objectives and measures, thereby fostering coherence and facilitating stakeholder co-ordination (OECD, 2022<sup>[1]</sup>). This section therefore examines the approach Ukraine has been building in recent years.

It pays attention to both the national and sub-national levels. Ukraine has been enhancing multi-level governance through ambitious reforms (OECD, 2022<sup>[2]</sup>). With regards to digitalisation, the country collects valuable insights into digital progress, including skills, across the territory. The MDTU has developed two methodologies to this end. The Regional Digital Transformation Index assesses the digital transformation in regions, covering different aspects such as institutional capacity, internet development, online and offline public service provision, digital education, penetration of basic e-services, digital transformation of industry, and overall business climate<sup>1</sup>. Considering over 80 indicators, the Index has a maximum score of 1. The 2023 edition reveals persisting gaps across the country, with Dnipro, Lviv and Poltava leading the way (0.908, 0.891 and 0.833, respectively), and some other parts of the country showing quite modest results (Kherson 0.316, Zaporizhzhia 0.289 and Sumy 0.178) (see Figure 2.1). Kyiv is close to the national average of 0.632, with a score of 0.684. One reason for these regional differences identified by the MDTU is a lack of human capital to support digital progress in some regions, e.g., Chernivtsi, Kirovohrad, and Chernihiv.

**Figure 2.1. The Regional Digital Transformation Index in Ukraine, 2023**



Note: This index is compiled by MDTU and is measured on a scale from 0 to 1, with 0 as the lowest and 1 as the highest score. The figure is based on 2023 data, with the exception of Luhansk Oblast, where data is from 2022. The index does not cover the temporarily occupied territories  
Source: (Ionan, 2024<sup>[3]</sup>; Dezentralisatsia, 2023<sup>[4]</sup>).

## Developing a strategic framework for SME digitalisation

Ukraine's efforts at both centralised and decentralised digital innovation policy were launched several years prior to the full-scale invasion. It gained notoriety when they proved critical to the country's wartime resilience. The role of digitalisation in efficient state functioning exemplified by Ukraine's innovative approaches to countering multi-pronged attacks and attempting to provide uninterrupted citizen services garnered interest worldwide. Ukraine's digital economy, most recognised by its booming ICT sector, was a key engine before the war and its resilience was due in part to concerted efforts following the establishment of MDTU. Prior to the creation of the MDTU in 2019, Ukraine's digital transformation strategy comprised a number of scattered digitalisation projects and lacking a unified multi-stakeholder ecosystem. The country lagged in comparison to neighbouring EU countries due to its later start. In 2018, the World Digital Competitiveness ranking placed Ukraine in 58<sup>th</sup> place, well below Czechia (33) and Poland (36), and somewhat below the Slovak Republic (50) (IMD, 2021<sup>[5]</sup>). The MDTU was tasked with transforming the unco-ordinated digitalisation strategy of prior years to a unified approach, with the designated authority to monitor implementation, respond to arising needs, and digitalise operations, processes, and services. By 2021, Ukraine had risen four places, to 54<sup>th</sup>: its results during the period 2015-2021, when compared with those of OECD countries, present an encouraging trend. The country stands out as one of the few nations that consistently improved its ranking between 2019 and 2021, positioning itself alongside countries such as Czechia, Greece, and Iceland in terms of evolving behaviour<sup>2</sup>. Despite this encouraging trend, the country still falls far behind the leading OECD countries – Denmark, Sweden, and the United States.

### ***Efforts to develop a digitalisation strategy were guided by EU integration ambitions***

Developing a comprehensive and long-term strategy requires setting high-level objectives and corresponding principles to guide a country's plans across all policy areas (OECD, 2021<sup>[6]</sup>). In the case of Ukraine, the objective of joining the European Union (EU) has profoundly influenced the country's national strategies and action plans across all domains.

The development of a digital strategy was deeply intertwined with EU-UA alignment under the 2014 Association Agreement (AA) with the European Union. The country's first digital strategy, *Digital Agenda for Ukraine 2020*, was presented in 2016, two years after the signing of the agreement, and developed along the same standards set forth for the digital growth of EU members as a part of the Europe 2020 Strategy (Yanovska et al., 2019<sup>[7]</sup>). The Digital Agenda was the country's first framework aimed at endorsing priority areas and basic principles of digitalisation (Yanovska et al., 2019<sup>[7]</sup>).

Policy efforts continued with additional documents, such as the Strategy on integration into the EU Digital Single Market submitted in 2018 together with an Action Plan. By 2020, Ukraine had made strides in implementing its digitalisation commitments under the AA, with particular progress in e-governance through the provision of public services by the newly established MDTU (Yanovska et al., 2019<sup>[7]</sup>). Also in 2020, the digital part of the roadmap of integration into the EU Digital Single Market was updated (Ingram and Vora, 2024<sup>[8]</sup>). A prolongation of monitoring Ukraine's adherence to EU digital standards under the AA continued through the *Digital support for Policy Support to Ukraine 2021-24*. Additional support in the form of bilateral projects was provided by the EU and focused on enhancing digitalisation infrastructure, capacity, communication, and interoperability. By 2022 and Ukraine's submitted request to obtain EU candidate status, the country's alignment with the EU acquis, particularly with regards to the EU's telecommunications orbit and the European Electronic Communications Code, improved. (Ingram and Vora, 2024<sup>[8]</sup>). Ukraine was the first non-EU country on the EU's "Third Countries Trusted List" and joined the "Digital Europe" programme (2022), as well as the "Connecting Europe Facility" (2023). "Connecting Europe" allows Ukrainian projects to apply for EU funding and encompasses digital infrastructure. However, only projects in *hard* infrastructure were realised thus far.

However, several setbacks were also identified and remain to be addressed, such as disengagement by state institutions and lack of adoption of relevant legislation critical to aligning with global digital trends. Development strategies at the national, regional, and sectoral levels tended to be mismatched with the available digitalisation opportunities (Ukrainian Institute of the Future, 2020<sup>[9]</sup>).

Following Russia's full-scale invasion, the EU stepped up its support for Ukraine's digitalisation by strengthening its assistance to identified national priorities, the maintenance of digital connectivity and electronic services. Russia's multipronged attacks against Ukraine included operations targeting internet infrastructure, resulting in connectivity breaches that risked leaving parts of the country in an information vacuum. Providing citizens and the government with internet access was and continues to be a matter of urgency and a national priority (OECD, 2022<sup>[10]</sup>). In this regard, the EU, too, played a critical role in developing a dedicated strategy, providing the MDTU with technical assistance in developing the National Broadband Strategy (currently under development, with a view to foster, *inter alia*, the rollout of high-speed fibre-optic networks and 5G technology).

### ***Establishment of the MDTU jumpstarted the prioritisation of digital transformation at national and subnational levels***

Ukraine was facing several obstacles in its digital transformation, particularly prior to the establishment of MDTU. These included institutional, infrastructural, ecosystemic, and e-governance related issues, leading to a weak digital ecosystem and a lack of measures to encourage digital and entrepreneurial education, skills development, and significant brain drain. Cognisant of Ukraine's comparatively poor standing and the need for a structured approach, the government started stepping up its state digitalisation efforts following the establishment of the MDTU in 2019 (Ukrainian Institute of the Future, 2020<sup>[9]</sup>).

The MDTU was designated by the Cabinet of Ministers as the main body ensuring formation and implementation of state policy with respect to digitalisation, coordinating digital development across the government (Cabinet of Ministers of Ukraine, 2019<sup>[11]</sup>). The MDTU gained more power in 2023 and became the central executive body in the field of electronic communications and radio frequency spectrum.

The MDTU was deliberately staffed with individuals drawn from the private sector, in the hope that they could bring more innovative ideas to the public administration. Its digital strategy was proposed in the form of 94 digital transformation projects, announced in 2021, to be completed over a three-year period (President of Ukraine Official Website, 2021<sup>[12]</sup>). The projects were divided into 23 categories including sectoral digitalisation projects, such as health, infrastructure, social policy, and a separate category on general digital transformation focused on electronic identity services, e-democracy, digital economy, digitalisation of education, and broadband access and infrastructure. Projects in 12 of the 23 categories have been launched to date. The Diia website lists all different projects as well as sub-projects, including their launch date, if available. It also shows the planned, tangible outcome of each project. However, this does not provide information on the progress towards these outcomes (Diia, 2023<sup>[13]</sup>). Projects in the other 11 categories were yet to be started at end 2023 (including, for instance, the categories "Justice" and "Agriculture").

To involve non-governmental stakeholders in policy design, the MDTU created a public dashboard for monitoring project implementation. The public had access to each of the projects through a portal including project description, deadlines, names of officials responsible for execution, and a rating system (President of Ukraine Official Website, 2021<sup>[12]</sup>).

Digitalisation at subnational level became a sector of the MDTU digital strategy as well. Here, the Ministry of Infrastructure functions as a key accelerator. In 2020, the government assessed its subnational digitalisation progress when developing the *State Strategy for Regional Development for 2021-27*. Digitalisation at the regional level was found to be weak and concerted efforts for improvement were required. The MDTU in collaboration with the Ministry of Infrastructure introduced regional Concept Papers

on improving digital competence (ITU, 2021<sup>[14]</sup>). Local governments took to adopting the Concept Papers and implementing their tailored action plans on digitalisation with a focus on developing digital skills, launching social initiatives and information campaigns (ITU, 2021<sup>[14]</sup>). The main objectives set by the Concept Papers included improving co-ordination between ministries and regional authorities.

Another critical barrier to regional digitalisation was the heavily bureaucratised nature of communication between the central government and local authorities. The ULEAD with Europe Programme, together with the MDTU, played a large part in strategy development to tackle this issue. The programme studied the experience of 125 territorial communities to find solutions in streamlining processes and addressing redundancies or barriers.

Additionally, MDTU's aforementioned 94 digital transformation projects included a category focused on digital development of communities and territories through priority sectors: *e-energy*, improving energy efficiency in residential and public buildings; *e-community*, digital transformation of organisational powers of local government and the administrative structures; *e-housing*, housing and communal services; and *e-urban development*, digitisation of urban development norms and construction regulations. The specific projects launched in each of these areas can be consulted via the Diia website<sup>3</sup>. For instance, within e-urban development, several projects on the digital transformation of waste management have been launched, e.g., an online user account for waste management (launched 30.03.2022). With regards to e-housing, for instance, a unified database that helps assess real estate value was launched on 30.12.2021.

### ***Nevertheless, a comprehensive policy approach to SME digitalisation is still lacking***

Concurrent with the Digital Agenda, the government adopted a *Concept for the Development of the Digital Economy and Society of Ukraine for 2018-20* (hereinafter “the Concept”) and a related action plan. The strategy presented the basic principles of digital economy development at an accelerated pace by eliminating obstacles that impeded growth and recognising the potential acceleration in GDP growth as a result of digitalisation. The Concept tasked the Ministry of Economic Development and Trade with co-ordinating implementation of the digital economy development plans aimed at creating incentives, motivations, and demand, and at shaping the digitalisation of the economy, public and social spheres, as well as defining existing challenges and tools for the development of digital infrastructure (Cabinet of Minister of Ukraine, 2018<sup>[15]</sup>). The action plan prioritised legislation on the digital economy and telecommunications, infrastructure and strategy development for broadband services, cashless economy programmes, and a programme focused on digital transformation in the regions. However, information on actual implementation is scarce – a governmental report indicates that 16 out of 34 planned measures were taken by Q4 2019, but there are no publicly available insights on implementation beyond that (Ministry of Economy of Ukraine, 2019<sup>[16]</sup>).

The National Economic Strategy until 2030 (NES 2030) also identified digitalisation of the economy as a key driver for economic growth. Approved by the Cabinet of Ministers in 2021, the NES 2030 outlined priorities within 20 functional and sectoral areas, with plans for breaking down the strategy into specific projects. The strategy benefitted from multistakeholder participations, including representatives of 21 think tanks, 34 business associations, 37 companies, 40 executive bodies, representatives of civil society and Members of Parliament (EU Neighbours East, 2021<sup>[17]</sup>). The Secretariat of the Cabinet of Ministers headed the design, implementation, monitoring and evaluation of the NES 2030 and co-ordinated among state institutions involved in digitalisation. Target indicators were set for measurement of implementation, which was to be accessed on an e-portal for each given reporting period. Given the circumstances posed by the war, monitoring of the NES 2030 strategy has been put on hold.

Additional efforts directed at digital innovation specifically are being provided. At the end of 2023, the MDTU presented the “Global Innovation Vision 2030”, a document outlining a vision and action plan to enhance the innovation ecosystem. This is building on the Strategy for Innovation Sector Development (until 2030) and the NES. Like other government documents previously mentioned, the vision foresees

making Ukraine “the most digital-friendly country in the world, with a strong digital economy, digitalised and accessible government, and social services that ensure a high standard of living and minimise corruption at all levels”. Priority innovation areas include: defence tech, agritech, audiovisual, medtech, biotech, greentech, AI, Semiconductors, Secure Cyberspace, Fluid Economy, Edtech, and Govtech – with a view to leveraging innovation for resilience, reconstruction and recovery (WinWin, 2023<sup>[18]</sup>). The strategy notably focuses on high-tech industries and foresees increasing R&D and human capital for innovation. It also aims at stepping up co-operation and co-ordination with the private sector and international partners to this end, notably via the creation of a new co-ordination body, the State Innovation Agency. The Vision is expected to be transformed into a Strategy.

However, while Ukraine has a strong overall policy framework in support of the IT sector, the strategic documents give limited consideration for the digital transformation of SMEs in “traditional” sectors. Existing policy documents support the development of a digital society and economy, but include few provisions targeting non-IT businesses, especially SMEs. For instance, the NES 2030 does highlight the need to foster digital skills development among firms and a shared technology centre to enhance access to digital technologies, but it does not provide for a comprehensive approach to SME digitalisation. The Global Innovation Vision focuses on digital innovation support but does not outline specific measures to foster digitalisation of SMEs. Moreover, current strategies do not have any targets to evaluate progress on SME digitalisation. The previous SME Strategy did not address this issue either.

The government’s most explicit formulation of SME digitalisation strategy is found in the stated strategic goals for SME development of MDTU’s Diia.Business. The latter lists the various strategic directions it intends to pursue, along with existing gaps and plans for improvement. Increasing the penetration of digital tools and strategy among micro and small businesses is also a strategic goal, with the objective of securing the participation of 10% of SMEs in programmes focused on adapting to the digital environment (Diia.Business, 2024<sup>[19]</sup>). Most important here is the government’s recognition of the significant barriers SMEs face regarding public services. The government set an objective to digitalise 100% of all SME-related public services to reduce barriers for their further development and to incentivise their own digitalisation. Sustaining continued efforts in that direction, the government in late 2023 launched the e-Entrepreneur project, which will combine twelve business services into one, fully online with no more paperwork (EU4Business, 2024<sup>[20]</sup>).

The Diia.Business strategic policy document states, “Strategic goals will be synchronized with the strategy of small and medium business development” (Diia.Business, n.d.<sup>[21]</sup>). Furthermore, the document stresses the need for adoption of a comprehensive SME development strategy that entails a digital first approach (Diia.Business, n.d.<sup>[21]</sup>). Given the dire circumstances facing the country as a result of the war, and the severity of destruction on all levels, work on a new SME development strategy (after completion of the SME Strategy 2020) was severely disrupted by changes in national priorities, as policy makers focused on confronting the immediate emergency and many policy issues that might have been addressed in separate documents were subsumed into larger plans for recovery and reconstruction. Nevertheless, the Ministry of Economy has been developing, in co-operation with the MDTU and EEPO, a draft SME Strategy for 2024-2027 since end 2023, drawing from OECD work, including insights from the *OECD SME Policy Index: Eastern Partner countries 2024*, and the findings and recommendations outlined in the present report. The draft document foresees measures to promote digital transformation – such as training, resources, and financial incentives, including for e-commerce, digital marketing and the use of digital business tools – as a priority area. This is particularly envisioned to go hand-in-hand with the green transformation. The Strategy should be finalised and adopted in 2024.

Digitalisation continues to be a priority in draft overarching strategies for the recovery, albeit with more limited attention granted to the digital transformation of SMEs. Ukraine had developed an initial recovery and reconstruction blueprint following the full-scale invasion in the form of a Draft National Recovery Plan (DNRP) in 2022. SME support was prioritised primarily through wartime emergency financing, post-war access to funding through credit guarantees for SME loans, and further functional development of

Diia.Business as the one-stop-shop for SMEs and repository of SME-related information. Although SME development didn't have its own dedicated chapter, the plan focused on creating a conducive regulatory environment and financial tools. While the DNRP dedicated an entire thematic chapter to digitalisation, with a notable emphasis on the IT sector, cybersecurity and e-government projects, SME digitalisation support was mentioned primarily in relation to cybersecurity and, at subnational level, to regional development programs rather than as a standalone initiative (National Council for the Recovery of Ukraine from the Consequences of the War, 2022<sup>[22]</sup>).

Despite its hasty development and ongoing need for revision due to evolving circumstances, the DNRP set a broad reform agenda for the country. The DNRP was superseded by the Ukraine Plan, introduced in March 2024, presenting a comprehensive framework for economic recovery and transformation until 2027. It includes over 150 indicators across 69 reform directions, outlining the cross-cutting priorities of the green transition, digitalisation, and European integration as well as investment needs and opportunities in each of these dimensions. Investment priorities include i) digitalisation of the economy and development of e-government; ii) support for the development of infrastructure and services in cybersecurity; iii) innovation development, involving creating and fostering the growth of technoparks and innovation clusters, as well as incentivising R&D; iv) venture capital and private equity sphere; and v) restoration and development of digital infrastructure.

**Table 2.1. Policy framework for the digital transformation in Ukraine**

| Policy document and timeframe   | Main objectives   | Selected measures to foster digitalisation  | SME-specific digitalisation measures  |
|---|---|---|---|
| Strategy on integration of Ukraine into the European Union Digital Single Market ("Roadmap")<br><br>2018-2023 | Bring down barriers and create new uniform rule on online-services freeware distribution, most notably, in digital marketing, e-commerce and telecommunications, and to strengthen cyber security of networks and information systems   | December 2020: Law on Electronic Communications which implements the EU Electronic Communications Code synchronously with the EU member states<br><br>December 2021: Law on NCEK (National Telecom Regulator)<br><br>September 2022: Law On Official Statistics<br><br>December 2022: Law on Amendments to Certain Legislative Acts of Ukraine on Ensuring the Conclusion of an Agreement between Ukraine and the European Union on Mutual Recognition of Qualified Electronic Trust Services and Implementation of European Union Legislation in the field of electronic identification<br><br>June 2023: Law on Protection of Consumer Rights | Aims to enhance digital skills training and SME access to digital goods<br>"Digital Competence Framework"<br>Remove barriers to e-commerce and e-logistics<br>Enhance digital security in IT businesses |
| Strategy for Digital Transformation of the Social Sphere<br><br>Since 2020                                    | Ensure European standards for the functioning of social protection institutions, the provision of social services, the financial stability of the social sphere, increasing its transparency and optimising its administrative expenditures.<br><br>Create a unified information environment of the social sphere<br><br>Help the government contribute to social cohesion by using digital | Creation of a unified information base of the social sphere<br><br>Unified register of providers and recipients of social services and benefits, as well as introduce a system for their verification<br><br>"eBaby" (implemented 2020-2022) to simplify the procedure for receiving services related to childbirth<br><br>Web portal of electronic services of the Pension Fund of Ukraine providing remote services through the personal accounts of citizens and employers   | N/A   |

|   | technologies   |  |  |
|---|--|--|--|
| Strategy for Implementation of Digital Development, Digital Transformations and Digitalisation of the State Finance Management System 2021-2025               | Solve the problem of the lack of integration between the information of the public finance management system online, the lack of a single data warehouse with up-to-date information available to all public authorities, the obsolescence of individual platforms, and the lack of automated information exchange with many other government agencies | Centralising IT resources and IT functions of the Ministry of Finance and central executive bodies; priority is given to the centralisation of cloud technologies, the creation of a single data warehouse, the gradual transition to a new level of service-oriented systems by ensuring the availability of public services online.<br><br>Creating a Committee of Information Technology Management in the Public Finance Management System<br><br>Developing processes of co-ordination and co-operation with the Treasury, the State Tax Service, State Custom Service, State Audit Service, and the State Financial Monitoring Service<br><br>Regulating the functioning of the Unified Information and Telecommunications System of the public finance management system  | N/A  |
| State Regional Development Strategy for 2021-2027<br><br>Regional Concept Papers (MDTU and Ministry of Development of Communities and Territories of Ukraine) | Ensuring economic growth, facilitating regional development, and preventing corruption<br><br>Enhance Ukraine's unity and foster a decent life for citizens in a united, decentralised, competitive and democratic Ukraine   | Providing assistance to underdeveloped regions through financial support.<br><br>Directing subsidies and state aid mainly to the creation of capital construction objects (state investment exclusively in state or communal property)<br><br>Strengthening the integrating role of agglomerations and large cities and thereby creating a legislative framework for the functioning and development of agglomerations, ensuring a balanced development of the territories that are part of them   | N/A  |
| National Economic Strategy 2030   | Offer a coherent vision regarding the strategic course of the economic policy of Ukraine by defining the long-term economic vision<br><br>Develop Ukraine's digital economy as a main driver of economic growth  | Increasing IT education in public educational institutions<br><br>Raising the overall digital skills levels of citizens through private and communal initiatives regarding digital skills and non-formal education<br><br>Improvement of the telecommunication infrastructure through targeted support to commercially disadvantaged regions and efforts to bridge the digital gap between urban and rural areas<br><br>Harmonisation of digital legislation by developing a draft law on making the necessary changes to the Law of Ukraine "About electronic commerce", ensuring the implementation of the Strategy of Integration to the European Digital Market of the EU, and supporting the development of local crowdfunding and the principle of "peer-to-peer" within the framework of the EU4Digital Programme | Upscaling of the provision of digital skills training of representatives SMEs as well as the creation of a single structure of digital skills ("Digital Competence Framework").<br><br>Upscaling SME access to digital technologies. |

Note: this table only entails ongoing policy documents.

