

4 Developing an eco-system for the digital transformation of SMEs

Building on the analysis presented in previous chapters, this section offers conclusions and policy options that Armenia could consider to further foster SME digitalisation. It is structured around three main objectives: 1) improving framework conditions for digitalisation, 2) building a structured system for SME digitalisation support, and 3) fostering synergies in the ecosystem to facilitate the digital transformation of SMEs.

Introduction

This chapter provides a set of policy options that Armenia could implement to i) improve the framework conditions for digitalisation, ii) build a structured system for SME digitalisation support, and iii) foster the synergies in the existing ecosystem to facilitate the digital transformation of SMEs.

OBJECTIVE 1. Improve framework conditions for SME digitalisation

Adopt a strategic approach to digitalisation

Adopting a strategic approach to SME digitalisation would help ensure more effective use of resources and maximise the potential impact of government support for digitalisation. By strategically planning and co-ordinating policy efforts, Armenia could address the multifaceted challenges faced by SMEs in a more comprehensive manner. This would also enable the government to monitor progress, identify barriers, and adjust interventions accordingly, leading to more efficient and sustainable outcomes.

Moving forward Armenia could consider:

- **Ensuring effective implementation and monitoring of the DSA.** Armenia would need to closely monitor the implementation of the DSA's Action Plan, based on clearly defined responsibilities and predictable and secure funding mechanisms. Strengthening the monitoring framework through a comprehensive and regular collection of additional data on digital transformation, such uptake of digital solution by businesses and level of digital skills, could strengthen the evaluation process and provide a more robust foundation for assessing the efficacy of the actions undertaken as part of the plan (see below). Furthermore, it is important to ensure adequate co-ordination and consultation with a broad range of stakeholders, including governmental bodies such as the Ministry of Labour and local authorities as well as non-governmental entities, including businesses, civil society, and trade unions. The active involvement of these stakeholders in policy design is crucial in shaping digitalisation policies and, more importantly, in providing valuable support for their successful implementation. Recognising the integral role of trade unions, businesses, and civil society in this process underscores the need for ongoing collaboration and engagement to ensure the comprehensive and effective realisation of the DSA's objectives.
- **Mainstreaming support to SME digitalisation in the new Entrepreneurship Development Strategy.** The ongoing preparation of a new Entrepreneurship Development Strategy is a welcome opportunity to place specific emphasis on the digital transformation of SMEs. This would help acknowledge the transformative impact of digital technologies on business ecosystems and would underscore Armenia's commitment to fostering a dynamic and technologically empowered entrepreneurial sector. To ensure a comprehensive and measurable approach, the strategy should incorporate Key Performance Indicators (KPIs) along with associated targets. This is essential for establishing a systematic framework that enables the monitoring and evaluation of the implementation of all proposed measures. By delineating specific KPIs and targets, policymakers can track progress, identify areas for improvement, and measure the tangible impact of the strategy on SME digitalisation and digital skills enhancement.

Box 4.1. Good Practices in Defining Key Performance Indicators (KPIs)

How to define robust KPIs

Assessing performance is the first step in understanding the efficacy of any intervention and facilitating necessary adjustments. Key Performance Indicators (KPIs) and associated targets play a pivotal role in effectively monitoring and evaluating strategies, representing measurable values that gauge the effectiveness of governmental objectives. Robust KPIs exhibits the following characteristics:

- **Measurable progress:** KPIs provide measurable benchmarks and indicators to track the level of implementation, performance, and overall effectiveness of initiatives. By establishing clear targets, policymakers can assess progress to make data-driven decisions.
- **Targeted interventions:** Setting specific KPIs helps focus efforts and resources on priority areas. By defining clear objectives and targets, policymakers can ensure that interventions address critical challenges and opportunities, leading to more effective outcomes.
- **Accountability and transparency:** KPIs provide a transparent framework for evaluating performance, enhancing accountability. By publicly disclosing KPIs, policymakers demonstrate their commitment to accountability, fostering trust.
- **Continuous improvement:** Regular monitoring of KPIs allows for ongoing assessment and adjustment of strategies based on real-time feedback. By identifying areas of underperformance or unexpected outcomes, policymakers can continuously adapt interventions, maximising impact, and efficiency.

Good practice example: Georgia's SME Development Strategy 2021-25

Georgia is currently implementing its second multi-year SME Development Strategy for 2021-2025 and related Action Plans for 2021-2022 and 2023-2025. The document is articulated along seven strategic directions, each with related objectives and KPIs.

