



MOLDOVA

DIGITAL

TRANSFORMATION

COMPACT



Republic of Moldova

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BRIEF INTRODUCTION

Country Context Framing

The COVID-19 pandemic underlined the importance of Digital Transformation globally and nationally. In response to these new challenges, Digital Transformation became one of the highest priorities for governments, including in Moldova. The Republic of Moldova is a country with all necessary ingredients for a fast and impactful digital transformation. Moldova has across the key areas of the nation:

- 1. Infrastructure** - Very good internet coverage where 98% of localities have internet connection, however adequate high-speed home access of broadband is still challenging.
- 2. People** - ICT skills are expanding, but not meeting the demand level and there doesn't seem to be encouragement of inclusive national adoption.
- 3. Government** - Good eGov platform has been progressing well in terms of digitalization of public services; with opportunities to monitor progress proactively as well as to expand in areas of demand such as business registration, and services related to judiciary procedures.
- 4. Business** - Vibrant and agile ICT sector that is already contributing more than 7% to GDP; nevertheless private-sector modernization needs support such as financing and public-sector innovation opportunities.
- 5. Whole-of-Society** - Digital Foundations serve as catalysts to speed transformation and while digital payments component scores highly according to the public sector, data from indexes and other sectors indicate that there may be a opening to focus efforts here to unlock further opportunities, particularly if paired with support for SMEs that have struggled due to the COVID-19 pandemic, further encouragement of startups with enhancing credit access, and support for citizen digital literacy.

Overall, international indicators reflect varying successes in Moldova's current development

but more research needs to be undertaken to be comprehensive in the confident determination of specific focus areas that are outlined. Digital changes rapidly, and a more real-time analysis across key indicators can provide a clearer look into progress over time.

During the COVID-19 pandemic, especially during the various lockdowns, over 150,000 children of preschool age were unable to attend school and continue their education online due to lack of devices, connectivity issues, educational content not adapted to online teaching, as well as limited teacher familiarization with online methods and lack of digital skills. A lot of companies, especially micro, small and medium enterprises (MSMEs), have been affected by the limitations imposed during the pandemic and faced difficulties in accessing their customers and partners through existing traditional distribution networks. As a result, many of them had to close their operations causing a lot of the population, especially women to lose their jobs. Additionally, access to some non-digitized public services was difficult, particularly during the lockdowns.

As the Digital Moldova Strategy came to a conclusion in 2020, the country is in urgent need to systemically rethink digital transformation opportunities and focus on a whole-of-society systemic transformation by the use of digital technologies and focus on the key opportunities in engaging with citizens, private sector, local administrations, building demand for digital skills and for utilizing digital solutions. Digitalization is key to also achieving the Sustainable Development Goals, as 2030 is fast approaching. The current Compact has been developed by the International Telecommunication Union Office for Europe and UNDP to be used as a tool in the process of defining the vision for digital transformation, supporting leadership and coagulation of national efforts, donor coordination and capturing of the emerging opportunities as the country enters a new stage.

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Methodology

The methodology used in this document is based on a five-building-blocks framework that analyses digital transformation from a variety of perspectives, enabling an understanding of the various dimensions of digital development and how they interact at country level. Below a short snapshot of each building block and how it fits in the overall digital development scenario of the country.

Infrastructure: Meaningful connectivity as foundation for digital transformation: Robust ICT infrastructure is key to the transformation of a country as the foundation for innovative services and economic activity to take place. ICT infrastructure needs to be evaluated based on several aspects critical to meaningful connectivity.

People: People-centric digital transformation: Digital skills development, human capacity building to empower citizens and strengthen employability is essential for the gigabit society. A people-centric digital transformation is essential to ensure all members of society, including vulnerable groups and with specific needs are connected meaningfully to take advantage of ICTs by enabling digital skills development.

Government: Centric digital transformation: Ensuring public services are delivered digitally is key to digital transformation and triggering

reduction in costs and bureaucracy by increasing efficiency. Governments should promote the right strategies and ensure public sector transformation is a catalyst for digital transformation in the wider economy.