Source: (Yanovska et al., 2019<sup>[7]</sup>; Cabinet of Minister of Ukraine, 2018<sup>[15]</sup>; Cabinet of Ministers of Ukraine, 2021<sup>[23]</sup>; National Council for the Recovery of Ukraine from the Consequences of the War, 2022<sup>[24]</sup>; EU-Ukraine Civil Society Platform, 2019<sup>[25]</sup>; Ministry of Social Policy of Ukraine, 2020<sup>[26]</sup>; Cabinet of Ministers of Ukraine, 2020<sup>[27]</sup>; Cabinet of Ministers of Ukraine, 2021<sup>[28]</sup>; Ukraine Recovery Conference, 2022<sup>[29]</sup>; Tarasiuk, 2020<sup>[30]</sup>)



## Building institutional capacity and fostering stakeholder co-operation

### ***Ukraine has expanded its institutional capacity and strengthened stakeholder collaboration for SME digitalisation***

*The government improved governance co-ordination mechanism at the national and subnational level*

A strong digital transformation strategy ensures policy is co-ordinated in an effective and coherent manner where all levels of government are a part of its implementation and monitoring (OECD, 2019<sup>[31]</sup>). With the establishment of the MDTU, the government sought to ensure more effective steering vis-à-vis a whole-of-government approach from the Ministry down to district administrations. The institutional framework supporting SME digitalisation now benefits from the involvement of different governmental, and non-governmental (international and private) stakeholders and is spread across the national and subnational level.

Allocation of key responsibilities for strategy design, implementation, monitoring, and evaluation varies across OECD countries, but most fall within two approaches. The first includes high-level designation, such as leadership by the head of government, and the second at a ministerial level with responsibility falling on one or several ministers tasked with strategic co-ordination (OECD, 2019<sup>[31]</sup>). In Ukraine, the designated high official charged with leading the strategy is the Minister of Digital Transformation. Following Russia's full-scale invasion and increased efforts in the field of digitalisation, Parliament voted to expand the Minister's duties and reappointed the Minister of Digital Transformation in March 2023 with the status of Deputy Prime Minister for Innovation, Education, Science and Technology, to empower the Minister's role in government and expand the reach across policy areas.

The government also created the new position of Chief Digital Transformation Officer (CDTO). On the one hand, CDTOs are appointed within ministries (at the level of deputy minister) to act as focal points across layers of government and are tasked with implementing digitalisation policy, including SME digitalisation. National digitalisation policy, such as Diia initiatives, must be implemented by the CDTO (as per a directive from the MDTU). On the other hand, CDTOs are also appointed to engage and develop digitalisation at regional and community level. Provision of digital officers at the national and subnational level is a critical step in improving stakeholder involvement in operational co-ordination of strategy implementation (OECD, 2019<sup>[31]</sup>). CDTOs first appeared in all ministries in 2020, followed by regional administrations by the end of the same year. Given the cross-cutting nature of digitalisation, CDTOs play a critical role in development and implementation of digitalisation policies. CDTO placement in varying sectors and levels of government facilitates the adjustment of digital strategies to their respective bodies or sectors. The MDTU acts as the single entity where strategic digitalisation efforts are consolidated, while the CDTOs act as the organisational co-ordination mechanism, securing synchronisation of digitalisation policy across multiple levels of government. CDTOs also help ensure digital transformation policy is not bottlenecked at the top tiers of government or concentrated in national bodies but trickles down to all branches and territories. They can report to MDTU, but are primarily working under their individual line managers, e.g., the heads of local governments, and coordinate with their regional community. This approach is also part of Ukraine's overall efforts to decentralise the government. Both national policy efforts and local level projects and programmes are tracked and reported bi-weekly vis-à-vis a CDTO dashboard across all regions.

The MDTU made a concerted effort in accelerating digitalisation at the subnational level through the aim of expanding CDTO presence, but CDTOs have not yet been appointed at the municipal level. Additionally, further elaboration on CDTO co-operation and support of SME digitalisation support at the local level is required. The MDTU's goal for subnational level CDTO expansion was in the form of a "25-38-1400" strategy (Bilyk, 2022<sup>[32]</sup>). Ukraine comprises 27 regions, two of which were temporarily occupied and therefore not under the government's control, leaving 25 regions. Therefore, the "25" in the of "25-38-1400"

goal corresponds to CDTOs at regional level. The 38 represents 38 CDTOs to be represented in Ukraine's largest cities and the 1,400 the number of CDTOs across municipalities. As of early 2024, there are 18 CDTOs in 19 ministries, 24 CDTOs in the central government, and 13 CDTOs in regional administrations. Data on CDTOs in municipalities are not available and therefore likely not yet implemented. However, the government has expressed its ambitions to install digital leaders in all territorial communities (Government of Ukraine, 2023<sup>[33]</sup>). Ukraine should continue pursuing expansion of CDTOs in all bodies and levels of governance – including through mayors, who, following the decentralisation reform, are responsible for appointing CDTOs in their cities.

The work of the CDTOs on a local level was to be guided and co-ordinated through a sub-product of the Diia ecosystem, Diia.Digital Community. Diia.Digital Community was intended to be a knowledge management platform to assist CDTOs in regional digitalisation through provision of guidelines, recommendations for implementation of digital tools, and a digital transformation plan, as well as a tool to connect municipalities and communities to implement digitalisation projects. The test version was launched by the MDTU in January 2021 with plans to scale it up one year later. However, work on the platform stalled following Russia's full-scale invasion. As of June 2023, the portal had not yet been created.

To coordinate digitalisation-related efforts across other government bodies, the Cabinet of Ministers of Ukraine further established the Intersectoral Council on Digital Development, Digital Transformation and Digitalisation. The MDTU provides organisational support to convene this. The Council involves members of the Verkhovna Rada as well as of different ministries. Importantly, it includes the Ministry of Economy, another central player in Ukraine's SME digitalisation efforts, under which the EEPO functions and whose supervisory board includes the Cabinet of Ministers, the Ministry of Economy, as well as the MDTU.

*The government has utilised a multi-stakeholder approach in its large-scale national SME development project: Diia.Business Support Centres*

Diia.Business Support Centres (hereinafter simply "Centres") are the government's leading effort in a comprehensive approach to SME digitalisation support involving citizens, the private and public sectors, and international players. They constitute the second component of the Diia.Business initiative and were established from 2020 onwards. A strategic direction of Diia Business was increasing support to SMEs at the national and subnational levels; therefore, the establishment of Centres became a large-scale national initiative to meet these ends.

Diia.Business Support Centres exist both virtually and offline, the latter in the form of physical centres located throughout the country. They facilitate co-operation with local NGOs, contribute to strengthening the SME infrastructure, and offer overall support for local SMEs. More specifically, they offer services such as consultations, educational programmes, and a catalogue of business ideas to businesses and entrepreneurs. They also cater to SMEs with little to no digital maturity, offering them consultations, trainings, and other programmes to assist with digitalising businesses (see Chapter 3).

The establishment of new Centres is initiated by local NGOs or proactive individuals, who also lead them. The EEPO does not dictate where Centres are to be based. Instead, the government presents the idea to potential partners or proactive individuals who are eager to open a Centre in their area. This entails strong government collaboration with the private sector, civil society, and international organisations, since it is only with their support that a Centre may be established. The government prepared a 44-page presentation document detailing the benefits of and requirements for establishment of a Centre which was sent out to interested NGOs (Diia.Business, n.d.<sup>[34]</sup>), and made applying to establish a Centre easily locatable on the Diia Business platform. Centres must be in areas with a large flow of people, and they must meet aesthetic and technical requirements, with detailed safety provisions, and a method to conduct cash-less transactions, among other things.

Funding to establish and operate a Centre does not come from the public budget, instead the initiators are tasked with securing financing from private or other sources. The Centres are either self-funded, funded through donors (e.g., GIZ, USAID), international corporations (e.g., Mastercard, Visa, Nokia) or the private sector (e.g., Avrora, Multimarket, Ajax, Caparol), or through a combination of those. It is however expected that Centres led by NGOs should be sustainable and not dependent on donor funding. To date, 14 Centres were established throughout the country, with a reduction to 12 following the temporary closure of the Kharkiv and Mykolaiv Centres due to the war. The offline nature of the Centres aims to target the segment of the population with less experience of technology or limited access to it. Since business incubators and accelerators are concentrated in large cities, regional Centres may act as a lifeline to the populations residing outside central hubs and avoid overconcentration of services in the metropolises. Additionally, Centres could consider adapting their advice based on the more prevalent industries in their regions, allowing for a more decentralised and less Kyiv-centric approach to SME support.

The EEPO does lead the design, implementation, reporting, and monitoring of the Centres. Once a Centre is approved and created, a “franchise book” is provided outlining clear instructions on all aspects of Centre operation, co-operation, reporting, and personnel training. The franchise book assists the government in ensuring SME support (including digitalisation) falls in line with national SME and digitalisation policies through stated clear objectives and allocation of responsibilities among stakeholders. Monitoring is conducted by the Centre, which is tasked with reporting to a centralised government dashboard. Centres also conduct weekly calls with the EEPO to report on their activities and the government has been known to call into centres posing as a customer requesting services in order to audit Centre adherence to mandatory protocols and quality.

Given the dire situation facing the country, finding an active population or partners ready to invest time and energy in the establishment of a Diia.Business Support Centre may prove difficult. However, the Diia.Business network of Support Centres keeps expanding: the last three centres were opened after the outbreak of Russia’s full-scale invasion – one in Warsaw, Poland (in May 2022), one in Rivne and one in Lutsk (in March 2023), and three requests have been received in Q1 2024 to open new centres in different regions, illustrating continued demand and willingness of regional partners and donor organisations to support such initiatives for SMEs in regions.

The EEPO’s goal is to open a centre in each territory comprising of more than 50 000 people (Diia.Business, n.d.<sup>[34]</sup>). A city is comprised of approximately 50,000 inhabitants, anything below is a town or rural area (Dijkstra et al., 2020<sup>[35]</sup>). Given the aforementioned Centre requirement to be located in an area with a large flow of people and the government’s goal of establishing Centres in each territory comprising 50,000+ individuals, Centres will be primarily city-based. This poses a risk to availability of Centre resources and services to more rural communities. The virtual component of the services may be utilised; however, SMEs in towns and villages far from urban centres may not be aware of the existence of such programmes.

Indeed, awareness of support services across the Ukrainian territory is uneven and SMEs in the municipalities often struggle to access relevant services (Kyiv International Institute of Sociology, 2022<sup>[36]</sup>). For instance, less than 60% of village/small city inhabitants have used e-government services, as compared to approximately 70% in larger cities. Moreover, only 43-50% of village/small city inhabitants use Diia, as compared to 58.5% in large cities (Kyiv International Institute of Sociology, 2022<sup>[36]</sup>).<sup>4</sup>

Recognising this, a representative of the Poltava Centre applied to the MDTU for approval to launch a “Diia.Business Bus”. The idea was to travel throughout the region, especially to remote villages, less likely to be as well connected to the administrative centre, and to conduct awareness-raising campaigns about SME support services, education, and trainings Diia.Business offers. Unfortunately, the project was submitted around the time of the full-scale invasion and has not been realised. Greater efforts on information campaigns and awareness raising targeting SMEs in the rural areas, who are also likely to be less digitised, may aid in SME digitalisation development.

With regards to digitalisation-related support, two Digital Innovation Hubs (DIH) have also been established in Ukraine. These are modelled on the example of European Digital Innovation Hubs (EDIH), which have been founded to speed up the digital transformation of SMEs across the EU. Box 2.1 provides detailed insights into how DIHs and EDIHs work. However, these are located in big cities (Kyiv and Lviv) and thus do not take away from the need to reach more remote SMEs.

### Box 2.1. (European) Digital Innovation Hubs

**Digital Innovation Hubs (DIHs)** serve as focal points for SMEs and can foster digital innovation and adoption by facilitating collaboration between businesses, research institutions, and government entities and providing access to mentorship, funding, and expertise. **European Digital Innovation Hubs (EDIHs)** are integrated into the Digital Europe Programme. They receive 50% of their funding from the European Commission and 50% from the respective member state, associated country, or region, or from private sources. They provide services in four main categories: i) access to technical expertise and the opportunity to “test before invest” in new technology, often through the involvement of third-party companies; ii) support to identify financing and investment opportunities; iii) provision of trainings and skill development; and iv) access to the innovation ecosystem and European network to share skills, resources, and knowledge. Through participating in EDIHs, companies gain access to a wealth of European best practices, fostering community, co-operation and knowledge exchange between different stakeholders. Simultaneously, their local presence enables them to engage with enterprises on the ground (e.g., in their native language).

In 2023, the MDTU started the national pre-selection of **DIHs in Ukraine**, receiving up to EUR 4.5 million support from the Digital Europe Programme. To date, two DIHs exist in Ukraine: the Centre 4.0 of the Igor Sikorsky Kyiv Polytechnic Institute and the Hub Laboratory of the Internet of Things: DIH I4MS, aiming to boost the local innovation ecosystem, involving manufacturers, academia, entrepreneurs, and the public sector. The EDIH network’s impact on the digital maturity of the businesses they support is measured through a custom-developed [digital maturity assessment tool](#). This measures the current level of digitalisation within above customers’ processes (an SME or a Public Sector organisation) and puts forward recommendations for improvement. The digital maturity of SMEs is assessed across six dimensions, including i) digital strategy and investments, ii) digital readiness, iii) human-centric digitalisation, iv) data management and security, v) interoperability, and vi) green digitalisation.

Source: (EIT, 2023<sup>[37]</sup>; academ.city, n.d.<sup>[38]</sup>; Land4Developers, 2019<sup>[39]</sup>; Agency of European Innovations, n.d.<sup>[40]</sup>; European Commission, 2023<sup>[41]</sup>).

### ***Ukraine’s approach to SME digitalisation benefits from the active involvement of non-governmental actors***

*Internationally backed programmes and foreign governments contribute significantly to scaling up SME capacity through targeted programmes and financial support*

The approach to SME digitalisation should embody views of all ecosystem stakeholders to avoid overlaps and duplication and to best utilise their willingness to support. Currently, internationally backed programmes and private funds are the government’s primary sources for funding SME-related initiatives. Most of the public budget is being reallocated to wartime initiatives and continued reliance on external funding is likely. This dependency is partly justifiable due to the urgent needs posed by the war but increasing public capital availability for SME support will be critical in the long-term.

Leading SME support initiatives and institutions bear the fingerprints of international key players in Ukraine's SME sector (i.e., USAID, GIZ, EU). The largest donors include USAID and UKAID which are particularly supporting Prozorro<sup>5</sup> and Trembita; the Swiss Agency for Development and Cooperation which focuses its efforts on supporting digitalisation of public services and e-democracy tools (e.g., d-DEM for petitions, local budgets, and consultations), as well as digitalisation for municipalities and e-education; and the EU, working towards enhancing administrative capacity (Ingram and Vora, 2024<sup>[8]</sup>)<sup>6</sup>. The US government is a key partner of the MDTU's Diia initiative and provided USD 25 million (approx. EUR 23 million) for its initial development with plans to export the app to other governments subsequently attracting funds for the state budget (Bloomberg, 2023<sup>[42]</sup>). USAID has supported 4700 SMEs through grants and helped secure USD 64 million (EUR 58.4 million) targeting SME support for the government's investment promotion initiative, Advantage Ukraine (USAID, 2023<sup>[43]</sup>). The EEPO's budget in 2021 comprised of EUR 1.3 million, of which EUR 475 000 came from the 2021 State Budget and EUR 754 000 from donors (OECD/EBRD, 2023<sup>[44]</sup>). Following the full-scale invasion international funding significantly increased with a state budget allocation of EUR 900 000 and donor funding exceeding EUR 1 million. The EU is working closely with the government in SME support, including at the subnational level. In February 2023, the government, in partnership with the EU, launched a digital transformation support programme for Ukrainian municipalities and regions where applicants must come from populations with less than 50,000 people, hromadas, and selected applicants will develop digital transformation projects for piloting (EU Neighbours East, 2023<sup>[45]</sup>). USAID's project, Competitive Economy Program (CEP) is one of the most comprehensive SME support initiatives. CEP provides SMEs with opportunities to showcase their products at export fairs nationally and internationally, connects start-ups to Silicon Valley, provides relocation services for SMEs displaced by war, and provides financial support to SMEs in the form of direct grants. CEP also works with the government to identify state regulatory tools impeding business development growth indicating regulations requiring nullification.

Private equity funds are few in Ukraine but those with an active presence have a long history in the country and play an important role in SME support. The Western NIS Enterprise Fund (WNISEF), for example, has worked in Ukraine for over 29 years and co-operates closely with the MDTU on SME-related initiatives, but all financial support for SME programmes is provided by the fund, not the government. Instead, government support appears in the form of information sharing and promotion of WNISEF initiatives on government platforms, such as Horizon Capital, also present in Ukraine for more than 29 years, has played a large role in securing funding for SME development. Following the war, the fund attracted more than USD 250 million (EUR 228.3 million) for SME-related support, the first largest fund for Ukraine and was signed by the president (President of Ukraine Official Website, 2022<sup>[46]</sup>).

The presence of non-governmental actors in SME support initiatives is beneficial, as it allows broader policy and strategy input and fills a financial gap. Recovery and reconstruction will be a monumental endeavour requiring co-ordination of partners on a grand scale.

*The private sector provides additional inputs, but connections between stakeholders could be further enhanced*

Finally, Ukraine's digitalisation ecosystem benefits from the involvement of private sector actors and initiatives. The rapid growth of the IT sector is encouraged by the development of some support infrastructure such as incubators and accelerators – e.g., 1991 Open Data Incubator, or the recently launched digital accelerator “Innovation Ukraine”.

Business associations also contribute to both development and implementation of policy in the fields of SMEs and digitalisation, notably hands-on inputs and projects. The Ukrainian Cluster Alliance (UCA), for instance, unites over 2000 companies that are clustered (60 clusters in total) according to their sectors. These include 1) Engineering, Automation, Metalworking, Machinery, Aerospace, and IT; 2) Agri-Food; 3) Medical; 4) Textile Industries; 5) Construction, Wood, and Furniture; and others (Ukrainian Cluster Alliance,

2023<sup>[47]</sup>). The different regional clusters further support the Ukrainian Armed Forces and territorial defence. In terms of financial support for businesses, UCA made I4SME/Horizon Europe funding available to SMEs. Moreover, the Alliance is cooperating with regional business clusters, encouraging international networking, developing innovative marketplaces for exporting SMEs (Land4Developers), and reskilling and upskilling initiatives. Beyond this, it has developed its own innovation model and KPIs (Land4Developers, 2020<sup>[48]</sup>). This foresees a step-by-step development including 1) Value Chain and Support Zones (e.g., cluster associations, regional development centres, etc.); 2) Innovation Zones (e.g., centres of expertise, R&D labs, etc.); 3) Incubation Zones; and 4) Experience Zones. UCA collaborates with donors and international partners, e.g. through Memoranda of Understanding with the European Cluster Alliance with the EU and EIT Manufacturing (since summer 2022) (EIT Manufacturing, 2022<sup>[49]</sup>). Beyond this, several innovation parks, created by private companies, exist in Ukraine (in addition to the 40 science parks founded by state-funded institutions). The first one, UNIT.City, was established in 2017. Building on this, in 2021, UNIT.Kharkiv was established. These parks include businesses, residential complexes, innovative educational institutions, and R&D centres, amongst others.