Table 4.1. Selected priorities and KPIs from Georgia's SME Development Strategy 2021-25

Priority	Indicators	
Improving the operational environment for SMEs	<ul style="list-style-type: none"> • "RIA SME TEST" is applied to legislative changes • Impact assessment performed for selected state support programs. 	<ul style="list-style-type: none"> • Number of available detailed statistics of SMEs by various directions • Share of insolvency procedures which resulted in rehabilitation rather than liquidation of the enterprise
Promoting the Development of Entrepreneurial Skills	<ul style="list-style-type: none"> • Number of trainings / meetings held per year • Number of Vocational Educational Institutions where the concept of entrepreneurial culture is introduced 	<ul style="list-style-type: none"> • Percentage of trained entrepreneurs that think the skills and knowledge they received during the training will be useful in improving/starting their own business
Improving Access to Finance for SMEs	<ul style="list-style-type: none"> • % of companies participating in State Financing Programs that are able to access financing from non-state sources after their participation in the State Financing Program 	<ul style="list-style-type: none"> • Leasing Transaction Volume • Financial statement submission rate
Promoting electronic communications, information technologies, innovations and R&D for SMEs	<ul style="list-style-type: none"> • Number of SMEs that have developed (at the level of prototype) an innovative product or service among beneficiaries of State Support Programmes 	<ul style="list-style-type: none"> • The number of entrepreneurs receiving digital skills trainings

Sources: (Ministry of Economy and Sustainable Development of Georgia, 2021^[1])

Sources: (OECD, 2017^[2]; OECD, 2019^[3]; OECD, 2017^[4]; Ministry of Economy and Sustainable Development of Georgia, 2021^[1])

- **Improving data collection on the digital transformation.** Recognising the pivotal role of data in fostering evidence-based policymaking and monitoring the impact of policies, improving data collection on digital transformation would be helpful. Armenia already made noteworthy progress in this direction. In 2023, Armstat carried out a pilot survey encompassing 2400 firms based on Eurostat's ICT usage in enterprises database (see Annex B. Armstat ICT survey). This initiative represents a commendable step towards broadening the spectrum of outcome-oriented indicators for digitalisation policies. However, it would be important to institutionalise and expand such data collection processes as a regular component of the national statistical production. The pilot survey could serve as a precursor to sustained efforts that embed the collection of digital transformation data into the regular data collection exercises carried out by Armstat. In addition, collecting detailed data on the total number and evolution of available e-government services could also be helpful to monitor their use and effectiveness, therefore improving interactions between citizens and businesses with government entities. To this end, Armenia could consider collecting data on the total number of the available government services ranked by sophistication level, such as informational services, one-way/two-way interaction, transactions, and personalisation.

Box 4.2. Statistical indicators on ICT usage

Collecting statistical indicators on the adoption of digital technologies in the business sector is key to build the evidence base to monitor SME digitalisation and to develop sound policies to support businesses in their digitalisation journey. The Eurostat ICT Usage in Enterprises and the OECD ICT Access and Usage by Businesses databases offer important methodological references in this respect.

Eurostat ICT Usage in Enterprises

The Eurostat ICT Usage in Enterprises is a yearly survey collected by the National Statistical Institutes (NSIs) based on the annual Eurostat model questionnaires. Its aim is to gather and disseminate standardised and comparable data on the use of ICTs and e-commerce in enterprises at the European level. This information supports the measurement of one of the key priorities outlined by the European Commission in its “Europe fit for the digital age” Plan. It also plays a vital role in monitoring the EU’s digital targets for 2030, as set by the Digital Compass for the EU’s Digital Decade.

The survey targets enterprises with more than 10 employees and it collects information on several subjects, including ICT systems, internet and electronic network usage, e-commerce, e-business processes, ICT competence, and the use of various emerging technologies.

OECD ICT Access and Usage by Businesses by OECD

The ICT Access and Usage by Businesses database features a selection of 59 indicators based on the second revision of the OECD Model Survey on ICT Access and Usage by Businesses. These indicators originate from two primary sources:

1. An OECD data collection covering selected OECD and accession countries or key partners, including Australia, Brazil, Canada, Colombia, Japan, Korea, Mexico, New Zealand, Switzerland, and the United States.
2. Eurostat Statistics on Businesses for OECD countries integrated into the European Statistical system. The indicators presented in the database align with the original indicators as published by Eurostat.