Business: Sector-centric digital transformation: Economic benefits accumulate when ICTs are used to transform all sectors, therefore business is very important to be included as a pillar when it comes to achieving digital transformation.

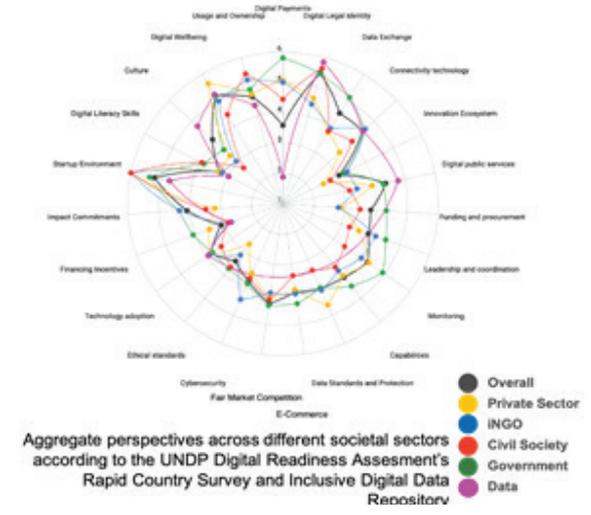
Whole-of-society: Innovation ecosystem transformation: Digital innovation is essential to accelerate digital transformation. Through strong digital innovation ecosystems, countries can benefit from increased productivity, economic growth and employment opportunities that catalyze digital transformation and ensure long-term digital development and positive impact on the country's broader economic development. A Whole-of-Society approach is a coordinated process between government, civil society and private sectors of society. An inclusive approach means leaving no citizen behind by building ownership, leveraging inclusive design, mitigating risks, and establishing sustainable accountability.

Regulatory guidance: Legal and policy support: Within each area we investigate the regulatory efforts that can be pursued to ensure effective impact.

Elaboration of this methodology, within the framework of building blocks above, benefited from secondary research information, including various publications, activities, and statistics as well desk research. Each piece of content is presented using the context of the relevant building block under which the information has been inserted, and therefore adopts one of the 5 perspectives of digital transformation.

Background Materials

SECTORAL PERSPECTIVES ON STAGES OF DIGITAL TRANSFORMATION



Digital Readiness Assessment: Rapid Country Survey and Inclusive Digital Data Repository. A survey was deployed to key stakeholders across public, private and civil society sectors to determine perspectives on digital strengths and weaknesses according to [UNDP's Digital Transformation Framework](#). The focus was to establish a means to further alignment on the current digital state of the nation. This

was augmented with additional international data sets. Each sector is plotted against our key indicator areas then the gap between the respondents is analyzed to better understand where the disagreements exist in order to better align on the correct place to start with implementing improvements in that area.

The [ICT-centric innovation ecosystem country review](#) examined the dynamics of the ICT-centric innovation ecosystem in Moldova and made recommendations to strengthen ICT innovation in the Moldova national development agenda and leverage the economic and social opportunities provided by innovative technologies.

It was guided by the “[Bridging the Digital Innovation Divide: A toolkit for developing sustainable ICT-centric ecosystem projects](#)”, which can also help further guide stakeholders in developing blueprints and recommendations that engage stakeholders in co-creation and help them identify gaps, amplify existing good practices and develop sustainable ecosystem initiatives tailored to unlocking their community’s potential.

The [ITU Digital Development Country Profile](#) comes to reinforce the ITU commitment to support Moldova’s efforts to streamline the development of key areas for the ICT-centric ecosystem development of the country.

FOUR KEY OPPORTUNITIES TO ACCELERATE DIGITAL TRANSFORMATION



Source: ITU

1. INFRASTRUCTURE: MEANINGFUL CONNECTIVITY AS FOUNDATION FOR DIGITAL TRANSFORMATION

- Well-developed mobile infrastructure offering strong potential for the ICT market is present in the country, but high-speed home access of broadband is still challenging.
- Affordable mobile internet access exists, but the fixed-broadband basket cost is yet not meeting the Broadband Commission’s target.
- There is strong government support to the ICT sector development, but no joint vision or overarching strategy related to its further development in place.
- Stakeholders have a strong desire for the development of the 5G network, but the first results are slow to materialize.
- There are a few efforts by stakeholders to increase cyber resilience but there is a clear need for stakeholders’ active engagement in strengthening the country’s cyber defense capabilities.