However, some business sector representatives argue that, despite stated ambitions, Ukraine only has a limited number of incubation zones (e.g., business angels, incubators, and accelerators, etc.); and experience zones (e.g., test labs, techno parks, etc.) (Land4Developers, 2020<sup>[48]</sup>). Beyond this, innovation parks and similar institutions face difficulties with regards to a lack of supportive infrastructure, regulatory obstacles, and weak investment incentives for innovation. Moreover, co-operation between certain stakeholders involved in SME digitalisation policies could be stepped up. While Ukraine benefits from some joint public-private initiatives, several gaps could be addressed. UCA, for instance, has developed many initiatives pursuing similar goals to those of EEPO and use similar measurements of success, but reports a lack of co-operation with the government. This not only leads to bottlenecks in the innovation and digitalisation ecosystem, but also slows down progress towards Industry 5.0 as well as the development of sustainable support instruments and tools for SME (digital) development (Sobolevska, 2023<sup>[50]</sup>). It risks doubling workload and disregarding potential for progress and innovation. Moving forward, a common framework and a streamlined approach to business digitalisation and innovation, including common KPIs, would elevate the efforts of both the public and the private sector. In this regard, UCA proposes three measures, including 1) the creation of a network of specialised centres to support SME digitalisation; 2) the creation of a network of incubators and accelerators according to their industry/sector; and 3) the creation of a network of independent experts to consult SMEs (Sobolevska, 2023<sup>[50]</sup>).

Regarding the last suggestion, SMEs in traditional sectors indeed tend to lack integration into existing networks / ecosystems. While the IT sector is flourishing, it has been quite export-oriented so far and has limited contacts with other sectors inside the country (Knuth, Saha and Poluschkin, 2021<sup>[51]</sup>). Enhanced exchanges between digital firms and businesses in non-IT sectors would be highly beneficial for both sides, e.g., by increasing SMEs' awareness of market solutions for the digital transformation and encouraging tech companies to develop digital tools addressing other sectors' needs.

## Way forward

### ***Refine the policy framework to foster the digital transformation of (non-IT) SMEs***

The government has made digitalisation a priority and has already developed several national documents and strategies outlining its ambitions for the digital transformation. However, there is a limited number of SME-related provisions in national and subnational documents for the digital transformation, especially regarding the digital transformation of firms in non-IT sectors.

Moving forward, the government could consider the following:

- In the short/medium-term, **streamline measures for SME digitalisation into one policy document:**
  - This can be done either in an SME Strategy or a National Digital Strategy<sup>7</sup>. As Ukraine is currently preparing a new national SME strategy, the upcoming document would be a good opportunity to effectively harmonise SME development measures with digitalisation-related provisions. Streamlining digitalisation-related provisions into the SME Strategy can i) enhance the awareness and attention to SME digital policy issues across the government; ii) facilitate the engagement of multiple stakeholders required for broad-based support; and iii) foster co-ordination in strategy development and implementation (OECD, 2022<sup>[10]</sup>).
  - To achieve strategic goals, the strategy must state clear objectives and measures, as well as expected outcomes that align with said objectives. It should also be linked to a clear and dedicated budget reflective of Ukraine's long-term budgetary capacity and recovery needs. Objectives should be cognisant of destruction of infrastructure, relocation of business, reshaping of industries, and the like. Lessons can be drawn from the government's responses to the COVID-19 pandemic, where SME digitalisation rescue packages, immediately following the start of the crisis, saw substantially greater support than post-crisis recovery plans (OECD, 2021<sup>[52]</sup>). Similarly, the Ukrainian government cannot lose momentum in providing SME digitalisation support when transitioning from crisis-response mode to long-term recovery. An improved policy strategy can guide sustainable SME development and recovery.
- Beyond this, in the medium-/long-term, Ukraine **could consider addressing digitalisation, including that of SMEs, in regional development strategies**. Given persisting disparities across regions, individuals and firms in Ukraine, SME digitalisation policies should account for regional specificities and varying levels of hardship. As mentioned above, Ukraine has a *State Strategy for Regional Development 2021-2027*, but this does not include measures fostering the digital transformation of SMEs. Furthermore, in an assessment of the strategy, the Kyiv School of Economics noted that it could better reflect the needs of the regions, arguing that a top-down approach to developing regional development policies is not suitable given limited knowledge about regions and local communities (Kyiv School of Economics, n.d.<sup>[53]</sup>). Some of Ukraine's regions have already developed their own development strategies, which also account for digital progress – such as the Cherkasy region, with its *Cherkasy Regional Development Strategy 2021-2027* which, however, does not include provisions related to businesses' digitalisation (Bilyk, 2022<sup>[54]</sup>). This area could be considered when developing future regional policy documents.

### ***Strengthen the institutional framework for SME digitalisation across levels of governance***

The government is committed to improving the institutional framework at national and subnational level. The current approach could be complemented by the following:

- **In the short- and medium-term, strengthen co-ordination mechanisms to design and implement SME digitalisation policies at all levels, particularly at the local level.** As mentioned, CDTOs are critical to driving digital transformation at all levels and sectors of government, improving growth and strategic planning. The government has made strides in creating CDTO positions at the ministerial and regional administration level, but the municipalities remain underrepresented. While CDTO presence in cities should be increased by mayors, the government could further elaborate CDTO roles in SME digitalisation support and ensure close co-operation with other SME digitalisation stakeholders. To this end, regular check-ins between CDTOs, the local population, and businesses (especially SMEs), for instance through public-private meetings, could be organised. Other formats might range from a weekly hotline, an online chat-function, to offline meetings in townhalls or the like. Monitoring of CDTOs should also be



ensured, to guarantee the quality of the work and minimise the risk of a fragmented policy approach.

- Raise awareness of the benefits of digitalisation and support services, especially in villages and smaller cities.** While Diia.Business support centres have proven to be an effective driving force for promoting digitalisation, their establishment primarily in city-level territories may leave SMEs in more rural areas under-served. Apart from fostering further expansion of Centres across the territory, more could be done to promote awareness (and by extension uptake) and conducting outreach campaigns to rural areas about Centre support services, as the use of e-government services is still uneven across the territory. Some efforts are being provided – e.g., the online component (Diia.Business) seeks to foster outreach in remote areas. The government noted in 2021 that not enough people were aware of success stories of SME digitalisation (Bilyk, 2022<sup>[54]</sup>); since then, a wide range of success stories is being shared on the website in different areas (beyond digitalisation), e.g., “women entrepreneurship” and “impact and investment”. However, uptake of support services could be further encouraged, as the use of e-government services is still disproportionate across the country’s territory. Considering that residents of villages and smaller cities indicate that they primarily learn about e-government services through TV, radio, or social media (Kyiv School of Economics, n.d.<sup>[53]</sup>), the EEPO could envisage, for instance, collaborating with local TV channels to include advertisement of its (and Diia’s) services and identifying communication media / websites used locally, potentially with support from marketing and social media experts.
- In the medium- and long-term, foster peer learning and integrate SMEs in digitalisation networks.** As mentioned, SMEs, in Ukraine as elsewhere, lack networks – notably with other SMEs and with Ukraine’s blossoming digitalisation and innovation ecosystem. Encouraging peer learning between SME managers, including from the diaspora, would be an effective way to help them develop skills and learn from each other’s experience, between government-led support programmes. There could be both an offline and online component, e.g., with a “sharing” function on the website to enable SMEs in different regions to share their struggles or ask questions to their peers. “Diia.Exchange” might, for instance, be a suitable name for such initiative. Sweden and Italy offer interesting examples in that regard (Box 2.2). Measures could also be taken to strengthen the network of existing DIHs and sector-specific support centres (e.g., FabLabs, Innovation Parks, innovative clusters, industry-specific incubators and accelerators, etc.).



## Box 2.2. Building capacity and learning culture through peer learning: examples from Italy and Sweden

### The Italian “Mentoring for International Growth” offers an online network for SMEs and business experts

Launched in 2018 by the Italian Union of Chambers of Commerce, Industry, Crafts, and Agriculture (Unioncamere), the “Mentoring for International Growth” project aims to support the growth and export of SMEs in Italy through establishing mentoring-relationships between SMEs based in Italy (mentees) and Italian businesses and entrepreneurs abroad (mentors). The project’s goal is to establish an international network between these. A central focus is on supporting SMEs to enter foreign markets and to increase their exports.

Mentors are selected by the Italian Chamber of Commerce which provides a list of trusted entrepreneurs online. Their services are offered on a voluntary basis. Mentees, in turn, must register with the local Chambers of Commerce, and are selected based on a project proposal as well as the availability of suitable mentors. Unioncamere acts as a coordinating point between mentors and mentees.

Once established, mentoring is set to last 8 months, with a minimum of 30 contact hours. As SMEs and mentees are not based in the same countries, most mentoring takes place virtually.

### The Swedish “Kickstart Digitalisering” initiative provided in-person opportunities for SMEs to connect with digitalisation experts

Sweden’s “Kickstart Digitalisering” initiative (2017 – 2020) offers a good practice example on how an offline network of Digital Innovation Hubs can support SMEs in the very early stages of their digitalisation journey. Using a peer-based and co-learning approach to identify SMEs’ digital transformation needs, it helped SMEs define, and take, initial steps towards digitalisation.

The initiative was based on a series of free-of-charge workshops over a six-week period, with fees covered by the Swedish Agency for Economic and Regional Growth. The workshops were led by experts, who were selected either by the Swedish Teknikföretagen or the IUCs (Sweden’s Industrial Development Centre), sharing their knowledge on key digitalisation processes with the participating SMEs. At the later stage, workshops also covered more technical skills, such as the use of e-invoices or CRM.

A total of 627 companies participated in the initiative, with the great majority reporting high satisfaction rates with the workshops. Most participating companies had 50 or less employees (75%) and 70% were from the manufacturing sector. The other 30% came from the service sector.

Source: (Italian Chamber of Commerce and Industry for the UK, n.d.<sup>[55]</sup>; Interreg Europe, 2020<sup>[56]</sup>; IUC, n.d.<sup>[57]</sup>; Camera di Commercio Italiana in Cina, 2020<sup>[58]</sup>; Tillväxt verket, 2020<sup>[59]</sup>; Meet@Torino, n.d.<sup>[60]</sup>)

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## Notes

<sup>1</sup> Beyond this, MDTU, together with the East Europe Foundation, has developed a second index, the Territorial Communities Digital Transformation Index. This is a tool for measuring and monitoring the current level of digital transformation of Ukraine's territories in terms of i) digital economy, ii) development of digital skills, iii) digital infrastructure, iv) digitalisation of public services, and v) digital transformation of local governments (MDTU, n.d.<sup>[61]</sup>).

<sup>2</sup> Data is not included for 2022 due to limited reliability and availability of data as a result of Russia's full-scale invasion.

<sup>3</sup> [Державні послуги онлайн \(diia.gov.ua\)](https://diia.gov.ua)

<sup>4</sup> Other factors such as age or education also play a great role in this, with younger people being more likely to be digitally educated. In 2023, only 2.1% of 18–29-year-olds reported they had no digital skills, as compared to 17.4% of those aged 60–70. 65.4% of young people (18–29) have above basic digital skills as compared to 12% of 60–70-year-olds. Beyond this, the MDTU found that the digital skills of people without vocational or higher education are lower than those with secondary special education, and especially of those with higher education (Ministry of Digital Transformation of Ukraine, 2023<sup>[62]</sup>). With regards to the use of e-government services, in 2021, 82.5% of respondents to a survey by the Kyiv International Institute of Sociology among 18–29 years old used at least one e-government service, vs. only 28% of people aged 70 and above (Kyiv International Institute of Sociology, 2023<sup>[63]</sup>).

<sup>5</sup> Prozorro was Ukraine's first major step towards digital government. It was launched in 2015 as an e-procurement system and is designed to create efficiency, transparency, and competitiveness. Now, it provides a central platform for the entire procurement process. According to Ukraine's government, this has saved approx. USD 1 billion per year in procurement spending (Ingram and Vora, 2024<sup>[8]</sup>).

<sup>6</sup> Other donors include: Global Affairs Canada, GIZ, German Federal Foreign Office, OCHA, SIDA, UNDO, UNICEF, and WHO.

<sup>7</sup> Many OECD countries have such designated strategies outlining a coordinated and holistic approach to their digital ambitions as well as the challenges these imply. The OECD, through its Going Digital Framework, has identified the key policy domains to include in such strategies and compiled an overview of key measures and principles to be considered when developing such document (OECD, 2022<sup>[10]</sup>).





# **3** **Developing comprehensive support services for SME digitalisation**

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This chapter delves deeper into the various challenges faced by Ukrainian SMEs in adopting digital transformation as well as solutions to overcome these. Barriers like lack of awareness, digital skills shortages, sectoral specificities, and financial constraints complicate sustainable digital progress, making targeted support essential. The chapter therefore provides a benchmark of existing tools for SME digitalisation in Ukraine against the blueprint developed by the OECD for policymakers and suggests avenues for further support services.

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## Introduction

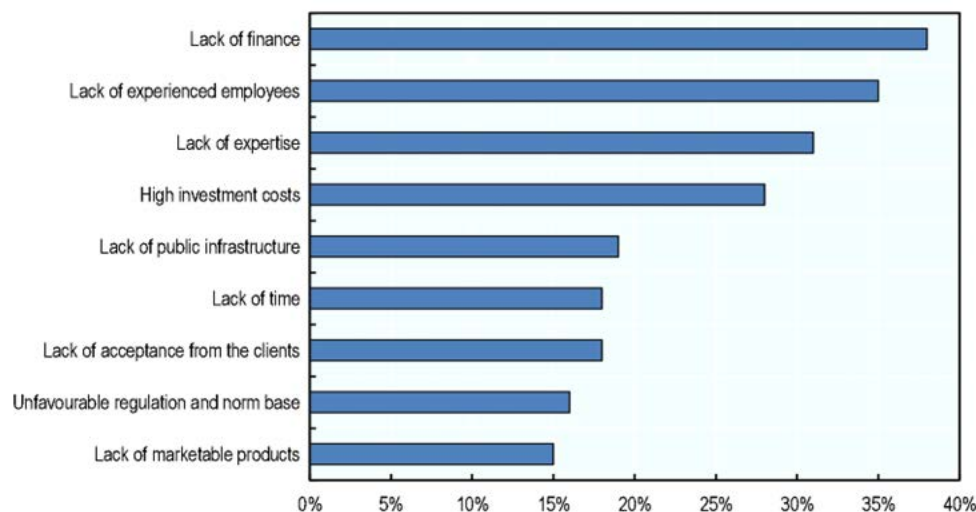
When successful, the digital transformation provides many benefits to businesses. Smaller firms, however, tend to struggle to engage and thrive in their digitalisation journeys (Knuth, Saha and Poluschkin, 2021<sup>[1]</sup>). Although there has been a steady uptake of digital technologies by SMEs in Ukraine over the last decade, they still lag larger businesses in terms of digital progress. This contributes to inequalities among firms, and, in turn, people and places (OECD, 2021<sup>[2]</sup>). Previous and ongoing crises, such as the COVID-19 pandemic and Russia's invasion, aggravated these inequalities (Qureshi, 2020<sup>[3]</sup>).

The hurdles SMEs face in adopting digital technologies include structural barriers such as the lack of information and awareness of digital tools and benefits, as well as digital skills gaps that impede managers and employees from identifying the digital solutions suitable to adapt their business models and processes. Another central barrier concerns difficulties SMEs encounter in accessing finance to invest into the digital transformation. Certain gaps and challenges also remain with regards to their access to the digitalisation ecosystem and networks, as outlined in the previous chapter. (Godlovitch and Bodin, 2022<sup>[4]</sup>).

A 2021 survey of Ukrainian companies (Knuth, Saha and Poluschkin, 2021<sup>[1]</sup>) illustrates the main challenges SMEs face in their digitalisation journey, highlighting *access to finance* and a *lack of experienced employees* as main obstacles (Figure 3.1).

**Figure 3.1. Perceived obstacles to digital transformation of Ukrainian SMEs**

Percentage of respondents, 2021



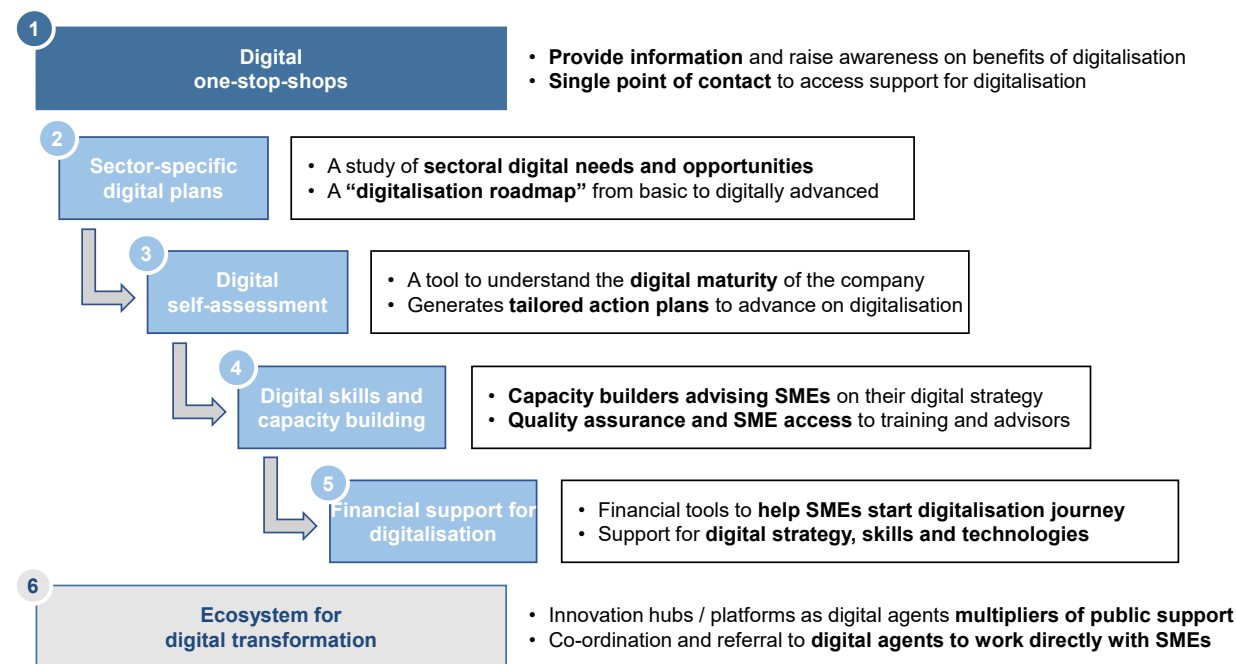
Note: Data refer to a survey sample of 500 companies. This includes companies of all sizes – micro, small, medium, and large enterprises – from all sectors and regions of Ukraine. The German Economic Team interviewed either the owners or managing directors or, in the case of large companies, top managers or high-ranking executives in each of the 500 companies throughout May and June 2021.

Source: (Knuth, Saha and Poluschkin, 2021<sup>[1]</sup>).

To tackle these challenges, SMEs need targeted support that is tailored to their broad range of individual needs (OECD, 2023<sup>[5]</sup>). This can take the form of a wide range of financial and non-financial services and tools. In 2021, the OECD developed a blueprint for policymakers to implement these (Figure 3.2). The document foresees 1) digital one-stop-shops providing information, raising awareness on the benefits of digitalisation and acting as single points of contact for support, 2) digital maturity self-assessment, 3) sector-specific digital plans that enable a study of sectoral digital needs and opportunities and offer a

“digitalisation roadmap”, 4) digital skills enhancement and capacity building, and 5) financial support to help SMEs start their digitalisation journey and to support their digital strategies, skills and technologies. This chapter conducts a benchmark analysis of existing support services available in Ukraine against (and beyond) this blueprint.

**Figure 3.2. A policymaker’s blueprint to accelerate the digital transformation of SMEs**



Source: OECD analysis, (OECD, 2021<sup>[6]</sup>).

## Developing support services tailored to every level of digital maturity of SMEs

### ***The EEPO’s extensive experience in offering business support programmes can be leveraged to provide tailored digitalisation support for SMEs***

To help overcome the challenges faced by SMEs, the EEPO provides a great range of online business support services. Since its creation in 2016, it has developed and implemented a series of targeted support programmes for SMEs through the Diia.Business online platform and its different sub-platforms. Diia.Business offers a wide range of online services helping to set up and manage a business, including initiatives tailored to the different stages of business growth, e.g., for aspiring entrepreneurs and exporters. Moreover, the EEPO is constantly working on expanding the variety of its support services. A recent addition to its support portfolio, for instance, includes a new course for entrepreneurs on how to develop a “trend framework for innovation” (reflecting on developments in AI, ERP, and robotic automation, and outlining measures that can help integrate such tools into businesses)<sup>1</sup>. The EEPO is constantly working on further developing Diia.

However, existing, and planned business support with specific reference to digitalisation is rather limited, especially for SMEs that are just starting to digitalise. Online tools are likely to be accessed primarily by SME managers or employees who are already internet-savvy. While Diia.Business Centres throughout Ukraine offer free offline business consultations with certified consultants, they do not provide programmes tailored particularly to SMEs aiming to *start* their digitalisation journey, nor are they tailored to other SME-specific needs, such as their levels of digital maturity or the sector they operate in.