Notes: the full list of subjects covered by the Eurostat ICT Usage in Enterprises survey is as follows: ICT systems and their usage in enterprises, use of the internet and other electronic networks by enterprises, e-commerce, e-business processes and organisational aspects, ICT competence in the enterprise and the need for ICT skills, barriers to the use of ICT, the internet and other electronic networks, e-commerce and e-business processes, ICT security and trust, access to and use of the internet and other network technologies for connecting objects and devices (Internet of Things), access to and use of technologies providing the ability to connect to the internet or other networks from anywhere at any time (ubiquitous connectivity), use of Artificial Intelligence, use of Cloud computing, use of data analytics, use of 3D printing, use of robotics, use of social media, internet advertising, and ICT and the environment.

Sources: (Eurostat, 2023^[5]), (OECD, 2024^[6])

Strengthen the regulatory framework for digitalisation

As seen in Chapter 3, cybersecurity concerns and the perceived complexity of obtaining and utilising e-signatures are major obstacles that limit businesses’ uptake of digital solutions. This, associated with scarce demand, limits SMEs engagement in e-commerce.

Although significant steps have already been taken to address these problems, the government could consider:

- **Ensuring the full implementation of the Action Plan for the SME Development Strategy 2020-2024.** The Action Plan defines specific measures aimed at creating a favorable environment for

the development of e-commerce among SMEs. Key measures include activities such as 1) analysing the legislative framework in the field of e-commerce and implementation of corresponding reforms, 2) improving access to international online payment systems (e.g., PayPal), 3) launching an electronic certificate of origin system, allowing to apply for a certificate online and receive it within a day, 4) analysing international postal deliveries and pinpointing prevalent issues that SMEs encounter during export, 5) developing guidelines and providing technical support for e-commerce through international trading platforms (e.g., ebay, etsy), and 6) developing a programme for promoting e-commerce among SMEs in the regions. Moving forward it will be important to ensure implementation of these measures, as the successful realisation of these initiatives will not only fortify the e-commerce landscape but also contribute significantly to the overall growth and resilience of SMEs within the national economic framework.

- **Improving the regulatory framework on e-signatures.** This will require a concerted effort to align with international standards such as, for example, the EU electronic IDentification And Trust Services (eIDAS) regulation. While initial steps have been taken and Armenia has embraced the use of qualified electronic signatures, these can only be obtained and accessed with a compatible ID card, potentially limiting accessibility for certain businesses, especially smaller ones. By extending the regulatory framework to include less sophisticated e-signatures, such as simple or advanced electronic signatures, Armenia can provide a more accessible and flexible solution for businesses that may not require the highest level of security and legal recognition. This approach not only caters to the diverse needs of SMEs but also promotes wider adoption of digital solutions. Furthermore, full harmonisation with the eIDAS regulation would bring several benefits, including compatibility with EU member states and several EaP countries, and serve as a foundation for interoperability with global digital systems. Moldova and Ukraine have already harmonised their legislation with the EU eIDAS regulation, Armenia's alignment would contribute to creating a seamless digital environment that facilitates cross-border transactions and enhances the interoperability of digital systems within the region.
- **Strengthening the policy framework for cybersecurity.** Armenia has demonstrated commendable progress in this area in recent years, and it is crucial to capitalise on this momentum by enhancing the existing policy framework for cybersecurity. First, the government could consider further aligning relevant legislation with EU directives (NIS2 Directive, see Box 2.3), as foreseen in the DSA. Armenia could also invest in better server security and strengthen the server infrastructure to increase resilience against cyber threats. Moreover, targeted initiatives aimed at encouraging SMEs to adopt cybersecurity measures would be essential. Such measures could include awareness raising initiatives to educate SME owners and employees about the various cyber threats they may encounter – such as phishing attacks, malware, or data breaches – to mitigate the risks. Finally, it would be useful for Armenia to establish a national certification scheme for digital security, delineating standardised criteria and assessment procedures to evaluate the cybersecurity posture of businesses – such as their ability to protect against cyber threats, detect security incidents, and respond effectively to breaches. Such a framework could help SMEs by providing them with clear and standardised guidelines for implementing cybersecurity measures and ensure that their digital security practices meet recognised standards.

Support the development of digital skills

Despite a vibrant private sector with many actors involved in digital skills development, the level of digital skills of the general population remains low and there is a shortage of professionals with digital skills in the private and public sectors.

Armenia is well aware of these issues and has included digital skills as one of the priorities of the DSA. However, achievements in digital skills assessment and anticipation remain relatively scarce. In addition,

data on digital skills levels (across individuals of different target groups and businesses) is not regularly collected and analysed, which significantly impedes policy monitoring and evaluation efforts.