Internet access in Moldova is relatively affordable. Due to the price drops registered over the past year, the country offers the data-only mobile broadband basket cost of 0.4% of GNI per capita for a monthly allowance of 1.5 Gb, which is even lower than the Europe region average of 0.6% of the GNI per capita. However, the fixed-broadband basket cost is 2.2% of GNI per capita for a 5Gb Internet data cap, which is not yet achieving the Broadband Commission’s 2% target.

ICT usage and coverage increased in Moldova over the past decade due to the strong government support for sector development through various strategies and regulations. Among them were the “Digital Moldova 2020” and its Action Plan for 2013-2020, aiming to develop infrastructure and access, digital content and electronic services, as well as capacities and usage. In line with the Strategy objectives, the Broadband Development Programme for 2018–2020 and its action plan were approved. To promote the efficient management of radio spectrum resources, the Radio Spectrum Management Programme for



Moldova has 99.9% of the population covered by 3G and 98% with 4G/LTE. In 2020, the number of active mobile-broadband subscriptions per 100 inhabitants reached the share of 58.8, while the number of fixed broadband subscriptions per 100 inhabitants was 17.8. The broadband adoption expands as the number of fixed broadband final users increased by 7.2% in 2020 compared to 2019, which results in over 719 000 users. The number of mobile internet users decreased by 0.4% and reached 2 371 108 users in 2020.

2013–2020 was created. It was followed by the Radio Spectrum Management Programme for 2021-2025, developed with ITU support. Nevertheless, the country currently lacks an overarching strategy where ICT plays a crosscutting role in supporting positive social and economic change.

“Moldova 2030” Strategy, adopted by the Government in 2020 but which awaits Parliament approval, establishes the need to promote 5G availability at over 100

Mbps for any household in the country by 2030. According to the Radio Spectrum Management Program for 2021-2025, which sets the preconditions for the 5G spectrum bands allocation, the 5G implementation and rollout will happen in two stages. The 1st stage (2021-2022) foresees the consolidation of the current networks with spectrum re-farming. The 2nd one (2022-2025) envisages the creation of an enabling environment for the implementation of 5G networks. Mobile network operators are supporting this implementation plan and already initiated various test pilots.

The 2020 ITU Global Cybersecurity Index ranks Moldova 33rd in the Europe region and 63rd globally. It highlighted technical measures as strength areas while organizational measures and capacity development as areas of potential growth. The country became a member of

the Budapest Convention on cybercrime in 2009 and has worked since then to address Internet safety and computer crime issues. The aim of enabling the conditions for greater security and trust in digital space, foreseen in the “Digital Moldova 2020” Strategy, led to the approval of the 2016-2020 National Cybersecurity Program. It resulted in approved Mandatory Cyber Security Requirements for the public authorities and established Government and Military CERTs. As the next step towards cybersecurity resilience, the 2019-2024 Information Security Strategy and Action Plan was approved. It aims to establish the National CERT, transpose the NIS directive, ensure control and monitoring of the application of minimum cybersecurity requirements, define the national critical infrastructure and the measures needed to protect it, as well as set the framework for counteracting hybrid threats.

Regulatory Guidance:

- In partnership with key operators and civil society assess what incentives are needed for broadband, and align with other infrastructure development plans such as road and energy for better last-mile delivery. Determine whether speed (5G) or access should be a current priority.
- Public programmes focusing on making the internet available to all groups should be further considered, such as providing more wi-fi hotspots in public spaces (that include public resources in addition to only internet) and supporting schools providing computers and data bundles to most vulnerable student groups.