*SMEs are unaware of digitalisation benefits and lack programmes tailored to their digital maturity levels*

Despite the EEPO's various support services, SMEs in Ukraine tend to use basic digital tools, while larger enterprises are leading in technology adoption (Knuth, Saha and Poluschkin, 2021<sup>[11]</sup>). Over a third of Ukrainian firms have websites (35%), while 29% use social media (2021). Fewer SMEs, however, have adopted more advanced digital services like cloud computing, IoT or big data analysis. Ukrainian SMEs appear to lag behind their counterparts in OECD countries as well as some of their EaP peers in terms of digital adoption (see Chapter 1).

Managing an initial digital transition and getting accustomed to digital tools, however, can drive further adoption and accelerate the use of more advanced digital services, as technologies are often complementary. For instance, complementarity exists “(i) between different technologies (e.g., back and front-office management software); (ii) with firms’ assets or investments (e.g., technical, managerial and general cognitive skills, financing capacities, organisational capital, intangible assets and R&D investment); and (iii) with policies (e.g., the propensity of the regulatory environment to promote competition and efficient resource allocation)” (OECD, 2021<sup>[6]</sup>; OECD, 2023<sup>[7]</sup>).

SMEs lack awareness of the benefits of digital tools and the ways they can be used, as well as the difficulty they face in choosing the right support programme for their needs out of the variety of existing programmes, are central barriers to digital progress. This is complicated by SMEs’ needs varying depending on their individual levels of digital maturity, as different maturity levels require different forms of support. To help tackle this, governments can provide digital maturity self-assessment tools (OECD, 2021<sup>[6]</sup>). Such tools are used to map a company’s digital readiness and point towards areas for improvement. At the same time, they can facilitate the collection of data that can be form the basis of future, tailored recommendations (Ottsejö, Sandra Nyström and Berglund, 2020<sup>[8]</sup>). The private sector can also offer digital audits in this regard, assessing what is already available in a respective company.

Digital readiness can be defined through a scale of maturity levels, ranging from *initial* to *digital-oriented* (meaning that the business is “based on a solid technology infrastructure”) (De Carolis et al., 2017<sup>[9]</sup>). Digital maturity assessments should further not only account for the digital technologies in use, but also for the level of digitalisation of the businesses’ overall organisational structures”) (De Carolis et al., 2017<sup>[9]</sup>). For instance, Politecnico di Milano’s *Digital Readiness Questionnaire* evaluates digital readiness through four analysis dimensions: process, monitoring and control, technology, and organisation. Importantly, digital maturity self-assessments should be only a first step on an SME’s digitalisation journey and need to be followed by practical, tailored advice on next steps to enhance digital maturity and, ideally, by financial support (OECD, 2021<sup>[6]</sup>; De Carolis et al., 2017<sup>[9]</sup>).

Digital maturity self-assessment tools are increasingly used across OECD and EU countries. Over half of OECD member countries have some form of digital self-assessment, and some common tools exist at the regional and international level (e.g., in the Baltics and the EU; a new Digital Maturity Assessment Tool was developed by the European Commission for EDIHs for instance. Box 3.1 provides an overview of best practices of digital maturity self-assessment tools.

### Box 3.1. Digital Maturity Self-Assessment Tools

**Digital maturity self-assessment tools** are widely used across OECD and EU countries to assess businesses' levels of digital progress. Good practice examples include:

**“Smart Latvia”/ “Diginno”:** In 2019, the Latvian Information and Communication Technology Association (LIKTA) launched “Smart Latvia”/ “Diginno”, an online self-assessment tool that allows Latvian managers to test their company’s digital maturity and to compare it with competitors, with support of Ministry of Economic Affairs and Communications of Estonia. This is available in Latvian, English and the other national languages of the Baltic Sea region and measures digital maturity across 10 business dimensions and took place in three stages. During the first stage, 1,000 entrepreneurs took the test and received tailored recommendations for their companies. Managers received recommendations on which IT solutions are suitable to enhance the company’s efficiency as well as tips on how to initiate an internal discussion on digitalisation with their employees. During the second stage, LIKTA collected up-to-date data on the digital maturity of Latvian companies. In parallel, it organised webinars, mentoring sessions and podcasts covering pressing issues for individual entrepreneurs and the overall ICT industry. The third and last stage included discussion rounds and in-person events, such as educative workshops, to support to managers of Latvian SMEs on implementing the latest IT solutions.

#### **Digital Maturity Assessment Tool of the European Commission**

With the roll-out of the Digital Europe programme, a new generation of European Digital Innovation Hubs (EDIH) are implemented to speed-up the digital transformation of SMEs across the EU. To measure the current level of digitalisation within EDIH customers’ processes (an SME or a Public Sector organisation) and put forward recommendations for improvement, the European Commission provides a European Digital Maturity Assessment (DMA) tool.

The tool assesses the overall digital maturity of SMEs across six dimensions, including i) digital strategy and investments, ii) digital readiness, iii) human-centric digitalisation, iv) data management and security, v) interoperability, and vi) green digitalisation.

**DREAMY (Digital Readiness Assessment Maturity model):** The DREAMY model and related questionnaire were developed by Politecnico di Milano as a digital maturity assessment method to measure manufacturing companies’ digital preparedness. It primarily consists of a questionnaire building on the five strategic areas for enabling smart manufacturing systems. These include i) Design and Engineering, ii) Production Management, iii) Quality Management, iv) Maintenance Management, and v) Logistics Management. Based on these considerations, the four dimensions of analysis of digital maturity are Process, Monitoring and Control, Technology, and Organisation.

Source: (Digital Innovation Network, n.d.<sup>[10]</sup>; Galina Misheva, 2021<sup>[11]</sup>; LIKTA, n.d.<sup>[12]</sup>; European Commission, 2021<sup>[13]</sup>; European Commission, 2023<sup>[14]</sup>; De Carolis et al., 2017<sup>[9]</sup>; Interreg Europe, 2020<sup>[15]</sup>; EIT Health, 2023<sup>[16]</sup>; European Commission, 2023<sup>[17]</sup>).

To date, Ukraine offers a self-assessment tool for digital skills through Diia.Digital Education’s so-called “Digigrams”. These national tests build on the EU competencies and DigComp UA frameworks and allow individuals to test their skills against 30 different digital competencies. As different occupations require different digital skillsets, different versions of Digigram exist, including variants for citizens, healthcare workers, public servants, and teachers (ITU, 2021<sup>[18]</sup>). Beyond this, the DigComp4Entrepreneurs framework provides a baseline against which to benchmark digital competence, in line with EU standards and practices (see Box 3.2). The EEPO has also launched a test of personal data protection that assesses how well a business is doing in terms of digital security and provides recommendations on how to enhance

security *via* the Diia.Business portal (Cyber Diia, n.d.<sup>[19]</sup>; OECD, 2021<sup>[20]</sup>). Fostering privacy protection further helps Ukraine move closer to EU standards of personal data protection. While the government has expressed its determination to establish a self-assessment tool for entrepreneurs to assess their digital maturity and skills, such a tool has not yet materialised. Ukraine could build on its experience to launch such tool to help SMEs start or progress on their digitalisation journeys.

### Box 3.2. Ukraine provides digital competence frameworks for skills assessment of entrepreneurs and youth

#### DigComp4Entrepreneurs

Ukraine's Digital Competence Framework for Entrepreneurs (DigComp4Entrepreneurs) was developed in 2021. It builds on the Diia.Digital Education project and received support from the East Europe Foundation. The framework's overall objectives include reducing barriers to business initiation, enhancing business agility, elevating competitiveness and digital security, incentivising entrepreneurial initiatives, and mitigating emerging challenges associated with digital technology advancement.

The programme particularly targets entrepreneurs (especially those lacking formal IT education) and allows them to assess their digital competencies. This is complemented by tests tailored to specific target groups, i.e., the Digigrams. Around 187.334 people have taken the assessment to date. Upon successful completion of the assessment, participants receive an electronic certificate. This confirms the individual's overall level of digital literacy, the total score achieved, and the breakdown of points attained in each competence area, and thereby helps individuals position themselves competitively within the labour market.

#### EntreComp4Youth and EntreGram4Youth

The key goal of these frameworks is to develop digital, entrepreneurial, and green skills for young people; complementary to key institutions in education, training, practical training, continuing education, and internships.

The Entrepreneurial Competence Framework for Youth in Ukraine (EntreComp4Youth) is dedicated to fostering youth leadership and entrepreneurship, e.g., through capacity building, fellowships, support for policy dialogue, and grants. This includes a self-assessment tool to measure the entrepreneurial potential of young people (EntreGram4Youth) which can be accessed via the Diia.Digital Education platform. Upon completion, test-takers receive a certificate that can be used, e.g., for job applications.

EntreComp4Youth is structured around four pillars mirroring the lifecycle of a startup; providing a roadmap and recommendations for each stage of a startup's life to promote entrepreneurship effectively. Building on the EU model, the Ukrainian government expanded the framework to include four pillars: (i) Pre-conditions (a new addition compared to the European framework), (ii) Start, (iii) Run, and (iv) Grow. Each pillar encompasses skills such as innovation, leadership, problem-solving readiness, adaptability, and financial management. It also includes competencies revolving around fostering public-private partnerships as well as support for young people with special needs.

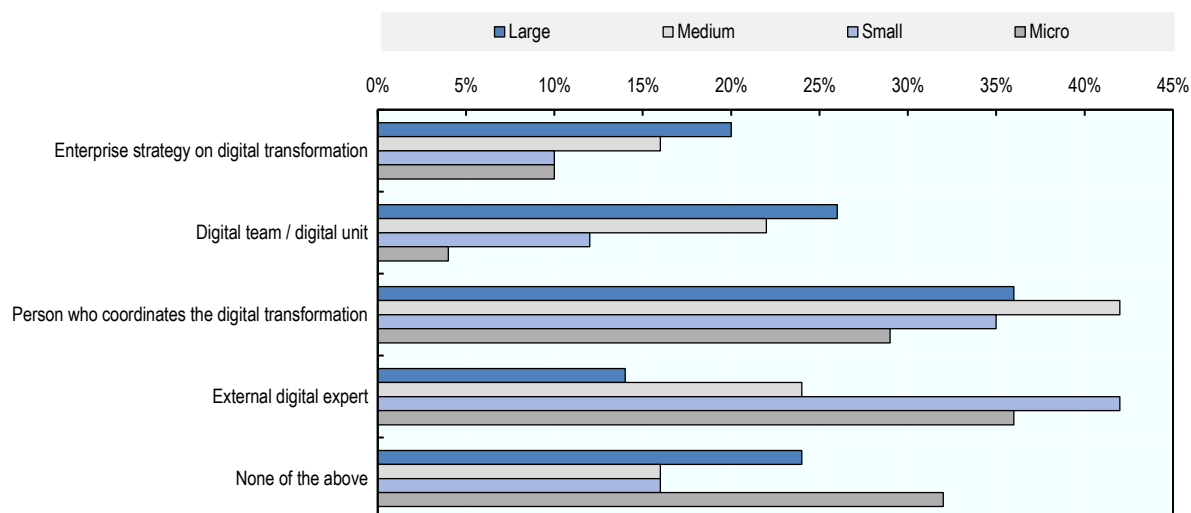
Source: (Ministry of Digital Transformation of Ukraine, 2021<sup>[21]</sup>)

While self-assessment tools for SMEs are a very useful first step, they should be complemented by tailored advisory services. Indeed, small firms or entrepreneurs who are not familiar with digital tools often struggle to understand the questions and interpret the results. Few have a strategy for the digital transformation (Figure 3.3) – even among large firms, only 20% of them do so, as against 39% of German companies, for instance (Knuth, Saha and Poluschkin, 2021<sup>[11]</sup>). Digital advisors/experts are therefore essential, to guide

SMEs, help them develop digitalisation strategies based on the test results and point them towards relevant solutions. While SMEs can receive preliminary guidance on digitalisation through the aforementioned free online consultation opportunities, this form of support does not involve a comprehensive analysis of the company's operations and is unlikely to provide a customised roadmap for their digital transformation.

**Figure 3.3. Organisational measures taken by Ukrainian firms for the digital transformation**

Percentage of firms having already taken the given measure, 2021



Note: Data refer to a survey sample of 500 companies. This includes companies of all sizes – micro, small, medium, and large enterprises – from all sectors and regions of Ukraine. The German Economic Team interviewed either the owners or managing directors or, in the case of large companies, top managers or high-ranking executives in each of the 500 companies throughout May and June 2021.

Source: (Knuth, Saha and Poluschkin, 2021<sup>[11]</sup>).

### Sector-specific digitalisation roadmaps can facilitate SMEs' diverse digitalisation processes

As mentioned, digital maturity self-assessment tools should be followed with further support for SMEs. The complexity of the digitalisation process does not allow for a “one-size-fits-all” approach, especially considering that SMEs in different sectors have different needs (OECD, 2018<sup>[22]</sup>; OECD, 2021<sup>[23]</sup>).

In terms of key sectors, Horizon Capital expects Ukraine's economy to be structured around advanced manufacturing, ICT, and agriculture (Savoy and Staguhn, 2023<sup>[24]</sup>). Wholesale and retail trade concentrate most SMEs, accounting for 39.8% (State Statistics Service of Ukraine, n.d.<sup>[25]</sup>). Ukraine's manufacturing sector has been historically strong, accounting for 10% of GDP in 2021 and representing 10% of SMEs in 2022. Agriculture made up around 13% of SMEs in 2022 and is vital for the economy and population, particularly considering war-induced grain shortages. Table 3.1 illustrates the various ways these sectors can benefit from digitalisation.

Table 3.1. Digital transformation can benefit SMEs in Ukraine's key sectors

| Sector                            | Benefits of digital transformation   |
|-----------------------------------|--|
| Wholesale and retail trade        | <ul style="list-style-type: none"> <li>• <b>Increased connectivity between Ukraine and OECD/EU countries:</b> Digitalisation can enhance cross-border connectivity and thereby facilitate opportunities to communicate between cross-border regulatory agencies</li> <li>• <b>Efficient customs procedures:</b> Digitising customs can automate clearance systems, support risk management, and validate processes for border control agencies and customs officers</li> <li>• <b>Facilitation of border crossing:</b> Using trade documents instead of paper documents decreases costs and time in cross-border trades. Mobile passport control systems where passengers submit their identification and customs through a mobile app can further streamline passport control inspections and passenger entry across borders.</li> <li>• <b>Improved customer experience:</b> With new technologies like social media, analytics, IoT, etc., SMEs can stay updated about their target market's requirements and make adequate offers. This also helps improving relationships with customers.</li> </ul>  |
| Agriculture                       | <ul style="list-style-type: none"> <li>• <b>Increased economic and environmental performance:</b> Digitalisation can help farmers make better decisions, optimise their operations, and increase productivity, leading to higher profits and a more sustainable agricultural sector</li> <li>• <b>Environmental sustainability:</b> The use of digital technologies can help farmers reduce their environmental footprint, by optimising resource use, reducing waste, and using precision farming techniques</li> <li>• <b>Competitiveness of the digital supply industry:</b> Digitalisation can help the agricultural sector stay competitive in the global market, by providing innovative solutions and creating new business opportunities</li> <li>• <b>Improved working conditions for farmer:</b> By automating tasks and optimising operations, digital technologies can help reduce the physical and mental workload of farmers, leading to better working conditions</li> <li>• <b>Increased transparency along the supply chain:</b> Digitalisation can help improve traceability and transparency of agricultural products, enabling consumers to make more informed choices</li> </ul>  |
| Industry<br>(e.g., manufacturing) | <ul style="list-style-type: none"> <li>• <b>Increased productivity:</b> By adopting digital tools, SMEs can enhance their effectiveness and increase the number of products manufactured per year. Digital technologies, such as augmented reality, additive manufacturing, big data, automation, or the Industrial Internet of Things, can further help SMEs adapt their production systems to handle diversifying and rapidly changing market demands.</li> <li>• <b>Improved decision-making:</b> Digital transformation can help businesses make informed and accurate decisions to visualize and analyse product data to improve quality, performance and productivity. It also offers a better picture of the market by providing better insights into customer behaviour and purchasing power and allows to get accurate and real-time information about the cost and time involved in various processes.</li> <li>• <b>Improved inventory management and visibility:</b> Digital technologies can facilitate the acquisition of production data and the energy monitoring of machines from the factory floor to a central repository where data analytics tools can generate KPIs. This reduces daily production management tasks and improves the management of equipment and resources while easing the burden on reporting by machine operators.</li> <li>• Overall, this leads to <b>increased competitiveness.</b></li> </ul> |

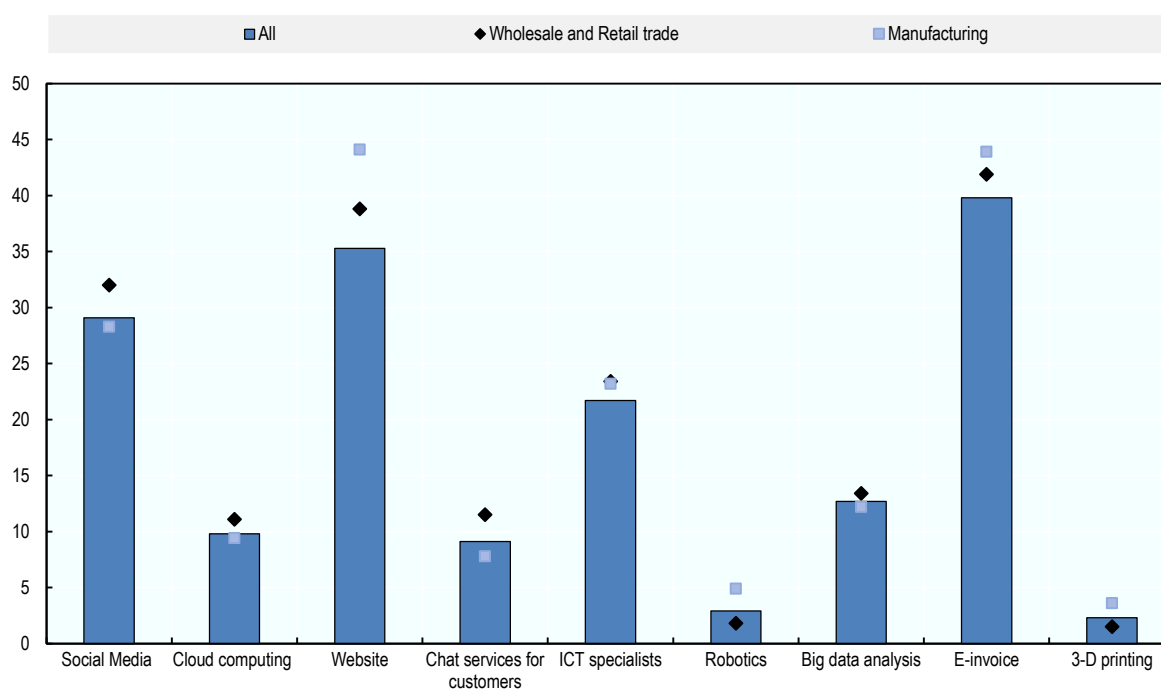
Sources: (Shevtsova et al., 2020<sup>[26]</sup>; OECD, 2019<sup>[27]</sup>; Doyle and Cosgrove, 2019<sup>[28]</sup>; Bandura and Staguhrn, 2023<sup>[29]</sup>; Bhagat, 2022<sup>[30]</sup>)



Figure 3.4 illustrates the use of digital technologies in Ukraine’s manufacturing and wholesale and retail trade sectors compared to all firms. The use of more advanced tools such as cloud computing or robotics is not very common amongst businesses in general, but the two selected sectors tend to use more digital technologies than the national average. Data reveal sectoral disparities in technology adoption, with manufacturing firms displaying higher uptake of robotics and 3-D printing, while businesses in the wholesale and retail trade make greater use of social media and chat services, as well as big data analytics. These differences partially reflect varying needs across sectors: robotics, for instance, can be especially useful for manufacturing, as they can facilitate production processes and can further alleviate the consequences of labour shortages (Povlsen, 2023<sup>[31]</sup>). However, the divergence in adoption rates between these sectors is minimal in most areas, in both Ukraine and the EU. What is striking, however, is that so few businesses in wholesale and retail trade use chat services for customers, considering that this is a very customer-oriented sector. Similarly, wholesale and retail trade companies could significantly benefit from creating more websites to facilitate interactions with customers. While businesses’ use of big data analytics reaches comparable levels between Ukraine and the EU, considerable gaps persist with regards to cloud computing for instance – 11% of Ukrainian firms in wholesale and retail use it and 9% in the manufacturing sector, vs. 34% and 32% in the EU, respectively (European Commission, 2022<sup>[32]</sup>).

**Figure 3.4. Ukrainian firms’ uptake of digital technologies by sector**

Percentage of firms, 2022 or latest available



Note: Data refer to 2020 (3-D printing, Big data analysis, and E-invoice), 2021 (Robotics, Website, and Chat services for customers), and 2022 (Cloud computing and Social media).

Source: (Ukrstat, 2023<sup>[33]</sup>).