Moving forward, Armenia could consider:

- **Improving digital skills assessment and anticipation tools.** To be in better position to identify skills needs, design adequate policies, monitor the implementation of measures and programmes, and adjust them as needed, Armenia could consider adopting a digital competence framework on the basis of which skills acquired by the general population could be benchmarked and certified. Armenia could consider using the EU's Digital Competence Framework (DigComp) as a reference (Box 4.3). Furthermore, producing and collecting information on the level of digital skills among citizens and firms, would be essential for identifying new demand for skills (OECD, 2019^[71]). The difficulties that SME representatives declare to encounter in finding and hiring employees with adequate digital skills denote a skills mismatch issue. The DSA acknowledges that there is a shortage of professionals with digital skills in the private and public sectors, primarily due to a mismatch between education outcomes and labour market needs. Skills assessment and anticipation exercises represent useful tools to address the issue. Armenia could consider implementing similar assessments, starting from simpler methods such as skills survey and forecasting exercises (Box 4.4).

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

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

Table 4.2. DigComp five areas of digital competences

Area	Description
Information and data literacy	This area equips individuals to find, evaluate and manage digital information responsibly. Key aspects include information retrieval, evaluation, data management, privacy and copyright. It enables informed decision making and active digital participation while safeguarding privacy and digital identity
Communication and collaboration	This competence area focuses on developing individuals' proficiency in using digital tools and platforms to effectively communicate, share information and collaborate with others. It emphasises clear and meaningful digital interactions, enabling collaborative and productive exchanges across various contexts and platforms.
Digital content creation	The DigComp's digital content creation is designed to empower individuals with the skills to proficiently produce, edit and share digital content across various formats, including text, images, audio, and video. It plays a pivotal role in enabling the effective expression of ideas and fostering valuable contributions to the digital landscape with professionalism and creativity
Safety	The safety competence area encompasses the acquisition of essential knowledge and skills that enable individuals to ensure their security and privacy in the digital environment. This entails a comprehensive understanding of digital security measures, proficiently safeguarding personal data and adopting responsible online practices to effectively mitigate potential risks and threats
Problem solving.	Problem solving encompasses the acquisition of adept skills in analysing and resolving challenges proficiently via the use of digital tools and technologies. This proficiency enables individuals to identify issues, devise innovative solutions and take informed decisions in the digital landscape

Source: (European Commission, 2023^[8])

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

Source: (OECD/EBRD, 2023^[9]; European Commission, 2023^[8])

Box 4.4. Skills anticipation tools

Skills anticipation tools are typically defined as activities designed to estimate future skills needs in the labour market “in a strategic way, using consistent and systematic methods” (ILO, 2015^[10]). These practices prove valuable for policy makers to understand the evolution of skills demand and supply and to implement appropriate measures to prevent and/or address skills shortages and mismatches. Given the rapid pace of technological advancements and their impact on economies and societies, these exercises are particularly relevant in the context of digital transformation.

In practice, tools for anticipating skills needs are diverse, ranging from simple surveys among employers or school/training graduates to quantitative projections based on macroeconomic modeling. A recommended approach involves a combination of different methods, sometimes employing both quantitative and qualitative approaches to gain a thorough understanding of current and upcoming trends. Most OECD countries have implemented multiple types of exercises, but forecasting exercises are particularly widespread, as they were being used by about 90% of OECD countries surveyed in 2016. Foresight exercises, which take a qualitative approach gathering stakeholders to develop future scenarios, identify priorities, and propose policy actions, are less common and were reported by only about half of OECD respondent countries.

Sources: (OECD/EBRD, 2023^[9]; OECD, 2016^[11]; CEDEFOP, 2008^[12]; ILO, 2015^[10])

- **Further promoting digital skills development among businesses.** Armenia could further promote digital skills development among businesses, especially small ones, by introducing new digital skills development programmes and ensuring the effectiveness of the existing ones. In terms of new programmes, the government could consider implementing additional re-skilling and upskilling opportunities for SMEs, as well as dedicated training modules on digitalisation including examples of digital solutions available to small businesses. In addition, a concerted effort in communication and outreach programmes would ensure that the diverse range of existing support initiatives is well-understood and accessible to the target audience. Awareness campaigns could also emphasize the tangible benefits and practical applications of digital skills in the contemporary business landscape. Finally, monitoring and evaluation of available training programmes should be implemented to ensure their continued relevance and effectiveness.
- **Ensuring involvement of relevant stakeholders and co-ordination between public and private initiatives aimed at improving digital skills.** To bolster digital skills development, the government should enhance the involvement of pertinent stakeholders while fostering seamless co-ordination between public and private initiatives targeted at enhancing digital skills. This multifaceted approach aims to cultivate a comprehensive ecosystem that facilitates the alignment of diverse efforts geared towards digital skills development. By actively engaging key stakeholders from both the public and private sectors, Armenia can leverage a collective wealth of knowledge and resources to drive meaningful advancements in digital literacy and proficiency. In addition, Armenia could raise awareness about the available support mechanisms among businesses and the general population. Finally, a robust monitoring and evaluation framework could be established to systematically assess the impact of digital skills development initiatives. This entails tracking the effectiveness of the various programmes, identifying areas for improvement, and measuring the overall progress towards enhancing digital capabilities in SMEs. In implementing these recommendations, Armenia could capitalise on the strengths of existing successful initiatives such as the Armath Engineering Laboratories, the TUMO Centre for Creative Technologies, and the Gyumri Technology Centre (see below).