2. PEOPLE: PEOPLE-CENTRIC DIGITAL TRANSFORMATION

- Citizens’ capacity to develop technical capabilities is expanding, but it’s still not meeting the demand level and there doesn’t seem to be rewards or incentives to encourage entrepreneurial mindsets or further societal adoption.
- IT professionals in Moldova have good qualifications but the size of the talent pool is very limited and not integrated.
- Significant efforts are undertaken by the government and other stakeholders to ensure an enabling environment for the digital inclusion of women and girls, but barriers remain for career advancement; programmes do not target the inclusivity of the most vulnerable groups.
- Moldova has a solid basic education system that ensures the foundation for advanced professional digital skills; yet there are few programmes to establish and/or attract more talent to STEM careers and the lack of specialised IT skills among the population.
- National stakeholders engage actively in promoting online protection, but there is a need for a more robust and coordinated approach.
- Even with wide internet access and ownership of ICT devices, challenges can be identified in the degree of quality and affordability of access for certain vulnerable groups (women, rural areas) that limit their capacity to access some services and hamper comprehensive development of the digital economy.

the risk of implementing teaching methods focused on theory rather than practical implementation, IT industry professionals are not formally allowed to teach at universities unless they have advanced degrees and pedagogical certification. However, “Education Development Strategy 2014-2020” and “Digital Moldova 2020” Strategy generated a significant number of programs and initiatives to support digital skills development. These include the ICT Centre of Excellence “Tekwill”, “Tekwill in Every School” program, the National Digital Literacy Program for Teachers, “Future Classroom Lab”, etc. Moreover, to overcome the pandemic, several online or hybrid platforms such as “Studii.md”, “Education Online” and “Invat.Online” were launched.

There are several universities and colleges providing ICT degrees, but they are a small proportion of the total. The lack of capacity to train new professionals and upskill adults with IT competencies can hamper the potential of development of the digital economy. In 2019, only 14% of researchers were dedicated to engineering and technological disciplines. Many believe that in general universities were successful in graduating IT specialists, but that their capacity was limited compared to the needs of the country, and a quarter of them considered that their capacity to train digital specialists is currently quite limited. At the same time, the general perception is that there are some incentives and facilities to attract foreign workers with IT skills, but that these are insufficient. There is a need to provide further incentives and or sufficient support for progress.

In Moldova, women are significantly under-represented in ICT education, with only 4.6% of girls in higher education choosing



Digital tools are integrated into all levels of learning across Moldova, and educators use them to enrich their teaching skills. The country has 18 higher educational institutions that offer IT-related studies. Yet, despite

STEM. As a result, women and girls account for 31% of jobs in the ICT sector but only 19% of digital professions. Their salaries in this sector are 33% lower than the salaries

of men. Yet, in recent years, the number of women-owned businesses in the ICT sector is growing faster than men-owned. Out of the total number of women entrepreneurs in Moldova, 67% run companies in IT, compared to 56% for men entrepreneurs. But there is a need for significant improvement from the gender disparities perspective at the management levels in SMEs, MEs, and large firms. To support women in their aspirations, GirlsGoIT Program was created and led to the establishment of girls-led local clubs in 13 regions in Moldova, and the “Empowering Women in ICT Skills” initiative was launched.

Moldova ratified [the Convention on the Rights of Persons with Disabilities \(UN CRPD\)](#) in September 2010, but it has not ratified or acceded to its Optional Protocol. Meanwhile, the country has achieved several milestones in building a legislative framework for digital inclusion and ICT accessibility, including [The Law on Social Inclusion no. 60/2012](#) and the National Program for Social Inclusion of Persons with Disabilities for 2017-2022. Additionally, [The Code on Audio-visual Media Services no. 174/2018](#) was brought in compliance with the EU Directive on Audio-visual Media Services, and [the Government Decision on the official pages of public administration authorities on the Internet no. 188/2012](#) (in force from 2018) sets compatibility requirements for public authorities’ websites following the Web Accessibility Initiative guidelines. Yet, the implementation framework could benefit from further improvement. It includes promoting the

universal design of ICT products and services, facilitating the engagement and participation of persons with disabilities, adopting ICT accessibility in education, and establishing financial schemes to support the provision of accessible information and communications.