Given disparities in digital tools’ utility and uptake across sectors, tailored approaches and advice can better address firms’ needs. Sector-specific digitalisation roadmaps, for instance, can provide SMEs with step-by-step recommendations on available digital solutions, adapted to their individual needs. Ideally, these should be integrated into broader (offline) support networks (OECD, 2019<sup>[34]</sup>).

Such roadmaps are not yet provided in Ukraine. However, some regions have shown willingness to take on such approaches: the *Operational Plan for the implementation of the Economic Development Strategy of Donetsk and Luhansk for the period to 2030*, adopted in August 2021 (Cabinet of Ministers of Ukraine, 2021<sup>[35]</sup>), for instance, foresaw the creation of a business support system including regional competence centres and a regional division of the EEPO focusing particularly on the business sectors the regions specialised in (apart from the large metallurgy, grain growing and oil production industries). The aim was to ensure the support of regional value-added chains and export businesses.<sup>2</sup> This experience can be leveraged when developing sector-specific digitalisation roadmaps.

To facilitate the development of sector-specific digitalisation roadmaps in Ukraine, data need to be collected on the digital maturity of different sectors to establish a baseline and identify sectoral priorities. The Ukrainian National Statistical Office, Ukrstat, is a regional leader in that regard – it already collects, size- and sector-disaggregated data on the number of enterprises that have access to the Internet; the digital tools used by enterprise size and economic activity; the number of industrial enterprises that implement innovation (product and/or technological processes); and in-house training provision on ICT-related skills (State Statistics Office for Ukraine, 2020<sup>[36]</sup>; State Statistics Office for Ukraine, 2021<sup>[37]</sup>). The results of the digital maturity self-assessment tool would offer insights into sectoral specificities per firm size, granted that respondents indicate their respective sector in the online questionnaire.

### ***The government is committed to digital skills training for citizens and entrepreneurs***

The lack of appropriate skills among SME managers and employees is one of the main barriers to digitalisation. In Ukraine, the lack of experienced employees and lack of expertise are, after lack of finance, the key obstacles to digital transformation cited by SMEs (see Figure 3.1). Basic digital skills are also essential for entrepreneurs and employees to benefit from the wide range of e-support services provided by the government (ITU, 2021<sup>[18]</sup>).

Several types of skills matter for the SMEs' digital progress. To offer policymakers a clear definition and help build a common understanding, the OECD has developed a taxonomy of ICT skills. While foundational skills, such as literacy and numeracy, appear as a pre-requisite for any individual to develop digital skills, the latter can then be broken down into three main categories: “i) ICT generic skills, that can be useful for the entire working-age population by facilitating the use of digital technologies for both work and daily life, ii) ICT advanced skills, developed by IT specialists (e.g., programming or developing apps), and iii) ICT complementary skills, that are not hard skills *per se* but help reap the benefits of digital tools – e.g., information processing, problem-solving, and interpersonal skills as well as managerial and organisational skills” (Grundke et al., 2018<sup>[38]</sup>; OECD, 2016<sup>[39]</sup>). Specific digital skillsets allow firms to streamline working progresses and to simplify collaboration, thereby increasing efficiency and helping open avenues to new markets. Digitally skilled entrepreneurs and employees can also help SMEs tap into the potential of market solutions. Many SMEs cannot rely solely on the digital skills of their employees and are dependent on larger ecosystems and networks in this regard (OECD, 2021<sup>[23]</sup>). To compensate for weak internal capabilities, they tend to outsource solutions when digitalising– e.g., for managing digital security risks, SMEs tend to rely on external consultants or the “security-by-design” features of the products and services they use; they also often source AI solutions from knowledge markets (OECD, 2021<sup>[23]</sup>). Digital skills can help SMEs make informed decisions when outsourcing such tasks. Insufficient digital skillsets of employees can risk inducing a mismatch on the labour market as well as a digital divide – not only between firms of different sizes but also between digitally advanced and less skilled workers (Friedrich-Ebert-Foundation, 2022<sup>[40]</sup>; Betily et al., 2023<sup>[41]</sup>).

The government's resolute commitment to nurturing digital skills among the population remains steadfast, even in the face of Russia's invasion. Despite severe disruptions in internet connectivity and outages, as well as the strains caused by migration and military service on the availability of skilled IT specialists (OECD, 2022<sup>[42]</sup>), Ukraine's dedication to fostering digital literacy has intensified. The war has prompted a

further strategic re-evaluation of the focus of pre-existing digital skills training-initiatives, like Diia.Digital Education. The United Nations reports that approximately 60% of Ukraine’s internally displaced persons (IDPs) are of working age. Digital skills retraining is a potential solution to equip them with the competencies sought by employers in the job market. For instance, despite wartime conditions, the high number of entry-level positions in technology-related roles, such as data analysts and digital marketers, indicates a demand for appropriately skilled employees (Ionan, 2023<sup>[43]</sup>). Consequently, Diia.Digital Education has honed its efforts towards addressing these specialised vacancies and an upgraded version, backed by Google and the East Europe Foundation, was introduced in May 2023. 2 million active students use Diia.Digital Education and 3 million certificates have been issued .

Table 3.2 exemplifies digital skills support provided by the government – ranging from digital skills self-assessments to training. To date, digital skills initiatives include the upgraded version of Diia.Digital Education (May 2023), its network of +5,000 hubs in public libraries, universities and schools and interactive portal containing over 320 lessons and 500 interactive tasks for IT teachers and children (including on big data and AI), the National Online School for Entrepreneurs, the International Computer Driver’s License, and the Digigram skills assessment tools mentioned above. 2 million active students use Diia.Digital Education and 3 million certificates have been issued (Diia.Business, EEPO, 2022<sup>[44]</sup>).

**Table 3.2. The Ukrainian government provides a range of digital skills promotion initiatives**

|                         | Programme  | Launch year                 | Beneficiaries   | Tool/ Service   |
|-------------------------|--|-----------------------------|---|---|
| Digital skills training | Diia.Digital Education   | 2020 (upgraded in May 2023) | More than 2.1 million Ukrainians, of which 75% have watched all edutainment episodes of their chosen course and received certificates | Online one-stop-shop for digital skills training in an edutainment format (including crypto literacy and blockchain courses as well as courses on cyber hygiene); more than 180 educational series, 50+ simulators; enabling teachers, parents, and employers with the necessary tools and resources to develop the digital skills of their students, children, and employees.<br><br>Since May 2023, it also offers career-oriented test and standardised national digital literacy assessments across over 50 distinct job-specific educational series, catering to diverse professions ranging from SMM specialists to bakers. It includes a job search feature, which consolidates job listings from leading Ukrainian job portals, facilitating direct employment opportunities for users. |
|                         | 5000 Diia.Digital Education Offline Hubs                         | 2020                        | More than 10 000  | Provides on-the-ground access to computers and internet to allow all citizens, especially veterans, women, IDPs and kids to enhance their digital skills and to meet the gap in access to digital skills training in rural areas.   |
|                         | National Online School for Entrepreneurs on Diia.Business portal | 2020                        | More than 24 800 users have started studying  | Online tutorials and educational series for entrepreneurs wanting to improve their business and enhance business digitalisation.  |
|                         | “International Computer Driver’s License”                        | n/a                         | Over 16 million Ukrainians  | Free computer skills training module  |
| Self-assessment tools   | Digigram   | 2020                        | n/a   | National Digital Literacy Tests (4 types of tests for citizens, healthcare workers, public servants and teachers).  |

Source: (ICDL, 2023<sup>[45]</sup>; Ionan, 2023<sup>[43]</sup>; Diia.Business, 2024<sup>[46]</sup>; Tech Ukraine, n.d.<sup>[47]</sup>; ITU, 2021<sup>[18]</sup>), fact-finding exercises conducted in H1 2023.

Tailored digital skills training for SME managers and employees is also offered through public-private co-operation. Beyond services to enhance digital skills for the general population, the government recognises the importance of providing tailored training to SME managers, employees, and entrepreneurs. To do so, the National Online School for Entrepreneurs on the Diia.Business portal offers several educational online courses covering topics such as “e-document management for entrepreneurs”, “transfer of business process online”, “Promotion on social networks – Boost with Facebook Bootcamp” and others (Diia.Business, 2024<sup>[46]</sup>). SMEs and entrepreneurs also benefit from initiatives carried out by, or in co-operation with, different public and private stakeholders (such as large companies). The “Partnership Offers” section of the Diia.Business website provides entrepreneurs with an extensive overview of over 60 discounts, promotions, and free opportunities from private Diia.Business partners (a list of which can be found on the Diia.Business website) including online services, training programmes, and paid consultations (OECD, 2021<sup>[6]</sup>). Such programmes can often achieve goals that could not be accomplished by governments alone (OECD, 2021<sup>[2]</sup>; European Training Foundation, 2020<sup>[48]</sup>). A wide range of training opportunities for entrepreneurs, particularly in the fields of digital marketing, sector-specific training (tourism), and war-related digitalisation support for businesses, exist in Ukraine – Table 3.3 provides some examples.

**Table 3.3. Selected examples of public-private digital skills training for Ukrainian entrepreneurs**

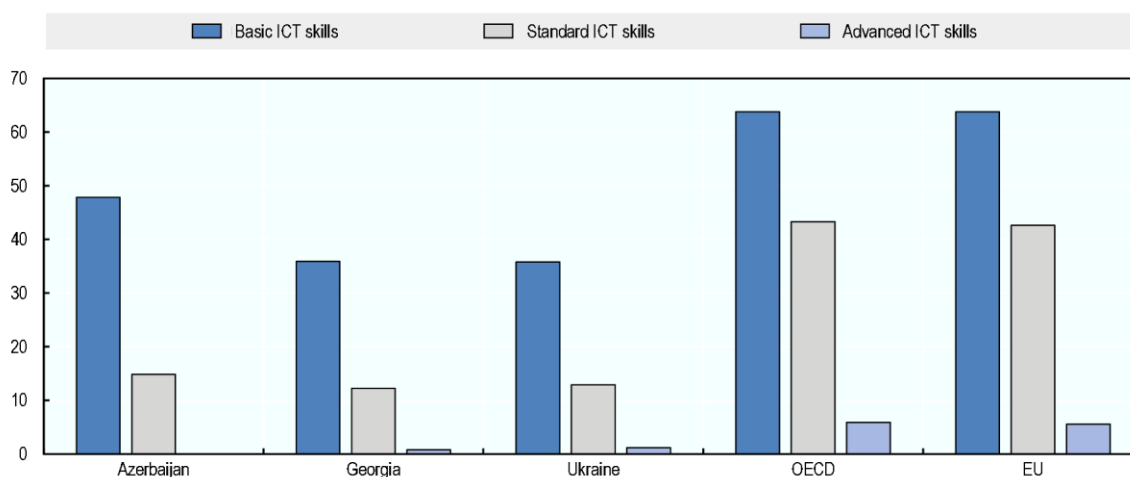
| Public sector partner                                | Private sector partner | Programme  | Launch year | Tool/ Service  |
|--|------------------------|--|-------------|--|
| Ministry of Digital Transformation and Diia.Business | Facebook               | “Boost with Facebook Bootcamp”                       | 2020        | Online course on basic online marketing skills   |
| Ministry of Digital Transformation and Diia.Business | IAMPM companies        | “Business Digitalisation: How to grow in wartime”    | 2023        | Course on how businesses can expand in face of Russian aggression  |
| EEPO   | Google                 | Meta Education Centre and different training modules | 2020        | Training modules on specific topics such as “fundamentals of digital marketing” and “online business development for tourism”. Citizens can take more than 20 blueprint courses and study the Meta Boost platform for free. Thereby, they can acquire or improve skills in marketing, brand promotion in social networks, and content creation |

Source: (OECD, 2021<sup>[6]</sup>; MenaFN, 2020<sup>[49]</sup>; IAMPM, 2023<sup>[50]</sup>), fact-finding exercises conducted in H1 2023.

Ukraine is often cited as a good practice example, especially by its peers from the EaP region, when it comes to offering digital skills trainings for both the general population, and entrepreneurs specifically. Indeed, the above-mentioned wide range of governmental and public-private support services is a considerable asset for Ukraine during wartime and beyond, helping Ukraine achieve its goal to engage 6 million citizens in digital literacy programmes (Siutkin, 2024<sup>[51]</sup>). However, despite this wide range of digital skills training, Ukraine still lags OECD and EU averages, as well as some EaP skills levels (Figure 3.5).

**Figure 3.5. Despite the wide range of digital skills services, Ukrainian citizens lack standard and advanced ICT skills**

Percentage of individuals with skills, 2021 or latest available



Note: Data not available for Armenia and Moldova. 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<sub>[52]</sub>).

Digital skills training opportunities are periodically monitored by the MDTU, which conducts bi-annual studies (the last one in 2023) (Siutkin, 2024<sub>[51]</sub>). These offer very valuable insights into digital skills development among different target groups and across regions. However, the ITU suggested that the effectiveness of the monitoring could be increased by updating the measurements used to assess and evaluate the levels of digital competencies at the individual, organisational and systemic levels, as well as on different levels of government (ITU, 2021<sub>[18]</sub>).

Collecting more extensive data on digital skills would also support these measures and enable a mapping of digital skills across regions and sectors (ITU, 2021<sub>[18]</sub>). This could help better adapt future support services to specific needs and can contribute to overcoming problems of skills mismatch in the labour market.

To this end, the government is planning to develop a systematic approach to regularly gather more SME skills intelligence data. It aims to adopt a new law on adult education, as well as to introduce a United State Electronic Database on Education (USEBE)<sup>3</sup>. As part of the planned work on updating the Diia.Business portal, the EEPO aims to expand the list of data about users during the registration and authorisation on the portal.

Moreover, while trainings are most often monitored, the *actual* impact of this impressive repertoire of digital skills training opportunities for entrepreneurs is not regularly evaluated. Doing so, i.e., by assessing the digital skills acquired by entrepreneurs using these services or the digital technologies adopted by SMEs, would allow Ukraine to better develop future services and adapt existing ones to real needs.

Overall, digital skills training should be integrated into a broader, nation-wide, step-by-step programme, including the digital maturity self-assessment, sectoral digitalisation roadmaps, in-depth advisory, and

financial support – to incentivise SME managers and employees to develop their skills and make use of the training options available, pointing them towards the most relevant ones.

## Offering adapted financial support services for SMEs’ digital transformation to help overcome key challenges

As seen above, access to finance and a scarcity of resources to invest in the digitalisation process is quoted as a central obstacle to SME digitalisation in Ukraine. The smaller the company, the more difficult it is to tap into both, external and internal funding opportunities (OECD, 2020<sup>[53]</sup>; OECD, 2023<sup>[54]</sup>). Generally, countries offer the following financing options to support SME digitalisation:

- Enterprise support agencies can ensure that SMEs have access to **grants** to purchase digital products and services. A good practice is to design such subsidies as “matching grants”, requiring a co-payment by the SMEs to ensure a minimum level of private investment and risk-taking in the digitalisation process (OECD, 2022<sup>[55]</sup>).
- **Vouchers** can incentivise SME managers to reach out for support in terms of mentoring, counselling, and training. When offering such incentives, it must be ensured that the quality of training is met by developing quality labels/certification of approved and efficient training schemes. Alternatively, only incentives of training and advice by previously accredited institutions should be provided (OECD, 2021<sup>[6]</sup>; OECD, 2013<sup>[56]</sup>; OECD, 2021<sup>[57]</sup>).
- Governments can facilitate SMEs’ access to **loans** by offering guarantees and counter guarantees to finance investment in digital transformation processes to selected financial intermediaries to increase their incentives to lend to SMEs. One way to quickly achieve this is to make expenditures on digital technology eligible for the already existing programmes (EBRD, n.d.<sup>[58]</sup>; The World Bank, 2024<sup>[59]</sup>).
- **Indirect financial incentives** can include accelerated depreciation schemes, allowing extra-amortisation on the purchase of certain eligible “digitally oriented” tangible assets and human resources. While these incentives operate through the tax systems, SME agencies could increase awareness of such options among their community of beneficiary SMEs (Godlovitch and Bodin, 2022<sup>[4]</sup>; OECD, 2021<sup>[6]</sup>).

In Ukraine, the Diia.Business portal provides an online marketplace with an overview of financial support programmes for SMEs, including grants financed by donors such as USAID or the EU. Ukraine has been implementing several initiatives to facilitate SMEs’ access to finance at large: the programme “5-7-9”, for instance, facilitates their access to credit at discounted rates through credit guarantees and partial compensation of interest on the loan. In 2020, the programme granted UAH 16.5 billion (roughly EUR 403 million) in credit and loans to 6,957 SMEs. Furthermore, there used to be a government-programme allowing entrepreneurs to apply to grants of USD 5000 (approx. 4,600 EUR) to launch their businesses<sup>4</sup>. However, this was discontinued after the beginning of Russia’s full-scale invasion. Still, new forms of support have been launched, including the “eRobota” project, consisting of six grant programmes for opening or developing a business. It offers, *inter alia*, micro-grants to new entrepreneurs (UAH 150 000 to 250 000 – approx. EUR 3,672 to 6,120), as well as green- and IT-related support – e.g., to support startups in the IT sector, or to fund IT training. Moreover, the new defence tech initiative “Brave1” offers support to critical industries (including to 100+ SMEs). It only promotes collaboration between stakeholders in the defence tech industry, but also offers financial support for defence tech projects. With the financial support of international donors, Diia.Business Centres across Ukraine were further able to implement several grant projects in different sectors. Examples include the “SME Competitiveness and Internationalisation Programme” (Diia.Business Centre, Ternopil), which was implemented under the EU4Business initiative and was co-funded by the EU and GIZ, the “Grants for Business” educational and consulting programme for SMEs (Diia.Business Centre, Poltava), or the educational and grant programme “Strength” (supported

by USAID) which aimed to help businesses from Kharkiv, Dnipro and Odesa that were forced to relocate to return and restore their businesses.

In terms of funding from the government, corporate lending, in particular to SMEs, declined less than expected and the NBU is rapidly adjusting to wartime conditions. However, funding (in the form of vouchers or bank financing) from the government or international donors is not adjusted specifically to fostering digital transformation and non-bank financial instruments are underutilised. Neither is it possible to track the distribution of private investment (including business angels and venture capital) across the components of the digital transformation process (EU4Digital, 2020<sup>[60]</sup>). Overall, while general business funding can be mobilised, particularly through international aid, financial support for the digital transformation of SMEs is scarce.

For digitalisation support, businesses, organisations and public administration can apply for funding and support for projects in “key capacity areas such as supercomputing, AI, advanced digital skills, and ensuring a wide use of digital technologies across the economy and society” through the Digital Europe Programme, which has an overall budget of 7.5 billion EUR for 2021-2027 (CEPIS, 2022<sup>[61]</sup>). USAID is another important donor in this regard.

While current circumstances do not allow for extensive funding specifically dedicated to SMEs’ digital transformation, given budget constraints and war-related financing priorities, the current donor-funded approach might not be sustainable in the longer run. Moreover, co-ordination issues among the donor community can complicate the timely and effective allocation of resources. Donors further sometimes struggle to allocate funding to SMEs’ priorities. Similarly, SMEs face difficulties in understanding the value added of some donor-funded projects, as their working languages can differ significantly. Looking ahead towards Ukraine’s recovery and reconstruction process, improved co-ordination among donors and between donors and recipient businesses, as well as broader financial support for SME digitalisation will thus be essential to ensure the long-term sustainable transformation of SMEs.

## Way forward

To support SMEs of all levels of digital maturity in all sectors and overcome the challenges described above, Ukraine can consider developing a comprehensive digitalisation support programme for SMEs in non-IT sectors, encompassing several short-, medium-, and long-term measures. In doing so, it can especially leverage EEPO’s longstanding experience in offering business support services.