OBJECTIVE 2. Build a structured system for SME digitalisation support

Establish an implementing agency with a strong mandate to act as a digital one-stop-shop

Like other cross-cutting policy issues such as gender, green growth or development, priorities to facilitate and manage the digital transformation are relevant in many domains, which calls for a holistic and co-ordinated approach to policy making. As noted in Chapter 2, the government's ability to assist the SME population was reduced due to significant changes in Armenia's institutional arrangements for SME support services and, although digitalisation stands as a discernible policy priority for the government, its implementation appears to be dispersed across various policy documents and different institutions. This fragmented approach poses a potential risk to the efficacy of the policy endeavours.

Moving forward, it would be useful to identify a co-ordinating institution (hereafter *SME support agency*) with a strong political mandate and sufficient resources to translate strategic priorities set by the government into tangible initiatives to help bolster the digital transformation of SMEs. Such an agency could provide a comprehensive range of SME development services, including those with a focus on digital transformation. In this context, it is important to highlight that the support should extend beyond businesses in the IT sector, ensuring a holistic approach to fostering digitalisation across diverse industries, including in particular also more traditional ones where the majority of SMEs operate (OECD, 2021^[13]).

This SME support agency could act as:

- **First implementer of digital transformation policies set by the national government.** The SME support agency would take the lead in implementing governmental policies defined in official policy documents (e.g. SME strategies and action plans). The agency would operate as the central co-ordinating body endowed with both the mandate and the requisite resources to translate strategic priorities related to business digitalisation into actionable measures. By assuming this responsibility, the agency could effectively bridge the gap between overarching policy objectives and on-the-ground implementation.
- **Single point of reference for businesses seeking public support to digitalise.** The designation of the SME support agency as the single point of reference for businesses seeking public support to digitalise is paramount in simplifying and streamlining the process for SMEs navigating the landscape of available assistance. By consolidating various resources, programmes, and initiatives under one roof, the agency could become a centralised focal point where SMEs could receive guidance and support tailored to their digitalisation needs.
- **Key provider of information.** The agency would become the main provider of information for all businesses seeking guidance and support. In this capacity, the agency could:
 - *Raise awareness of the benefits of digital transformation for businesses.* Through targeted outreach campaigns, workshops, seminars, and informational materials, the agency would educate SMEs about the tangible benefits of digital transformation, such as increased efficiency, productivity, competitiveness, and market access. By fostering a culture of digital awareness and literacy, the agency would help SMEs understand the benefits of digitalisation as a strategic step for sustainable growth and resilience.
 - *Maintain an observatory of digital solutions and a database of trusted digitalisation experts.* The agency could curate and maintain an observatory of digital solutions, tools, and technologies relevant to SMEs. This repository would serve as a valuable resource for SMEs seeking guidance on selecting and implementing digital solutions tailored to their specific needs and requirements. Additionally, the agency could establish a database of trusted digitalisation experts, including consultants, service providers, and technical specialists. SMEs could then

- leverage this network of experts for advisory support, technical assistance, and capacity-building initiatives, enhancing their digital capabilities and competitiveness.
- *Clearly present information on existing support programmes for the digital transformation.* As the central repository of information, the agency should provide clear and accessible information on existing support programmes and initiatives aimed at facilitating the digital transformation for SMEs. This includes details on eligibility criteria, application procedures, available funding, and support services offered under each programme.
- **Co-ordinator of the resources available in the digital ecosystem.** The agency could serve as a focal point for co-ordinating activities and fostering collaboration among various stakeholders in the digital ecosystem (see below). This entails establishing partnerships with government agencies, industry associations, academia, and the private sector to pool resources, share best practices, and leverage synergies in supporting SME digitalisation.