Moldova ratified the [Lanzarote Convention on the Protection of Children against Sexual Exploitation and Sexual Abuse](#) in March 2012. But the national legal framework has not yet been fully updated to reflect its provisions. The country interventions focus on two main pillars: online risk prevention and child protection. The Action plan on promoting the safety of children and adolescents on the Internet for the years 2017-2020 laid the groundwork for the first joint efforts to protect children from online threats. Previous parallel and fragmented efforts were part of the Digital Moldova 2020 Strategy and the National Cyber Security Program for 2016-2020. Besides, the Information Security Strategy for 2019-2024 also touches upon this issue. Yet, there is no single entity in charge of coordinating all online child safety efforts, making the monitoring and evaluation process inefficient. Besides, some mechanisms for reporting illegal online content are missing, and the only web platform for advice and information about online safety is [www.siguronline.md](#). Yet, among the most impactful initiatives is the Safer Internet Day organized in Moldova since 2004 to raise awareness about the dangers and available means of tackling online safety issues.

Regulatory Guidance:

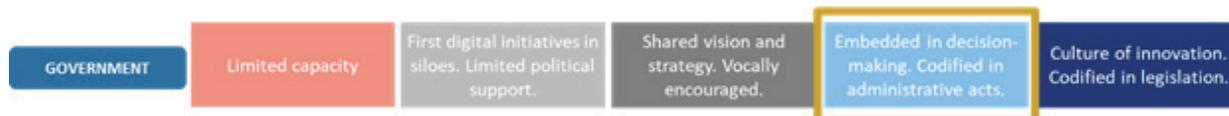
- A robust regulatory framework on the provision of accessible information and communication was established, but the implementation framework requires further improvement.
- Current online protection activities seem focused on child safety and can be expanded to be further inclusive and connected with larger digital literacy matters to address emergent issues such as harassment, disinformation, media literacy and more.
- A path to incentivize STEM careers can be encouraged with policies and connections to public infrastructure works.
- Further research gathering data on the impact of digital transformation on vulnerable groups and their special needs should be made.
- Initiatives promoting entrepreneurship, facilitating dialogue between startups and increasing the visibility of successful businesses created in the country could also increase the interest of youth for entrepreneurship.
- Science and technology policies can support the integration of STEM knowledge in other popular and competitive domains for the Moldovan academia (such as Natural Sciences), by promoting interdisciplinary collaboration and outputs-based projects.
- Increase availability of IT professionals via internal education policies and attraction of foreign talent.

3. GOVERNMENT: CENTRIC DIGITAL TRANSFORMATION

- e-Government development is improving with many laws and frameworks but ranking on e-Government index is still low.
- Public sector transformation is gradually enabling effortless digital interaction between government authorities and citizens and strives to provide qualitative public services.
- Ongoing public administration reform embraces coordination with local and national stakeholders, data sharing and cooperation between institutions.
- Several relevant on-line services are available for citizens on key areas related to governance and transparent procurement. However, many essential services to citizens are yet to be digitized, and further efforts need to be done.
- There is not much awareness regarding the use of open-source technologies around government procurement, indicating a gap and potential barrier in opportunity to expand the local ICT sector.
- Lack of coordination between governmental agencies and concrete vision reverts to technical problems in system architectures, interoperability and service integration; further work can be done on customer orientation, monitoring and evaluation mechanisms, and addressing internal change resistance and bureaucratic barriers to deploy new services.

perimental stage. The Strategic Program for Technological Modernization of Government for 2011-2016, set the framework for the future e-transformation process and put in place most of the critical elements of the system as the: e-Transformation subdivisions in all central public administration authorities, the Government Data Portal “date.gov.md” (2011), a one-stop shop for all the public services “servicii.gov.md” (2012), digital mobile signature (2012), M-Cloud (2012), “MPass” (2013), “MPay” (2013), “MSign” (2013), “e-Visa” (2014), and the government interoperability platform “MConnect” (2014). All these projects and initiatives led by the government and supported by international donors resulted in a well-developed e-government national infrastructure. However, the 2020 e-Government Development Index ranks the country 79th globally, which is 10 positions lower than in 2018. This evolution highlighted the slow rate of current e-government development in comparison with other countries.