### ***Account for SMEs’ diverse digitalisation needs in terms of digital maturity and sector***

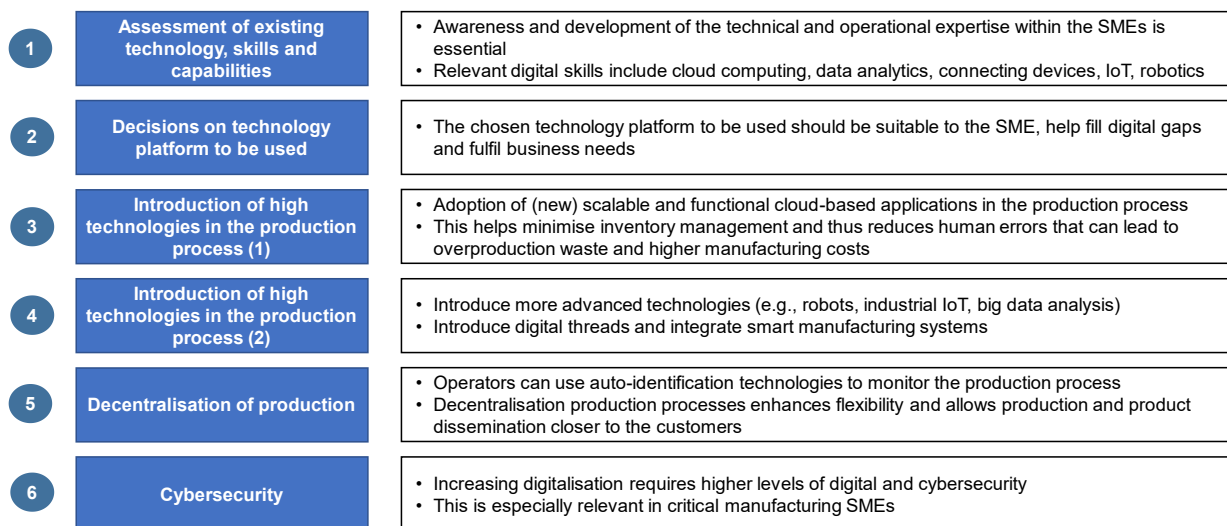
As mentioned, SMEs tend to lack awareness of their digital needs and have only limited access to support services tailored to their digital maturity levels and/or their sectoral needs. To overcome this, the government could consider the following measures:

- **In the short term,**
  - **Develop an online digital maturity self-assessment tool for SMEs:** Usually, digital maturity self-assessment tools are divided into questions covering the following : i) general information about the company and its use of digital tools, ii) self-reflection on why the company has not yet digitalised further and assessment of obstacles the company might be facing on its digitalisation journey, iii) digital skills assessment, iv) use of digital technologies in human resources, resource management, in the production process, and in financial management, v) digital security measures, vi) use of digital tools in customer relations and for outward presentation of the company, and vii) digital plans for the future. In developing its own SME digital maturity self-assessment tool, Ukraine can draw on a range of good practice examples from OECD and EU countries illustrated in Box 3.1.



- Expand sector-specific digitalisation support:** Digital maturity self-assessment tools should guide SMEs towards relevant digitalisation support. To this end, the government can consider adopting a sector-specific approach to digitalisation support services. Ukraine's DIHs are already applying a sector-specific approach (e.g., DIH I4MS focusing on manufacturing companies). However, in order to scale this up, an important step would be to perform studies on the digital maturity of different sectors to establish a baseline and identify overall sectoral priorities. Beyond this, sector-specific digitalisation roadmaps can provide step-by-step digital solutions that are sensitive to the respective sectors in which SMEs operate (OECD, 2021<sup>[61]</sup>; OECD, 2021<sup>[62]</sup>). Here, the first step usually includes solutions to get digital-ready and provides a list of basic recommendations to streamline operations and optimise resources. The second step includes solutions to connect businesses and to expand the market. The last stage offers solutions for intelligent and data-driven business. To maintain its relevance, the roadmap will have to be updated according to the respective industry's digital progress (Spaltini et al., 2022<sup>[63]</sup>). Infographic 3.1 provides an exemplary digitalisation roadmap for manufacturing SMEs<sup>5</sup>. Lastly, to fully tap into the potential of the digitalisation support-network across Ukraine, synergies between DIHs and regional Diia.Business Centres can be fostered to expand sector-specific online and offline services, depending on the sectoral concentration of SMEs in the respective regions. Eventually, the government might consider moving these "sectoral hubs" online. For this, however, it should be ensured that all SMEs in the region are aware of the services and know how to access them online.

### Infographic 3.1. An exemplary digitalisation roadmap for manufacturing SMEs



Source: (Spaltini et al., 2022<sup>[63]</sup>; Stich et al., 2020<sup>[64]</sup>; OECD, 2022<sup>[65]</sup>).

- In the long term, connect SMEs with independent, private consulting service providers for in-depth consultations.** SMEs currently benefit from some free-of-charge consultations. In the long run and as SMEs' digital concerns become more multi-faceted, these might, however, not be able to provide the in-depth digitalisation support and guidance that SMEs need. At the same time, Ukraine has a booming IT sector and expertise that has little points of contact with the SME environment and is largely export-oriented. Looking ahead, independent consulting services from private providers (from the IT sector) might be able to complement Diia's work. This can help SMEs access tailored, in-depth advice on how to go digital and should be integrated in Ukraine's overall SME digitalisation programme. Being able to consult with consultants (e.g., from the IT sector)



could also allow SMEs make more informed financial and investment decisions. EEPO could thereby outsource the advisory component, tapping into private sector opportunities and acting as a “bridge” in that regard, pointing SMEs to independent experts, and perhaps providing partial co-funding of service fees to support SMEs in accessing private consultations. The expertise and services from IT consultants can prove especially valuable for tailor-made digital audits, assessing the digital tools already available in the respective companies and providing guidance on which new digital tools to purchase. It is important, however, to highlight that Diia.Business is not intended to compete with independent consulting services in any form, neither should private consulting services be crowded out. Box 3.4 provides a good practice example from Austria, the KMU.Digital initiative.

### Box 3.3. The “Mittelstand-Digital Initiative”

The “Mittelstand-Digital Initiative” was launched by the Federal Ministry for Economic Affairs and Climate Action of Germany. It supports the digitalisation of SMEs through i) its Centres of Excellence across Germany, and ii) its “IT Security” initiative.

The regional centres each specialise in a specific SME sector that is aligned with the overall sectoral focus of the region they are located in. These centres function as a single point of contact for entrepreneurs and provide opportunities for best-practice exchange, professional consultation on digital transformation (free of charge), and digital learning opportunities.

Through the digital security training, SMEs can utilise an online tool, “Sec-O-Mat” which offers individual action plans to enhance IT security for SMEs. This is part of the wider “IT-Sicherheit in der Wirtschaft”-project.

Funding is provided through the “Digital Jetzt”-initiative by the German Ministry for Economy and Climate Protection. Through a simple online application tool, SMEs can apply for funding that is specifically intended to implement digital technologies and support employees’ digital skills training.

Source: (BMWK, 2022<sup>[66]</sup>; BMWK, n.d.<sup>[67]</sup>; Misheva, 2022<sup>[68]</sup>; BMWK, 2024<sup>[69]</sup>; BMWK, 2024<sup>[70]</sup>).

### Box 3.4. The KMU.Digital Initiative

Similar to the “Mittelstand-Digital”-Initiative, the Austrian KMU.Digital supports the digital development of SMEs in Austria. It was initiated by the Austrian Ministry for Labour and Economy in co-operation with the Austrian Economics Chamber and is co-funded by the European Union. Through KMU.Digital, Austrian SMEs receive tailored and individual consultations with certified experts. Topics include business model development, resource optimisation, e-commerce, online-marketing, IT and cybersecurity, as well as digital administration. KMU.Digital supported over 22,000 digitalisation initiatives, including through financial support of around EUR 22 million, since its launch in 2017 (as per August 2022).

SMEs can refer to three types of digitalisation consultations, covering i) analysis of their status quo and future digital potential, ii) strategy consulting, and iii) support with realising concrete digitalisation projects. The KMU.Digital Website offers a very comprehensive 11-step guideline on how to best make use of its services and how to receive relevant funding. It is reported that e-commerce is amongst the most requested topics for consultation, while not that many MSMEs are asking for support in the areas of digital administration or cybersecurity.

The costs for consultations are covered as follows: i) 80% (max. EUR 400) for initial consultations on the status quo and digitalisation potential, ii) 50% (max. EUR 1,000) for strategy-related advice, and iii) 30% (max 6,000) for concrete digitalisation projects. KMU.Digital realises that especially micro and small enterprises lack (financial) resources to digitalisation. This is why over 75% of financial support goes towards supporting their digitalisation projects.

Source: (KMU.Digital, 2024<sup>[71]</sup>; Austria, 2023<sup>[72]</sup>)

### ***Consider financial support services for SME digitalisation***

The ongoing war complicates SMEs’ overall access to finance, not least because, naturally, a large share of the government’s budget goes towards defence<sup>6</sup>. While the funding of defence-tech (e.g., “Brave1”) offers a good practice example that the government can apply to other areas as well, no programme is dedicated to funding SMEs’ digitalisation or to incentivising SMEs to digitalise to date. Thus far, SME digitalisation is not considered in Ukraine’s annual state budget nor is this accounted for in the Ukraine Plan, despite SMEs noting access to finance as a major barrier to digitalisation (see above). For now, funding primarily comes from the donor community, where co-ordination is not always straightforward. Regular check-ins between donors and receiving businesses on the ground could be institutionalised, to ensure that funding is matched to SMEs’ priorities. This, however, does not take away from the value added of considering solutions for financial support coming from the government in the long run. Certain co-financing mechanisms might still be viable options even under current conditions and especially looking towards recovery and reconstruction. Overall, financial instruments, such as preferential or interest free loans, guarantees, mezzanine finance, or VC, for the digital transformation can be provided through one place, ideally a National Development Bank operating on a commercial market. Funding for digitalisation can then be allocated to that Bank and be reinvested in the future.

As regards this, funding in Ukraine is usually targeted towards a specific audience, and less so towards, in this case, digitalisation specifically. The government could consider, in the medium and longer terms, the following measures and could refer to good practice examples from EU and OECD countries outlined in Box 3.5 below:

- **Co-financing/co-investment approaches, bringing together private and public investors, to incentivise SMEs to go digital in the medium-term.** This can alleviate budget burdens, while still fostering digital progress and can be particularly valuable in supporting SMEs to access support in the early stages of digitalisation (European Commission and EBRD, 2019<sup>[73]</sup>). Through co-financing, SMEs can access support and consulting services at lower-than-market prices (Kergroach, S., 2021<sup>[74]</sup>). The Spanish “Innocamaras Programme” is a good example, promoting the digitalisation of SMEs through a two-steps plan.
- **Introduce post-war incentives for SMEs to invest into their digital transformation in the long-term:**
  - **Offer vouchers for specific SME digitalisation projects.** Vouchers can help SMEs (quickly) access concrete services, advice, or expertise. They can further incentivise SME managers to reach out for digitalisation support and are often used to promote innovation related activities, such as the adoption of digital technologies and the acquisition of new skills, e.g., through training. Providing funding for concrete projects also allows to trace it and to use it as efficiently as possible. Moreover, vouchers harbour great potential for complementing digital maturity self-assessment tools and sector-specific digitalisation roadmaps by offering tailored financial support for specific needs that might be identified through self-assessments and in roadmaps. They are widely used across OECD and EU countries, e.g., in Denmark and Portugal.
  - **Loans and (co-financed) grants** can help SMEs purchase digital products and services and can also be used to hire digitalisation experts (Knuth, Saha and Poluschkin, 2021<sup>[1]</sup>). This format of the “5-7-9” programme or of eRobota, for instance, could be tailored to incentivising SMEs to invest into their digital transformation. Moreover, with its “Vision 2030”, Ukraine plans to offer funding programmes for innovation projects involving businesses and academia (e.g., in the form of vouchers or grants) on the condition that 50% of the funding will be spent on R&D. Similar models could be developed for SMEs’ investment in digital progress.

### Box 3.5. Selected examples of successful funding of SME digital transformation

#### Co-financing mechanisms for SME digitalisation in Spain

The Spanish “Innocamaras Programme” promotes SME digitalisation through in two steps (Cronuts.Digital, n.d.<sup>[75]</sup>). Overall, the programme aims at supporting SMEs in developing own plans of innovative solutions (Interreg Europe, 2021<sup>[76]</sup>). The first step, an initial diagnosis and consultation of the SME, is fully financed by the Multi-regional Operational Programme of Spain (ERDF) and the Murcia Chamber of Commerce, while co-financing takes place in a second step, the elaboration of an Individual Plan for the implementation of innovative solutions (Interreg Europe, 2021<sup>[76]</sup>).

#### Voucher schemes for SME digitalisation in Denmark and Portugal

The Danish government offered grant vouchers to promote digitalisation and e-commerce in Danish SMEs (2018-2023). Danish SMEs could apply for vouchers for competence development, investment in new technology and for advice on digital conversion and automation (Acubiz, 2022<sup>[77]</sup>). Portugal’s “Industry 4.0 Vouchers to promote SME digitalisation” enables SMEs to purchase consultancy services to identify strategies for adopting technologies and enabling digital processes. SMEs can apply for vouchers with a specific project (Interreg Europe, 2021<sup>[78]</sup>).

#### Loans for SME digitalisation in Germany

The KfW Bank’s “ERP Digitisation and Innovation Loan” provides a good practice example for Ukrainian banks. The funding (provided as a loan) can be used for investments and working capital in connection with digitalisation innovation projects, for consulting services, hardware, and software, as well as the qualification of employees (KfW, 2020<sup>[79]</sup>). As mentioned above, the German “Digital Jetzt” funding programme is included in the “Mittelstand-Digital”-ecosystem and makes grants available for investments in digital technologies for SMEs of all sectors, as well as investments for the qualification of employees on digital topics (BMWK, n.d.<sup>[67]</sup>).

#### Three projects supporting the funding of SME digitalisation in the Czechia

The Czechia offers three main projects to fund SME digital transformation: “Rise Up”, “Technologies and Applications for Competitiveness”, and the National Recovery Plan. “Rise Up” uses national and EU funding and promotes SME digitalisation through different calls, e.g., for businesses seeking consulting or expert advice. 85% of the associated costs are covered and, in total, EUR 20 million are allocated to the programme, with subsidy amounts of EUR 2,000 to 200,000. Specific areas for consultation and support include, but are not limited to, marketing and customer care, project management, and data integration. 70% of participating firms are small companies.

The “Technologies and Applications for Competitiveness” programme allocates another EUR 260 million to business digitalisation and includes “Virtual Enterprise I.”, “Digital Enterprise I.”, and “Technology 4.0”. The Czech Recovery Plan also includes pilot calls for the first two proposals and allocates EUR 116 million. Individual projects are funded through co-financing (with rates ranging from 20-40% and 30-60%). Thus far, both programmes have helped SMEs (and large firms) to acquire new technological equipment, to enhance connectivity within their company, to enhance cybersecurity, to offer one-off training (IT certification processes), and to implement digital models, e.g., in construction businesses.

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## Notes

<sup>1</sup> Information retrieved at the third public-private working group meeting on 21 November 2023.

<sup>2</sup> Given the continued large-scale destruction and structural changes of Donetsk and Luhansk as a result of Russia's war against Ukraine, the regional strategy is likely to be adjusted to reflect the evolving reality to ensure applicability.

<sup>3</sup> Information retrieved from fact-finding exercises in H1 2023.

<sup>4</sup> Information retrieved from fact-finding exercises conducted in H1 2023.

<sup>5</sup> This roadmap is exemplary and was established building on the experience of primarily OECD-based manufacturing SMEs. This might look different in the Ukrainian context and it is important to keep in mind that digitalisation roadmaps overall should always be adapted to the specific situation and needs of the respective sector (and its SMEs).

<sup>6</sup> Information retrieved through fact finding exercises conducted in Q2 2023.



# 4 Leveraging digitalisation to tackle war-related challenges and plan for the recovery

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This last chapter delves deeper into specific ways digitalisation can help SMEs weather wartime challenges. Based on recent insights into Ukrainian firms' needs, it focuses on 1) e-commerce as a way to alleviate the impact of trade disruptions and 2) helping SMEs better manage digital security risks and gain trust in the cyber environment.

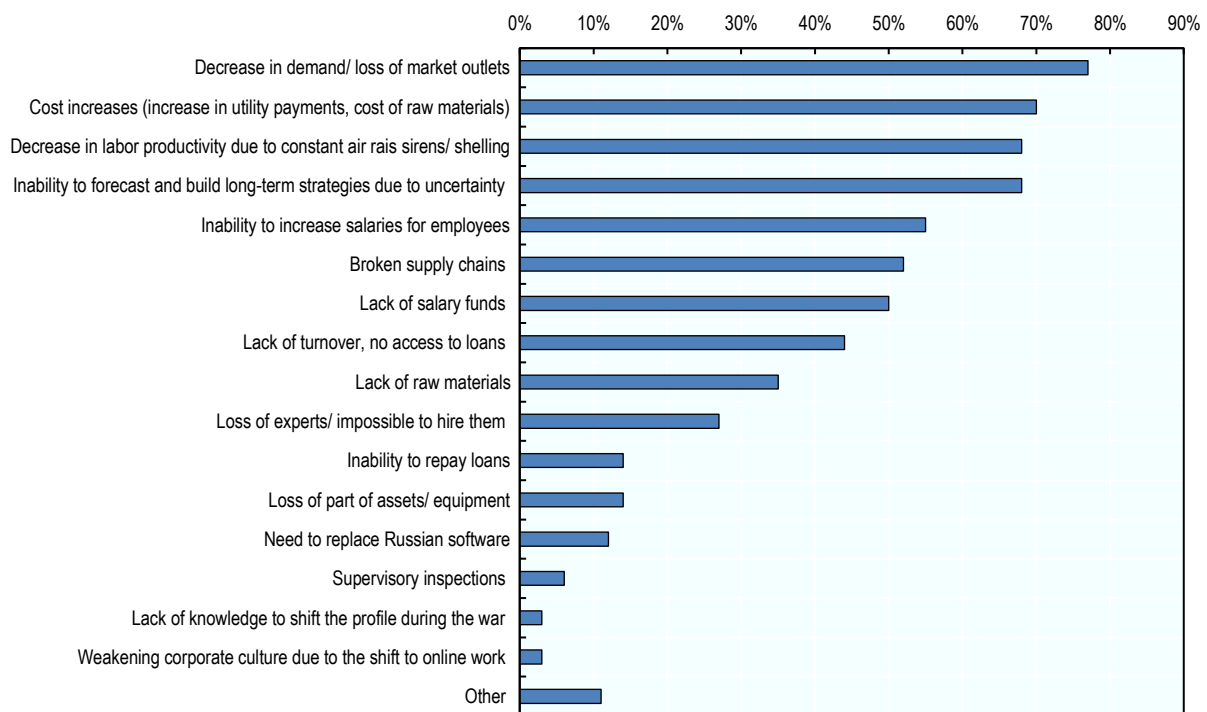
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## Introduction

Ukrainian companies face a number of war-related challenges, such as physical damage to assets, loss of personnel, disruption of supply chains and the reduction in consumer demand, dampening business activity and economic growth. Digitalisation can help firms weather crisis-induced challenges and become more resilient to shocks; digitalisation should always be a means, not an end *per se*. This chapter delves deeper into specific ways digitalisation could be further leveraged to help SMEs tackle some of their war-related problems.

The first section focuses on e-commerce as a way to widen market outreach. Indeed, a recent survey conducted by the EBRD reveals that the decrease in demand and loss of market outlets is quoted by 77% of SMEs as the main challenge encountered in wartime (Figure 4.1). Subsequently, the most frequent support requested, regardless of the firm's sector, is related to the expansion of sales markets (primarily to foreign markets).

**Figure 4.1. Key challenges faced by SMEs during Russia's full-scale invasion**



Source: (EBRD, 2023<sup>[11]</sup>).

Moreover, the survey results also highlight firms' need to replace Russian software. The large majority of SMEs are still reliant on such tools – 1C, for instance, is used by 80% of Ukrainian firms. This increases their vulnerability in a context where Ukraine has been facing increasing Russian and suspected Belarusian cyberattacks. While the state has shown impressive cyber resilience so far, small firms are typically less equipped to deal with such risks, as they lack awareness and the resources to take adequate security measures. Moreover, digital security is closely linked to e-commerce, as security issues can impede trust in the digital age, and thereby hamper Internet use and uptake of e-commerce. This chapter's second section is therefore dedicated to digital security risk management.

## Fostering e-commerce as a way to alleviate the impact of trade disruptions

### **Ukraine's e-commerce market has been growing in recent years, fostered by policy measures and increasing alignment with EU standards**

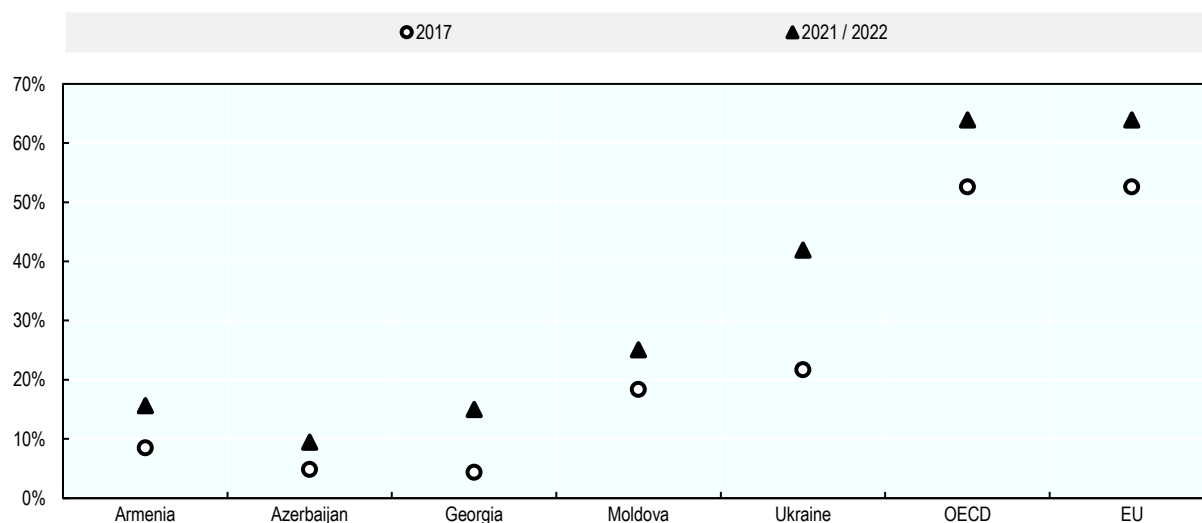
*E-commerce market value and uptake have been steadily expanding in Ukraine*

Eastern Europe has been recording higher growth rates in B2C e-commerce than many Western European countries (UPU, 2023<sup>[2]</sup>), although Western Europe still represent the largest share of total e-commerce turnover in Europe. In Ukraine, the value of the e-commerce market developed threefold between 2016 and 2020, making it the 48th largest market for e-commerce as of 2023 (ECDB, 2023<sup>[3]</sup>). It grew by 41% from 2019 to 2020 alone, amounting to USD 4 billion, approximately 2.6% of the country's GDP (up from 1.04% in 2015), and is still increasing. The turnover of e-commerce sales almost doubled between 2018 and 2021 (+91%) (Ukrstat, 2023<sup>[4]</sup>). The leading segments include electronics, clothing, furniture, beauty products and groceries.