Develop specific programmes to support SME digital transformation

While a number of SME support programmes are readily available within the country, there is a lack of targeted efforts to enhance SME digitalisation, particularly evident in traditional sectors beyond IT. To address this, the government could consider:

- **Adopting a sectoral approach to facilitate advancement in digital maturity.** Navigating the digital landscape poses common challenges for SMEs; however, adopting a one-size-fits-all strategy proves ineffective. As seen in Chapter 3, the extensive diversity across industries and the business population in Armenia demands a tailored and flexible approach. Recognizing and addressing the unique needs and characteristics of each sector and business entity is essential for fostering successful and inclusive SME digitalisation.

To ensure adequate and targeted support, the government could start by assessing the different needs and challenges to SME digitalisation in the different sectors (Chapter 3). Based on the insights gathered from this analysis, tailored digitalisation plans could be designed to accommodate the specific demands and opportunities within each industry. Priority sectors should be identified as a starting point, with focused efforts directed towards formulating sector-specific digital plans to drive targeted support initiatives (an example of impact-based prioritisation and sector-specific digital plans is provided in the Annex).

- **Developing enterprise digital maturity self-assessments.** The level of digital maturity can vary considerably across enterprises in a given industry, as businesses with different levels of digital readiness usually coexist. To support enterprises in their digitalisation journey, it would be useful to provide them with tools to assess their digital maturity and receive tailored recommendations for improvement. An online platform for self-assessment would enable entrepreneurs to conduct self-tests and receive personalised recommendations based on their specific needs and challenges. The effectiveness of such a tool relies on businesses' awareness of its existence, highlighting the need for robust awareness-raising efforts. In addition to the development of the platform, Armenia could consider involving consulting firms and individual advisors to provide free-of charge express diagnostic tool. A useful reference in this context is the Digital Maturity Assessment (DMA) framework developed to investigate the digital maturity level of EDIHs' beneficiaries (Box 4.5).

Box 4.5. EDIH Digital Maturity Assessment framework

A digital maturity assessment (DMA) tool is instrumental to measure the digital maturity status of an entity. In order to monitor the increase in the digital maturity of EDIH customers over time, the Joint Research Centre (JRC) developed a DMA framework that is based on an online questionnaire ready to be used by SMEs and public sector organisations (PSO) with the support of an EDIH expert.

The framework is used to investigate the base digital maturity level of every beneficiary organisation before the EDIH intervention starts, and to observe its evolution until 3 years later to understand their digital maturity's growing curve. It consists of two main modules: this first module collects general data about the EDIH customer such as contact details, address, type and size of organisation, sector of activity and more that will serve for statistical analysis; the second module is the core part of the DMA questionnaire for SMEs consisting of questions assessing the different aspects of digital maturity within an organisation, grouped under six dimensions.

Table 4.3. Six dimensions of the second module of the EDIH DMA framework for SMEs

Dimension	Description
Digital Business Strategy	The questions of this dimension intend to capture the overall status of a digitalisation strategy in the enterprise from a business perspective. They ask about the enterprise's investments in digitalisation per business areas (either executed or planned) as well as the company's readiness to embark in a digital journey that might require organisational and economic efforts not yet foreseen
Digital readiness	The digital readiness dimension provides an assessment of the current uptake of digital technologies (both mainstream and more advanced technologies) that is valid for both manufacturing and service companies.
Human-Centric Digitalisation	This dimension looks at how staff are skilled, engaged and empowered with and by digital technologies, and their working conditions improved, with a view to increase their productivity and wellbeing.
Data Management	This dimension captures how data is digitally stored, organised within the enterprise, made accessible across connected devices (computers, etc.) and exploited for business purposes, keeping an eye on ensuring sufficient data protection via cybersecurity schemes.
Automation & Intelligence	This dimension explores the level of automation and intelligence facilitated by digital means that is embedded in business processes.
Green Digitalisation	This dimension captures the capacity of an enterprise to undertake digitalisation with a long-term approach that takes responsibility and cares about the protection and sustainability of natural resources and the environment (eventually building a competitive advantage out of this).

Source: (Kalpaka, 2023^[14])

The responses to the questionnaire are then scored to obtain a quantitative measure of the digital maturity level. In particular, each question is scored on a scale from 0 to 10 and each dimension is scored on a scale from 0 to 100 (with higher scores indicating higher maturity). Each item contributes equally to a question score and each question contributes equally to Dimension score.