The e-Governance infrastructure implemented within this strategic programme boosted the public administration reform and changed the way public services are delivered. This process was guided by the National Program for Modernization of Public Services for 2014-2016 and the National Action Plan on reform of modernization of public services 2017-2021. The project for modernization of government services 2018-2023, contributes to the elimination of outdated public services and ensures the consolidation of several services in order to increase their quality in line with citizens’ expectations. At the same time, access to public services at local level



The e-Government process in Moldova started in 2006 with the approval of the e-Governance Concept. But until 2010, its implementation was on the pilot and exper-

is expected to be facilitated through digital channel improvement, reduction of the number of mandatory documents, as well as minimizing the duration of public service delivery.

Currently, the national eServices portal “servicii.gov.md” offers Single-Sign-On access to 178 e-services and information on 649 administrative services. All the datacenters from the public authorities are migrating to MCloud. The open data platform “date.gov.md” offers access to 10884 resources. The payment system MPay integrates 86 administrative public services and has registered until now about 20 mln. transactions. The government data exchange platform “MConnect” connects

71 entities, 45 of which are the public authorities. Additionally, in 2020 the Citizens Government Portal was launched, designed to provide citizens with an efficient and modern mechanism for obtaining official information about themselves. The information is obtained from the registers and information systems of data providers and delivered through a single access point or a virtual cabinet referred to as “MCabinet”.

Regulatory Guidance:

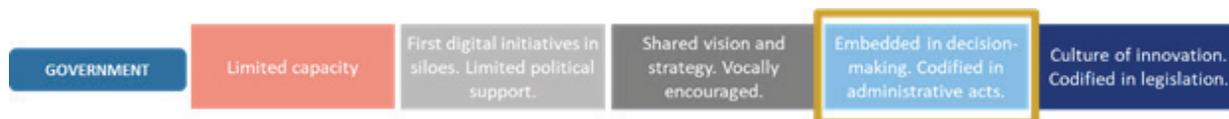
- Widen the range of available digital services reducing the need for physical interaction as much as needed and integrating additional services, such as e-services for business.
- The digitalisation of services related to the judiciary are also identified as highly desirable e-services.
- There is a need to improve project planning, and particularly invest in the provisions for the long term around human, financial and institutional needs.
- Internal upskilling programmes are needed to increase overall IT skills of public workers to adapt to new processes, incentivizing internal training of IT professionals and ensuring long term human resources planning in projects.
- Norms governing open data policies, including standards for the publication of data need actualization integrated with recent developments.
- An overall lack of basic knowledge around current regulations can be a barrier, such as digital privacy confusion

4. BUSINESS: SECTOR-CENTRIC DIGITAL TRANSFORMATION

- The agricultural and food production industry is a prime sector for digital transformation, but readiness for digital technologies is lagging behind.
- SMEs are the backbone of the economy with huge untapped potential but with an urgent need to digitally transform their businesses.
- Entrepreneurs can easily create a business in Moldova, and the country ranks very positively in the domain of ease for creating a business but contrasts with the lack of credit and financing for the private sector and new ventures, which is limited in the country, and is discouraging the emergence of new start-ups and business models.

collection and management concerning agricultural and rural statistics and focus on mainstreaming climate change adaptation into the country’s national planning processes for reduced vulnerability to climate change at local and central levels. Besides, the private sector and the Tekwill Project started to support the digital transformation of the strategic sectors of the economy.

On the other hand, SMEs are the main drivers of the economy. In 2019 they represented about 98,6% of the total number of enterprises, generated 39,5% of sales revenue, and employed 61,6% of people working for the private sector. However, less than 17% of SMEs have successfully integrated digital technologies in their work, which unveils huge untapped potential but also highlights an urgent need for SMEs to transform their



Agriculture plays a central role in the country’s economy, with 3/4 of the territory covered by arable land and 1/3 of the population employed in the sector. Despite the large size of the sector, its performance is uneven with the highly variable growth. During the last three years, it accounts for 10–12% of GDP. Due to the sector’s vulnerability to the weather as well as to the limited access to relevant information and poor links between stakeholders of the value chain, setting it on the sustainable development path is challenging but also critical for a country’s economic growth.