This steady growth has been supported by increased digital literacy levels and demand for online shopping: 42% of Ukrainians aged 15 years and above bought something online in 2021-22, an increase of 20 percentage points since 2017 – a share above that of other EaP countries, but still below OECD/EU levels, where close to two thirds of the population shop online (Figure 4.2). Ukraine exhibits the lowest annual individual e-commerce expenditure volume, amounting to USD 104, in stark contrast to Czechia's significantly higher spending of USD 800 per year (Soul Partners, 2021<sup>[5]</sup>). Nevertheless, Ukraine's allocation of budgetary resources for e-commerce aligns reasonably well with the Visegrád Group countries' average, comprising 4.72% of total expenditures. This ratio falls below the corresponding figures in Czechia and Hungary, which are approximately 8%, but above Poland and Slovakia, whose households dedicate 3.8% and 2.5% of their total expenditure, respectively, to online spending (IMF, 2022<sup>[6]</sup>; The World Bank, 2022<sup>[7]</sup>).

**Figure 4.2. Evolution of the number of online shoppers in EaP, OECD and EU**

Percentage of individuals aged 15+ having used a mobile phone or the internet to buy something online



Note: OECD and EU values refer to the median values of countries for which 2021 data is available.

Source: OECD calculations based on (The World Bank, 2021<sup>[8]</sup>).

The rapid growth of the sector has been fostered by the COVID-19 pandemic, with containment measures prompting individuals and businesses to step up online activities. Besides the pandemic, several factors have been pushing consumers to shop online in Ukraine. These include the growing internet penetration rate and number of smartphone users: fixed and mobile broadband subscriptions have registered the sharpest increase in EaP countries between 2015 and 2020, +60% and +969%, respectively (ITU, 2022<sup>[9]</sup>). In addition to internet penetration, digital literacy has also considerably improved, thanks to dedicated policy efforts – 79% of Ukrainians used the internet in 2021, and half of the population had basic and above basic digital skills in 2021, up from 30% in 2019 (ITU, 2022<sup>[9]</sup>). The barriers to e-commerce growth are a preference for personal shopping (69.4%) and lack of skills or knowledge (12.5%, down from 14.5% in 2019). Finally, the quality of postal services matters as the possibility of having a lost or broken package is also a factor hindering higher e-commerce share.

### *Increasing alignment with EU legislation enhances opportunities*

E-commerce growth has been fostered by the Ukrainian government's substantial efforts. Several measures were taken to build a robust legal and regulatory framework, simultaneously seeking approximation with EU standards to tap into the potential of the EU market and encourage cross-border trade. Progress is reflected in the Network Readiness Index 2023, which lists e-commerce legislation among Ukraine's strengths (Portulans Institute, 2023<sup>[10]</sup>).

In Ukraine, the e-commerce sector is mainly regulated by the law *On Electronic Commerce*, adopted in 2015, which provides definitions for e-commerce and online store<sup>1</sup>, establishes procedures for conducting electronic transactions using information and communication systems, and defines the rights and obligations of parties. This law is complemented by additional documents overseeing various aspects, e.g., on e-payments (*Law on Payment Services, Regulation on System of E-payments* of the National Bank of Ukraine *Approving Amendments to the Regulations on the Procedure for Issuing and Acquiring Payment Instruments*). Ukraine has made strides in approximating its framework and standards with that of the EU, e.g., harmonising e-signatures with eIDAS. The country has fulfilled its obligations under the Association Agreement on e-commerce, particularly the implementation of Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce in the Internal Market ("E-Commerce"- Directive) (Shcherbak, 2022<sup>[11]</sup>). The harmonisation of e-commerce with EU standards continues to be a part of Ukraine's long-term ambition to join the EU, with dedicated measures foreseen in the *National Economic Strategy 2030* and the initial *DNRP*.

In line with these strategic documents, the government has been making further efforts recently. With regards to consumer protection for instance, a new law was signed in July 2023 to ensure compliance with EU consumer protection rules, including five Directives<sup>2</sup>, thereby replacing the previous framework adopted in 1991 and amending the current E-commerce law. The new legislation reinforces the requirements laid out by the current laws, notably refining the definitions of digital trading platforms and product comparison services and imposing pre-contractual obligations on e-commerce actors. These provide for informed and conscious decisions from customers – who should benefit from clear, easily accessible and understandable information about products, in Ukrainian. Additional provisions include specific measures for vulnerable consumer groups, as well as regulations in case of purchase of unfit and/or dangerous items. Enforcement is fostered by enhanced power granted to the consumer protection authority, which can now request the internet service provider to restrict access to a given website if the latter is not observing the requirements, and to consumer advocacy groups, to whom the new law gives a legal framework to which to refer. The new law also paves the way for the creation of a new portal for e-commerce consumers, "E-Consumer" (Є-Покупець), as was foreseen in the Draft Recovery Plan, to be launched within three years to further protect them from online fraud: this publicly available platform should facilitate interactions among consumers, traders, and the consumer protection authority (e.g. enabling consumers to fill in complaints in case of rights violation) and ensuring the traders undergo mandatory



registration procedures and obtain the status of certified traders (ACC, 2023<sup>[12]</sup>). Overall, the new regulations, to enter into force in July 2024 (if martial law is terminated) will grant Ukrainian consumers with the same rights and guarantees as EU citizens and stipulate that buyers in online stores should be protected no less than buyers in ordinary offline stores, in line also with the OECD E-commerce Recommendation (OECD, 2016<sup>[13]</sup>).

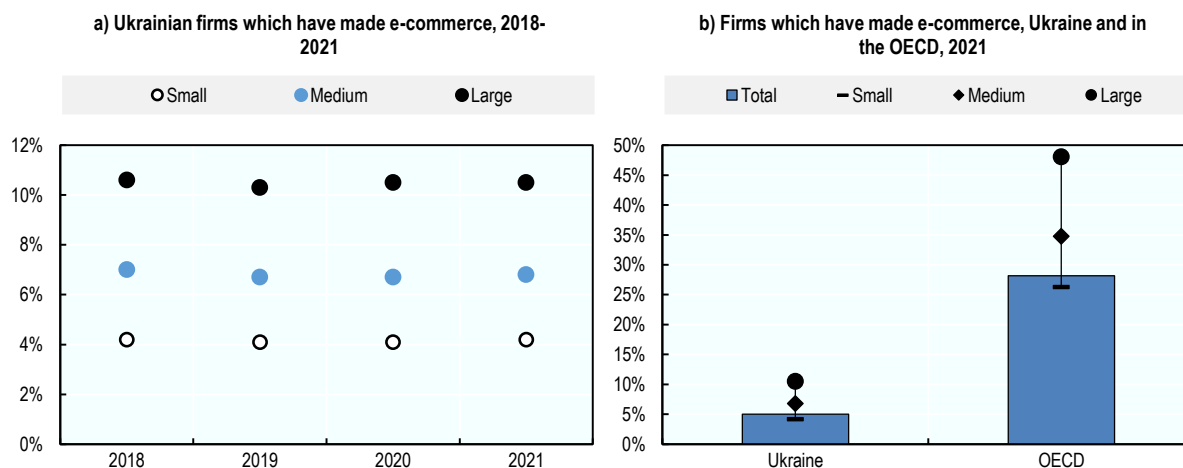
### **Smaller firms' use of e-commerce remains limited, calling for targeted support**

*SMEs' e-commerce uptake shows little change, continuing to lag behind that of larger firms*

Ukrainian SMEs' e-commerce adoption has shown little change over recent years, consistently trailing behind large enterprises. The share of SMEs engaging in e-commerce remains far below large firms, with only 4.2% of small ones making online sales, vs. 10.5% of large companies. Overall, the number of firms selling online, regardless of size, has been stalling, despite the COVID-19 pandemic and related containment measures, and it remains below OECD levels (Figure 4.3). The value of sales increased by 91% between 2018 and 2021, but this rise has been driven by large firms, with SMEs' e-transactions stalling (Figure 4.4).

**Figure 4.3. Firms engaging in e-commerce, Ukraine and the OECD**

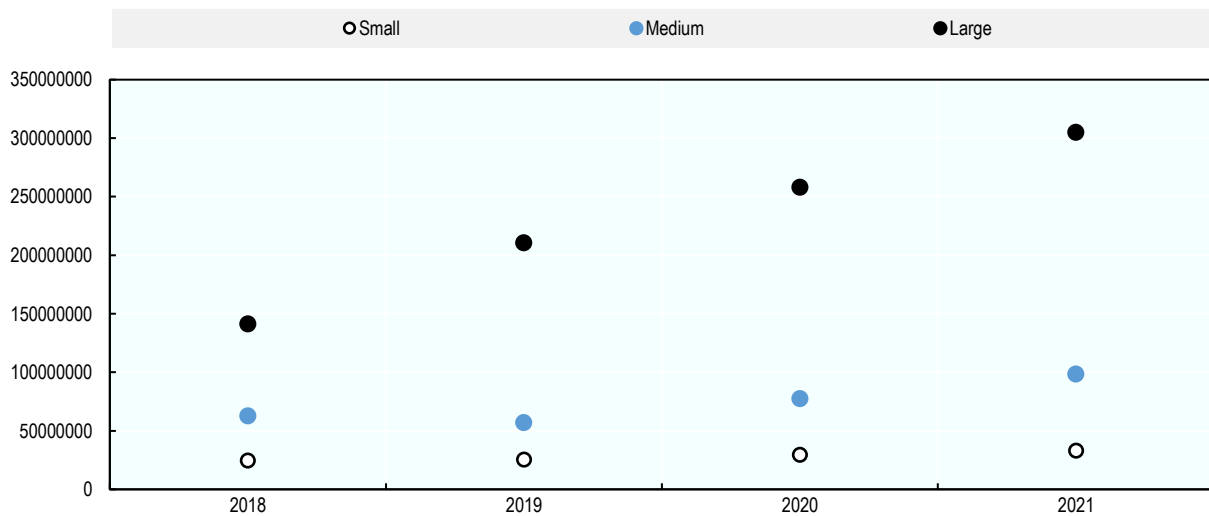
Percentage of total firms



Source: (Ukrstat, 2023<sup>[4]</sup>), (OECD Going Digital Toolkit, 2023<sup>[14]</sup>).

**Figure 4.4. E-commerce sales by Ukrainian firms per firm size**

Turnover of e-commerce sales, thousand UAH



Source: (Ukrstat, 2023<sub>[4]</sub>).

This plateauing trend in online sales and persisting disparities among firms ensue from several factors. Many companies, especially smaller ones, lack awareness of the opportunities offered by e-commerce. As mentioned in Chapter 3, SMEs often lack the financial and human resources to reap the benefits of digital tools – e.g., in this case, the skills and ability to create a website, using social media platforms, develop a digital marketing strategy, establish additional sales channels, and manage hybrid operations – which requires investing time and money (OECD, 2023<sub>[15]</sub>). Additional challenges appear with regards to cross-border e-trade: the usage of global marketplaces by Ukrainian firms remains limited, and local marketplaces rarely sell abroad (EU4Digital, 2021<sub>[16]</sub>). In recent years, Ukraine has seen continued growth in its three largest online marketplaces – Rozetka, Prom and Epicenter (epicentrk.ua). For example, the Prom marketplace, which offers products by thousands of entrepreneurs across the country and is visited by almost 50 million consumers every month, has the annual revenue USD 25-50 million, while the annual revenue of Rozetka, which provides a one-stop shop for all customer's needs, stands at USD 200-500 million (Similarweb, 2023<sub>[17]</sub>). Nevertheless, online retailers are accelerating their offline expansion. Rozetka had opened five flagship stores of 1500-3000 sq m each and more than 70 pick-up spots by November 2020. These local marketplaces, while contributing to the expansion of domestic e-commerce, rarely export to the EU – they are not designed for foreign customers, providing information in Ukrainian and Russian only, and prices in local currency. As for global marketplaces, there has been some progress in the use of some online platforms such as Amazon, Ebay and Etsy, further fostered by recent improvements in e-payments, with Paypal and Etsy Payments being now available. However, uptake is still hindered by several challenges – including delivery times (up to several weeks) and costs (EU4Digital, 2021<sub>[16]</sub>).

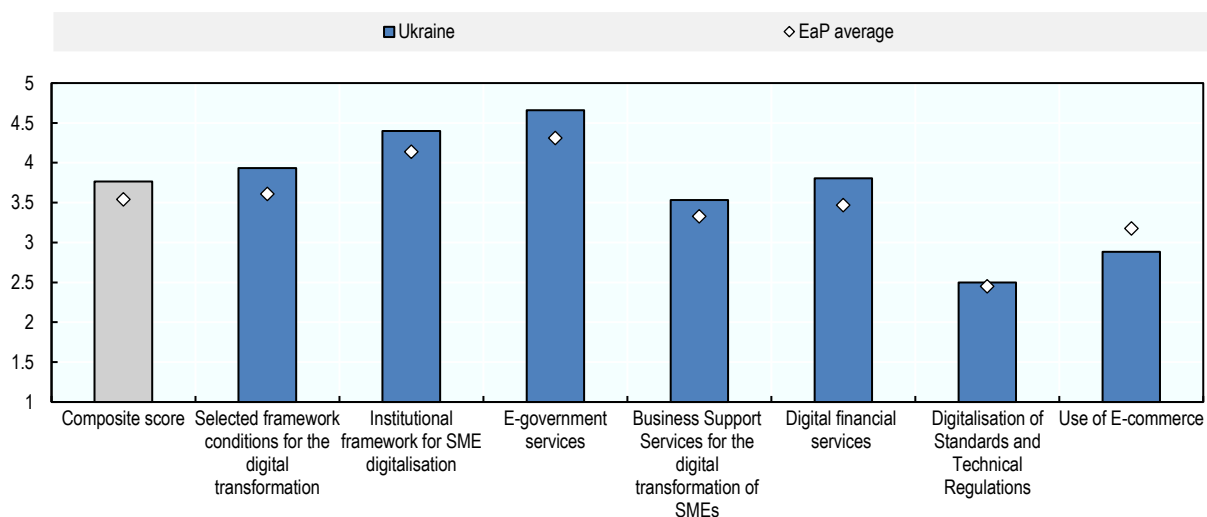
*The EEPO has been implementing substantial support for SME internationalisation, which could be complemented by more e-commerce-specific provisions*

Against this backdrop, Ukraine has been continuously expanding its support to SMEs through the EEPO. A wide range of tools have been implemented to support SME internationalisation at large – resulting in a +31% increase in score for the dedicated dimension in the latest *OECD SME Policy Index* (OECD, 2023<sub>[18]</sub>). The Diia.Business portal includes a dedicated section, gathering various resources to help SMEs

export their products and services – such as an export-readiness test, advisory services, guidelines and tips, insights into foreign markets, training, a business matchmaking/networking service, but also support to participation in international fairs and exhibitions. Noteworthy efforts have been made to increase SMEs' awareness of export market opportunities through analytics and guidelines on foreign countries and markets. With regards to e-commerce specifically, additional materials have been made available online – such as guidelines on how to use global marketplaces such as Amazon, eBay and Etsy, and online marketing advice (Diia.Business, 2024<sup>[19]</sup>). After the start of Russia's full-scale invasion, a Ukrainian IT company, EVO, with the support of the MDTU, the Ministry of Foreign Affairs, Visa, and Banda, launched *Made with bravery*<sup>3</sup>, an e-marketplace for products made in Ukraine, by Ukrainian entrepreneurs. This new platform contributed to increased visibility of Ukrainian goods abroad, advertising them in English and offering worldwide delivery options.

While these developments mark a positive stride forward, support for entrepreneurs to engage in e-commerce, domestically or abroad, is relatively modest. The OECD SME Policy Index 2024 assessed several aspects of SME digitalisation policies in Eastern Partner countries. Ukraine performs strongly overall, but the use of e-commerce is the only digitalisation component where it scores below the regional average (Figure 4.5). This is partly due to the absence of a comprehensive programme to promote e-commerce for SMEs. Yet Ukrainian SMEs express high demand for more export-related support, as many of them seek to enter foreign markets: the most frequent requests one year after the start of the invasion included the promotion of Ukrainian businesses in foreign markets, consulting (notably on marketing and requirements for export to the EU), as well as training on how to sell on global marketplaces (Amazon, eBay) (EBRD, 2023<sup>[11]</sup>). Indeed, SMEs lack the ability to carry out necessary market assessments and to discover how and via what channels they can promote their products. Current strategic documents do not address this demand, focusing rather on improving the legal and regulatory framework, notably consumer protection. Moving forward, the approach could be complemented by some SME-related support, to develop the supply side.

**Figure 4.5. Scores for SME digitalisation policies in Ukraine in the OECD SME Policy Index 2024**



Source: (OECD, 2023<sup>[18]</sup>).

## Helping SMEs address digital security risks and gain trust in the cyber environment

### ***Ukraine has shown cyber resilience, fostered by policy efforts and growing international co-operation***

*Against the backdrop of increased digital security threats, Ukraine has been developing a policy framework to enhance cyber resilience*

While the digital economy has been bringing significant benefits to economies and societies and constitutes a source of growth, innovation, improved well-being, productivity and inclusiveness, these opportunities come with a myriad of new and ever-growing digital security threats. The latter vary in form and scope, ranging from untargeted phishing campaigns to very sophisticated malwares. Digital security incidents are increasingly prevalent and impactful, affecting both large and small organisations. They can have significant economic and social repercussions, including reputational damage, disruption of operations, financial losses from scams or disruptions, expenses related to recovery – which in turn can hinder innovation and competitiveness. Incidents may compromise the availability, integrity, or confidentiality of information and systems, stemming from deliberate malicious actions or unintentional events such as natural disasters or human error, and they can also erode consumers' trust. In that context, SMEs appear to be particularly vulnerable to digital security risks. They often lack the awareness, resources and expertise needed to assess and effectively manage these risks; yet incidents leading to compromised consumer trust, reputational damage, or revenue decline may inflict greater harm upon SMEs compared to larger firms, given small businesses' increased vulnerability to enduring difficulties in managing temporary customer or revenue losses. Conversely, SMEs equipped with sound digital security policies may have a competitive advantage in the marketplace (OECD, 2016<sup>[20]</sup>).

Ukraine has faced increased cyber-attacks since the outbreak of Russia's war. *Forbes Ukraine* estimated that the losses caused in Ukraine by cybercrime in 2022 amounted to UAH 1 billion (EUR 24 million), a 96% jump compared to 2021 (Forbes, 2023<sup>[21]</sup>), with the average losses per attack increasing by 49% (to UAH 7,900 / EUR 190). Over 2021-2023, data security problems also increased in frequency, by 14%, resulting in 60% of the adult population having experienced at least one data breach in 2022, and 8 out of 10 teenagers (Ministry of Digital Transformation of Ukraine, 2023<sup>[22]</sup>). Recent insights into the frequency and type of digital security incidents are not available, but evidence collected prior to Russia's full-scale invasion suggests that Ukrainian firms' exposure to digital security threats had been on the rise, with 31% of businesses experiencing cybercrime in 2018 (up from 24% in 2016). The survey found, *inter alia*, that Ukrainian companies were more likely to experience a disruption of business processes, extortion or intellectual property and theft, as well as politically motivated or state sponsored attacks, than firms surveyed in other countries (PwC, 2018<sup>[23]</sup>).