Source: (Kalpaka, 2023^[14])

Provide financial support for the digital transformation of SMEs

Frequently, SMEs encounter significant challenges in their digitalisation journey due to limited resources available to invest in the transformation process. Armenia could leverage ongoing initiatives such as the Economic Modernisation Programme (referenced in Chapter 2) to expand financial assistance dedicated

to SME digitalisation. In order to alleviate the financial burden on businesses, a diverse array of instruments could be deployed:

- **Grants and vouchers** are key tools in facilitating SME access to digital resources. By providing direct financial assistance, grants enable businesses to invest in essential technologies and infrastructure lowering the overall associated cost. On the other hand, vouchers offer a flexible mechanism by subsidizing the cost of digital services or training, thereby making them more accessible to SMEs.
- **Loan guarantees and interest subsidies** constitute another form of facilitating SMEs' acquisition of digital tools. Embracing the "test-before-invest" principle ensures that financial support is allocated to SMEs for adopting technologies or solutions that promise increased operational efficiency and ultimately drive productivity growth. Through loan guarantees, the government can mitigate the risk for financial institutions, encouraging greater access to capital for SMEs seeking digital investments. Simultaneously, interest subsidies reduce borrowing costs, easing the financial burden and incentivizing SMEs to explore and adopt transformative technologies.
- **Cost reimbursement mechanisms for digital consulting services and trainings**, including tax incentives, play a pivotal role in supporting SME digitalisation efforts, effectively lowering the financial barriers associated with acquiring specialised expertise and skills. This support enables SMEs to access tailored guidance and training to navigate the complexities of digital transformation, optimize their use of digital tools, and capitalise on emerging technologies. Additionally, cost reimbursement mechanisms encourage SMEs to invest in continuous learning and skill development, fostering a culture of innovation and adaptability within the business ecosystem.
- **Awareness raising about existing sources of financing** is instrumental in empowering SMEs to leverage available resources for their digitalisation endeavours. Through targeted campaigns, workshops, and outreach initiatives, SMEs can gain valuable insights into the diverse array of financing options offered by governmental bodies, financial institutions, and other stakeholders. Similar initiatives can support SMEs to navigate the funding landscape and make informed decisions that align with their specific needs and goals.

OBJECTIVE 3. Foster synergies in the ecosystem to facilitate digital transformation in SMEs

Consider embracing the creation of DIH-like initiatives

Establishing a single agency to serve as a one-stop-shop for SME support, including facilitation of digitalisation endeavours, is an important first step. However, the process of setting up such an entity could prove to be time-consuming and resource intensive. In light of this, Armenia could consider adopting a decentralised approach, capitalising on the already vibrant digital ecosystem. Embracing DIH-like initiatives could provide a viable solution, allowing for the integration of various stakeholders and resources across the ecosystem to efficiently cater to the diverse needs of SMEs aiming to digitalise.

A Digital Innovation Hub (DIH) serves as a focal point for driving digital transformation, functioning as a collaborative ecosystem, bringing together various stakeholders from the public and private sectors, including consulting firms, incubators, universities, research institutions, and industry players. These entities collectively offer a wide range of services and facilities aimed at supporting SMEs in their digitalisation journey. This encompasses providing access to **test-before-invest facilities**, where SMEs can experiment with new technologies and solutions before making significant investments. Additionally, DIHs offer **skills training programmes** to equip SMEs with the necessary competencies to leverage digital tools effectively. They also provide **support in finding investment opportunities**, facilitating

access to funding sources, and fostering **ecosystem building** and networking activities to promote collaboration and knowledge exchange among stakeholders (Kalpaka, Sörvik and Tasigiorgou, 2020^[15]; European Commission, 2023^[16]).

Hybrid business models, combining public and private financing, are often adopted to sustain and expand DIH initiatives, ensuring their continued development and ability to deliver valuable services to businesses within predefined criteria.

Considering the robust ecosystem already in place, Armenia stands to benefit significantly from building upon its successful existing initiatives. This can be achieved through strategic utilisation of key resources:

- Leveraging technology centres, accelerators, and incubators to serve as digital educators, providing SMEs with essential knowledge and skills to navigate digital transformation effectively.
- Engaging consulting firms and individual advisors as digital guides, offering personalised guidance and expertise tailored to the unique needs and challenges faced by SMEs in their digitalisation endeavours.
- Partnering with local high-tech companies to serve as digital suppliers, facilitating access to cutting-edge technologies and solutions essential for SMEs to enhance their digital capabilities and competitiveness.

Box 4.6. European Digital Innovation Hubs

European Digital Innovation Hubs (EDIHs) help businesses as well as public sector organisations respond to digital challenges and become more competitive. Through their regional presence, they can easily reach local companies and address them in the local language while also granting them access to the broader innovation ecosystem. As the network of digital innovation hubs is EU-wide, companies can benefit from European best practices, which fosters co-operation and knowledge transfer between all stakeholders. This unique combination of regional expertise, paired with a European network, enables well-tailored support on digital transformation with access to a community of hubs.