Well aware of these increasing challenges, Ukraine has been working on developing a strong policy framework to address them already prior to the war, with a first cybersecurity strategy for 2016-2020, followed by the ongoing *Cybersecurity Strategy of Ukraine 2021-2025*. The latter entails provisions to counter cyberterrorism and cyberespionage, but also grants attention to digital security, i.e., economic and social aspects. Built around three main principles – deterrence, cyber resilience, and interaction –, it mentions some of the aspects listed in the *OECD Council Recommendation on National Digital Security Strategies* (see Box 4.1), such as awareness-raising of digital security risks, vulnerability treatment and international co-operation, albeit to various and at times limited extent. It emphasises the need to enhance coordination between different cyber security actors and the issues of operative exchange information on cyber threats, effective training system and models of public-private partnerships – one of the items foreseen in the previous strategy that did not materialise (National Security and Defense Council of Ukraine, 2021<sup>[24]</sup>). Moreover, digital security challenges are also mentioned in key digitalisation documents

outlined in Chapter 2, such as the *Strategy on integration of Ukraine into the European Union Digital Single Market*, the *National Economic Strategy 2030*, and draft strategies such as the DNRP and Ukraine Plan. The draft SME Strategy 2024-2027 also states the aim to strengthen SMEs' digital security capabilities.

#### Box 4.1. Key principles of the OECD Council Recommendation on National Digital Security Strategies

This OECD Recommendation provides guidance on how to develop National Digital Security Strategies. Recognising that the digital transformation brings about several benefits for businesses and society, the Recommendation also appreciates that it implies several security risks that need to be accounted for.

As a baseline, the Recommendation suggests establishing a solid **institutional framework** to adopt and implement the national strategy. Specifically, it suggests adopting a whole-of-government and whole-of-society approach; to ensure intra-governmental coordination as well as the support by the highest level of government; and to allocate clear responsibilities.

##### Key recommendations include:

- **Raising awareness** of digital security risks across all of society and supporting the development of a **skilled workforce** that can manage security risks and meet job market needs.
- **Responsible incident response and vulnerability coordination** through establishing Computer Security Incident Response Team(s) (CSIRT) and Information Sharing and Analysis Centres (ISACs) as well as through engaging private actors to respond to possible cyber-attacks.
- Establishing **risk management standards**.
- Encouraging the development of a **cybersecurity industry** and promoting **research and innovation** in digital security risk management.
- Encouraging stakeholders to enhance the **digital security of products and services** and to manage potential vulnerabilities of those.
- Particularly protecting **individuals and SMEs** from digital security threats, as they often lack awareness, and increasing their ability to deal with digital risks.
- Applying a **sectoral approach to digital transformation**.
- Creating **trusted partnerships** among stakeholders to collaborate in managing digital security risks and strengthening **international co-operation** in this regard.

Co-operation and coordination amongst stakeholders are considered vital for a successful implementation of National Digital Security Strategies. The Recommendation lastly suggests allocating sufficient funds as well as to regularly assess, review, and improve the strategy.

Source: (OECD, 2022<sup>[25]</sup>)

Cybersecurity policies are designed and coordinated by Ukraine's National Cybersecurity Coordination Centre (NCCC), under the National Security and Defence Council of Ukraine. The country benefits from a Computer Emergency Response Team (CERT-UA) operated by the State Service for Special Communications and Information Protection of Ukraine to help detect, monitor, and investigate threats. The body has received international accreditations. Recent progress has notably been made with regards to information-sharing, as CERT-UA now provides a platform to report digital security incidents as well as newly established guidelines to this end, adopted in 2023 and based on the EU Agency for Cyber Security

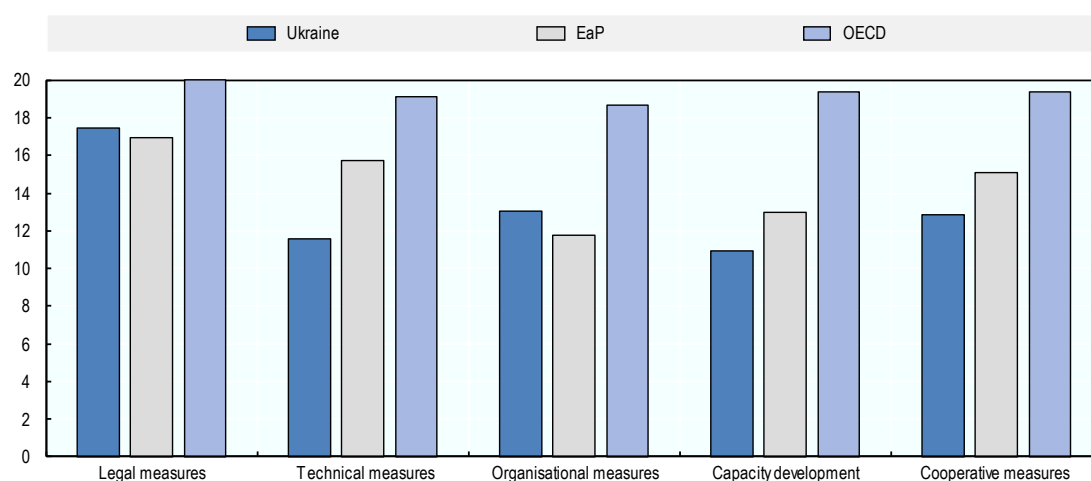
(ENISA) recommendations. CERT-UA has reportedly dealt with 2,194 incidents (Government of Ukraine, 2024<sup>[26]</sup>).

*Ukraine has worked to build a stronger legal framework, with a view to approximating with EU standards, and to increase international co-operation*

Ukraine was among the first EaP countries (together with Georgia) to develop a legal and regulatory framework on digital security. The main document in that regard is the *Law on basic principles to ensure cyber security* (adopted in 2017, amended in 2020), laying out the key principles for a cybersecurity system and its stakeholders. Some minimum cybersecurity requirements were defined at the national level, mostly based on ISO and NIST standards, and applying to public entities and private firms. Ukraine's efforts in recent years were fostered by the previous cybersecurity strategy, and are reflected in the ITU's Global Cybersecurity Index, where legal measures stand out as the country's main strength (ITU, 2024<sup>[27]</sup>).

**Figure 4.6. ITU's Global Cybersecurity Index scores, per pillar**

Scale from 0 to 20



Note: **Legal measures** refer to the presence of legislations, regulations and other rules related to digital security; **Technical measures** to the existence of technical institutions and framework for digital security; **Organisational measures** to the presence of coordination institutions, policies and strategies at the national level; **Capacity Development** to research and development, education and training programmes, certified professionals and capacity building, and **Cooperative measures** to partnerships, cooperative frameworks and information sharing networks. Average value for EaP, median value for OECD.

Source: (ITU, 2024<sup>[27]</sup>).

Current plans foresee further steps to strengthen the legal arsenal, notably in the *Strategy on integration of Ukraine into the EU Digital Single Market 2018-23* and the *Draft Recovery Plan*. Both documents emphasise the need to align Ukraine's regulations with that of the EU and with NATO requirements. Indeed, the country, like its regional peers, has not yet aligned its laws and regulations with the EU Directive on the security of network and information systems (NIS). Some welcome measures were recently adopted, e.g., new regulations to exchange information on cyber incidents, but further improvements are needed to align with EU requirements (Maigre, 2024<sup>[28]</sup>; European Commission, 2023<sup>[29]</sup>).

Ukraine's aspirations to align with international standards fall in line with overall efforts to enhance cyber resilience through greater cross-country co-operation. Like EaP peers, Ukraine has ratified the Budapest Convention on Cybercrime, which seeks to facilitate international co-operation on the investigation of cybercrime, and the country has been steadily stepping up co-operation with foreign partners, e.g., through

cyber exercises conducted with the EU, NATO, and other states and international organisations. Recent examples include the signature, in 2023, of an arrangement between ENISA and Ukrainian counterparts, targeting capacity-building, exchange of best practices (including on key legislation implementation), and awareness-raising (European Union Agency for Cybersecurity, 2023<sup>[30]</sup>).

### ***Better implementation, increased stakeholder coordination, and SME-specific provisions would help smaller firms manage digital security risks***

*Limited strategy implementation and stakeholder co-operation has impeded the effectiveness of digital security policies*

While Ukraine appears undoubtedly committed to building up cyber resilience, there remains room for improvement with regard to effective implementation of planned measures, as well as coordination across stakeholders. The assessment of the previous cybersecurity strategy found that less than half of the actions foreseen were implemented, with particular issues in terms of operative exchange of information, training, public-private partnerships, and the establishment of a list of critical information infrastructure. These shortcomings were partly due to a lack of clarity in the priority areas outlined, with planned measures not always associated with objectives and assigned to relevant actors, and a reported lack of resources. The absence of indicators to monitor and evaluate the strategy also hindered the realisation of the latter (National Security and Defense Council of Ukraine, 2021<sup>[24]</sup>).

One of the key challenges identified was the insufficient exchanges between relevant actors. The previous strategy was primarily implemented by security and defence actors, while ministries, scientific institutions, and non-governmental stakeholders, as well as educational and research institutions, were reportedly insufficiently involved (National Security and Defense Council of Ukraine, 2021<sup>[24]</sup>). Yet co-operation, including at domestic level, is essential to effectively manage digital security risks. At organisation level, leaders, decision makers and technical experts need to cooperate to assess threats and ensure alignment of the measures with the organisation's objectives; exchanges between organisations are also crucial, e.g., to share information about emerging threats and vulnerabilities within entities and across supply chains or sectors, including among competitors (e.g., through Information Sharing and Analysis Centres – ISACs) (OECD, 2016<sup>[20]</sup>; OECD, 2022<sup>[31]</sup>). In Ukraine, however, the inadequate level of coordination, co-operation, and information exchange among entities has been a persisting issue (Spînu, 2020<sup>[32]</sup>). Public-private co-operation, for instance, remain limited, e.g., with regards to information-sharing – there is no automation of processes or risk management systems. Prior to Russia's full-scale invasion, 28% of organisations in Ukraine were unlikely to share information about digital security incidents with the government or law enforcement agencies, vs. 12% of firms globally – this is partly due to a lack of trust, with more than half of firms reporting lack of trust in the expertise of law enforcement agencies (PwC, 2018<sup>[23]</sup>). Finally, the development of the partnerships with technological and industrial partners is still at a nascent stage (EU4Digital, 2020<sup>[33]</sup>).

Enhanced involvement of all stakeholders, notably the business, technical, and civil society experts, would therefore help inform policymaking and strengthen overall cyber resilience.

*SMEs could benefit from targeted support to better manage digital security risks*

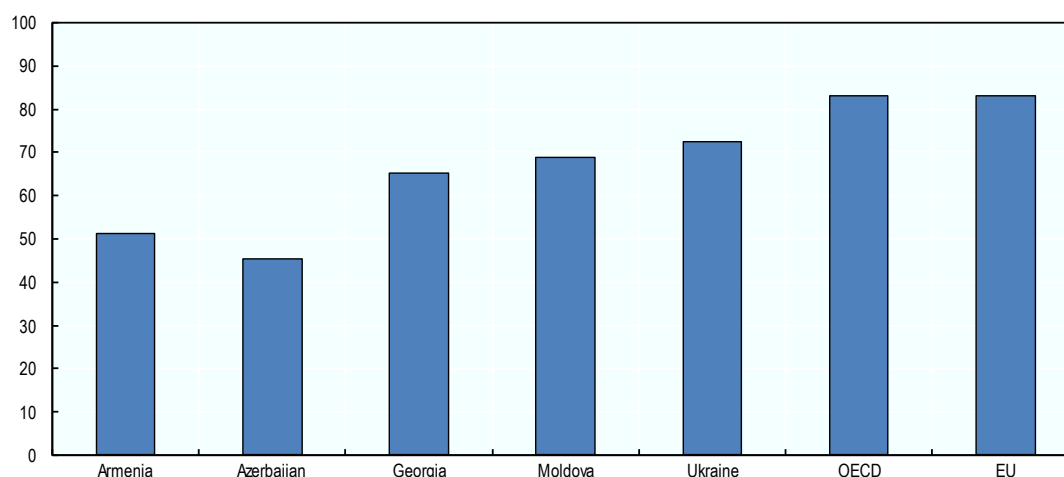
As digital security threats increase, SMEs, in Ukraine like elsewhere, often lack awareness of risks and appear to be particularly vulnerable. Recent studies reveal that more than one Ukrainian out of three (36%) do not have cyber security measures at their workplace, and one out of four (26%) reports there are no effective measures to protect data and confidential information (Ministry of Digital Transformation of Ukraine, 2023<sup>[22]</sup>). Ukraine benefits from a larger density of secure Internet servers than EaP peers, albeit less than OECD and EU levels (Figure 4.7), but the use of Russian software by public authorities, citizens and businesses alike increases the attack surface. The country is still dependent on ICT products and



management software from Russia. *Inter alia*, concerns about SMEs' overreliance on Russian products, e.g., for CRM and ERP systems, have been on the rise since the outbreak of Russia's full-scale invasion. Some 12% of SMEs see the need to replace Russian software as a key wartime challenge (Dolmatova, 2023<sup>[34]</sup>), but, as of 2023, 80% of Ukrainian businesses still used 1C for instance, which might make them more vulnerable to potential attacks.

**Figure 4.7. Number of secure Internet servers**

Per million inhabitants, 2020



Note: Median values for OECD and EU

Source: (Portulans Institute, 2023<sup>[10]</sup>).

Amidst these increasing concerns and challenges, several non-financial tools were developed to increase SMEs' awareness of, and preparedness for, data protection-related risks (e.g., Diia.Business's online self-assessment tool on data protection for SME managers) and digital security threats (e.g., the free online course on Cybersecurity Basics for Entrepreneurs, launched by MDTU in collaboration with Diia.Business Diia.Education, NCCC, the Cyber Diia platform, Google, and Information Systems Security Partners). More recently, the EEPO and foreign stakeholders, such as USAID, have been working on developing financial support, such as vouchers, with a view to incentivising small firms to invest in digital security services (American Chamber of Commerce, Ukraine, 2023<sup>[35]</sup>) (Prostir, 2024<sup>[36]</sup>). However, support remains relatively scarce overall, and SMEs' coverage in the current approach to digital security still appears to be limited, with policy documents entailing very few provisions for them.

More could be done with regards to personal data protection. There is no general obligation to report personal data breaches either to customers or to law enforcement. While this fosters an environment where SMEs can operate digital services with greater ease, without the burden of cumbersome technical requirements, it might undermine customers' trust in businesses, providing no guarantee that firms sufficiently protect their personal data. This appears as a concern for many consumers, with 40% of Ukrainians having opted out from purchasing online due to digital security/privacy reasons. This issue might also be particularly detrimental for cross-border e-trade, as Ukrainian SMEs seeking to export might be confronted to more stringent digital security and data protection requirements. Fostering enforcement of privacy standards could not only help SMEs protect themselves but could also give them a competitive advantage in the marketplace, enhancing their reputation, revenues, and consumers' trust.



## Way forward

### ***Help SMEs tap into the potential of e-commerce***

In light of the above, Ukraine could step up its support to help SMEs broaden their domestic and foreign customer base by tapping into e-commerce opportunities. To this end, the following measures could be considered:

- **In the short-term, help SMEs reduce shipping costs and time:** delivery times and costs often appear as one of the main challenges to cross-border e-commerce. While Ukrainian SMEs' selling online may have quality products, the logistics to ship them abroad, e.g., to EU markets, lead to longer delivery times, and might therefore lower competitiveness. Moreover, the war has created additional logistical and storage challenges. Storing goods in warehouses in target markets could be useful in that regard, enabling firms to have products ready to be quickly dispatched. Provisions in that direction could include raising SMEs' awareness of such warehousing options and enhancing their access thereto, e.g., by subsidising costs for first-time users. A pilot programme could be considered with neighbouring EU countries, e.g., Poland.
- **In the medium-term, step up direct support for SMEs to develop both domestic and cross-border e-commerce practices:** the analysis has shown that uptake of global marketplaces by Ukrainian businesses remains relatively low, while Ukrainian marketplaces are little known to foreign customers. Moreover, SMEs often lack awareness of market opportunities, and of how and via which channels they can promote products. With a view to addressing these persisting challenges and the overall high demand for more export support from SMEs, additional tools could be implemented – e.g., consulting (notably on marketing strategies, opportunities and requirements for exports to EU markets) and training on how to sell on global marketplaces (Amazon, eBay). Such components could be included in the overall SME digitalisation programme recommended in Chapter 3.
- **In the long-term, raise stakeholders' awareness of new laws and regulations:** the recent and ongoing changes to the legal and regulatory framework for e-commerce to align with the EU are very welcome steps; however, SMEs' limited time and resources often do not enable them to keep abreast of new requirements such changes might introduce. Moreover, evidence show that stakeholders often lack awareness of EU cross-border taxation procedures (EU4Digital, 2021<sup>[16]</sup>). More could therefore be done to help small firms keep track of the latest changes and requirements, e.g., on consumer protection, and to foster stakeholders' awareness of EU changes in customs, taxes, security, and parcel delivery areas.

### ***Equip SMEs with the necessary tools to tackle digital security challenges***

Ukraine has shown impressive cyber resilience and continues to provide substantial policy efforts to tackle ever-growing threats. Building on this, the following could complement the current approach and enhance its effectiveness:

- **In the short-term, help SMEs protect themselves from digital security risks:** as outlined, SMEs often lack the awareness, resources and expertise to assess their digital risk exposure; they appear as the “weak link” in networks, being an easier access point for hackers to target larger firms, and this might ultimately undermine resilience (OECD, 2020<sup>[37]</sup>). Moreover, in the case of Ukraine, the overreliance on Russian software such as 1C creates additional vulnerabilities. The priority should therefore be to foster the uptake of an alternative software, ideally in Ukrainian, as language remains a barrier. This could be encouraged through targeted financial support, to incentivise the change, coupled with training. Beyond this, additional tools could be implemented to raise SMEs' awareness of existing risks, help them manage them and respond to potential

attacks, and ultimately increase their trust in digital technologies. These could entail, for instance, standards on digital security and data protection for SMEs, specific training for both SME managers and employees, and/or financial incentives to invest in cyber insurance. Integrating a digital security component in overall SME digitalisation programme could help in that regard.

- **In the medium-term, increase co-operation across all stakeholders to enhance capacity and resilience:** while international co-operation between Ukraine and partners has been on the rise, the limited collaboration between public and private stakeholders remains a challenge. In line with the *OECD Recommendation on Digital Security Risk Management*, co-operation within and between organisations and sectors could be stepped up, e.g., through public-private and sector-specific partnerships. The role and involvement of educational and research institutions could be enhanced, e.g., to inform policymaking, but also to help increase cyber literacy levels.
- **In the long-term, strengthen policy framework on cyber / digital security, ensuring effective implementation and monitoring & evaluation:** drawing on from the lessons of the previous cybersecurity strategy, Ukraine should ensure effective implementation of the actions planned. Objectives should be systematically associated with concrete measures, measurable indicators, targets and budget lines, and clearly allocate responsibility for each action, in order to avoid the caveats reported in previous strategies. As the current strategy will expire in 2025, future policy documents could also grant more attention to digital security risks to economic and social activities and include SME-related provisions. Ukraine might find it useful to leverage OECD tools for guidance, such as the abovementioned *OECD Recommendation on National Digital Security Strategies* (OECD, 2022<sup>[25]</sup>) and the *OECD Policy Framework on Digital Security* (OECD, 2022<sup>[38]</sup>), which would also help the country get closer to OECD standards.

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## Notes

<sup>1</sup> According to the provisions of this Law, e-commerce is an economic activity in the field of electronic purchase and sale, sale of goods remotely to the buyer by making electronic transactions using information and communication systems, while an online store means presenting or selling a product, work or service by making an electronic transaction. In this case, the sale of goods is carried out remotely.

<sup>2</sup> Council Directive 93/13/EEC of 5 April 1993 on unfair terms in consumer contracts; Directive 98/6/EC of 16 February 1998 on consumer protection in the indication of the prices of products offered to consumers; Directive 2005/29/EC of 11 May 2005 concerning unfair B2C commercial practices; Directive 2013/11/EU of 21 May 2013 on alternative dispute resolution for consumer disputes; and Directive (EU) 2019/771 of 20 May 2019 on certain aspects concerning contracts for the sale of goods.

<sup>3</sup> shop.brave.ua

# Enhancing Resilience by Boosting Digital Business Transformation in Ukraine

Digital technologies not only offer a vast potential to enhance firm productivity, they can also help enhance resilience and support economic recovery in times of war. The government has made significant strides in accelerating the digital transformation and has reinforced support for digitalisation since the onset of Russia's full-scale invasion in February 2022. While digital technologies have brought significant benefits to the country, Ukraine's SMEs are yet to fully tap into the potential of digitalisation. Beyond war-related challenges, lack of awareness, digital skills shortages, sectoral specificities, and financial constraints complicate their digital development.

The government aims to further promote SME digitalisation and is currently preparing its SME Strategy 2024-27. Throughout 2023, the OECD provided guidance to Ukraine on how to help SMEs leverage digitalisation for productivity, resilience, and recovery. This report presents an overview of the findings, looking at i) ways to strengthen the national and subnational institutional and policy framework for SME digitalisation; ii) avenues for targeted digitalisation support services for SMEs, building on the OECD's blueprint; and iii) specific ways digitalisation can help SMEs weather war-related challenges.

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