Digital Innovation Hub services

EDIHs receive 50% of their funding from the European Commission and 50% from the respective member state, associated country, or region, or from private sources. The hubs' services can be divided into 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.

EDIHs have proven to be important enablers for the digital transformation of SMEs. This best practice can be replicated under the EU's Economic and Investment Plan for the EaP region, which is worth EUR 2.3 billion in grants, blending and guarantees, with a potential to mobilise up to EUR 17 billion in public and private investments (EIB, 2020^[17]).

Latvia's Digital Innovation Hubs

In Latvia, two organisations - the Latvian IT Cluster and the Latvian Digital Accelerator - have been granted EDIH status. The hubs offer a comprehensive range of services aimed at empowering local companies to embrace digitalisation and enhance their competitiveness. They focus on several key areas, including:

- **Raising awareness and capacity building.** Through marketing campaigns, “kickstart” workshops, networking events, and trainings on general digital skills, the hubs aim to increase awareness among SMEs about the benefits of digitalisation.
- **Matchmaking with mentors and grant opportunities.** The hubs facilitate matchmaking between SMEs and experienced mentors, providing invaluable guidance and support throughout the digital transformation process. Additionally, small grants (EUR < 5 000) are available to enable SMEs to test new technologies and innovative solutions.
- **Support for technology adoption.** To assist SMEs in adopting digital technologies, the hubs offer grants and other financial instruments. Furthermore, dedicated skill upgrade programmes help SMEs develop the necessary expertise to leverage digital tools effectively.
- **Fostering further digital transformation:** Through initiatives such as corporate hackathons, access to industry experts, and grants for innovative technologies, the hubs encourage continuous digital innovation and transformation among SMEs.

Through their diverse range of services and partnerships, these EDIHs are committed to driving digital innovation, empowering SMEs, and contributing to the country's digital growth.

Source: (European Commission, 2023^[16]; Latvia's Digital Innovation Hub, n.d.^[18]; OECD/EBRD, 2023^[9]; Digital Accelerator of Latvia, n.d.^[19]; IT Cluster, n.d.^[20])

Leveraging technology centres, accelerators and incubators as digital educators

Armenia boasts a wide range of dynamic initiatives dedicated to nurturing talent and advancing technological entrepreneurship across the country, exemplified by initiatives such as Tumo Centres, ImpactAim accelerator, and Armath laboratories (see Chapter 2). Leveraging the expertise and infrastructure of these initiatives, they can play a pivotal role in:

- Designing and implementing tailored training programmes specifically tailored to enhance the technological competencies and knowledge of employees and executives within SMEs. These programmes could be customised to address the unique needs and challenges encountered by SMEs in adopting and leveraging digital technologies effectively.
- Developing and disseminating comprehensive online educational resources geared towards bolstering digital skills among the broader population. These resources could encompass a wide range of topics, including basic digital literacy, advanced technological concepts, and practical skills.

Entities involved in these initiatives could be well-positioned to become DIH, as they often possess the basic expertise, infrastructure, and networks to serve as focal points for driving digital innovation and transformation. With their diverse range of programmes, resources, and partnerships, they can provide SMEs with essential support services, including tailored training programmes, access to digital technologies, and networking opportunities. Leveraging their existing strengths and capabilities, these entities can effectively serve as collaborative ecosystems, facilitating knowledge exchange, experimentation, and collaboration among stakeholders to drive digitalisation and innovation across various sectors of the economy.

Using consulting firms and individual advisors as digital guides

The government could play a pivotal role in facilitating SMEs' access to the expertise offered by existing consulting firms and advisors. Specifically, the government could consider implement specialised training programmes aimed at enhancing consultants' capacities to formulate and execute digital transformation strategies tailored to SMEs' needs. This initiative could also include the development of a certification program to ensure the quality of consulting services and establish a repository of accredited providers.

Leveraging local high-tech companies as digital suppliers

Finally, the analysis highlighted the limited awareness of SMEs on the availability of local and cost-effective digital solutions. Compounding this issue, a substantial proportion of high-tech firms specializing in digital tools have traditionally targeted foreign markets. To address this gap, the government could serve as a vital intermediary between SMEs and local providers of digital solutions performing a matching exercise. By fostering collaboration and incentivising local tech companies, the government could encourage the development and implementation of tailor-made digital solutions specifically designed to meet the needs of local SMEs. Additionally, the government could play a proactive role in raising awareness among SMEs regarding the availability and benefits of these local digital solutions. This could involve the preparation and dissemination of informative materials aimed at educating SMEs about the diverse range of cost-effective digital tools and services offered by local providers, empowering them to leverage digital technologies.

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