Among the previous Government initiatives meant to achieve the sector transformation can be recalled the Strategic Programme for technological modernization of development policies in the agro-industrial sector (e-agriculture) approved in 2013, the Digital Agriculture Map launched in 2015, and several information systems for monitoring and record-keeping. Meanwhile, the ongoing FAO projects contribute to improving data

businesses. COVID pandemic has amplified the importance of enterprises digitization and a special focus was put on e-commerce as a large share of country SMEs are active in trade.

To properly respond to the SMEs needs, the long-term and medium-term policy framework was provided by the Strategy for the Development of the Small and Medium-Sized Enterprise Sector for 2012-2020. This Strategy was followed by the Support Program for businesses with high potential of growth and internationalization approved in 2020. Based on these strategic documents, the Government has put in place a wide range of projects to support SMEs like: Efficient Business Management Programme, “PARE 1+1” Programme, Women in Business Programme, Start for Youth Programme, etc. The support network is also actively engaged in facilitating the interactions between IT and non-IT companies to boost non-tech industries’ assimilation of technological innovations.

Despite all these efforts, several barriers particularly related to e-commerce are still considered as limiting ones in the SMEs transformation process. Among them is an evident lack of e-fulfillment solutions,

and export processes are slow and costly. Also, there is low cross-border e-commerce flow, and Moldova is under-represented on international marketplaces.

Regulatory Guidance:

- Research to understand the barriers that small companies are facing, and design targeted initiatives to enable their digitalisation.
- Adoption of digital tools by SMEs and other productive sectors of the economy, such as agriculture and services, can bring important competitiveness gains and improve their positioning in international markets.
- Develop focused strategic roadmap on innovative IT technologies and how they can bring competitiveness gains on dominant and emergent economic sectors.
- Provide support such as internationalisation services, specialised trainings, and promote overall research and development through award opportunities.
- Initiatives promoting co-creation of digital solutions, start-ups challenges and living-lab like initiatives can increase the visibility to the IT sector.
- E-commerce roadmap draft includes relevant and concrete actions addressing several regulatory and administrative challenges faced by local businesses. These measures also need to be combined with concrete actions to strengthen consumer protection and raise consumer trust on the system as barriers to e-commerce uptake include the lack of trust on local providers and regulations on the demand side, and administrative and regulatory barriers encountered by local businesses on the supply side.

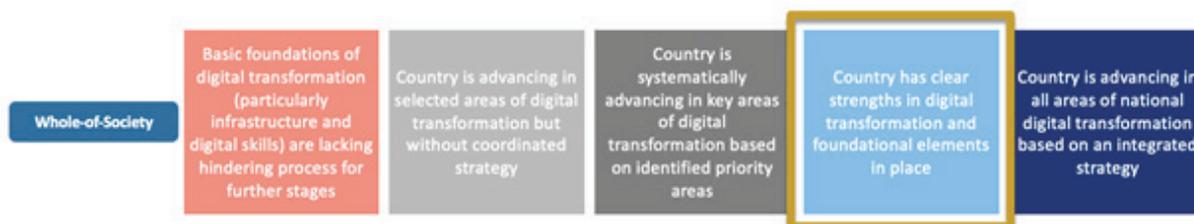
5. WHOLE-OF-SOCIETY: INNOVATION ECOSYSTEM TRANSFORMATION

- Moldova’s performance in key indicators of ICTs, innovation, and entrepreneurship translates into its competitiveness and leaves significant space for improvement.
- There are widespread efforts at policy reform, yet there is no common vision for ICT-centric innovation ecosystem development engaging all the stakeholders.
- The soft infrastructure is well developed in the capital city, and two new infrastructure elements are under development in the regions, yet a big part of the country remains underserved.
- The ecosystem lacks sustainable funding and talent readiness to ensure digital innovation at scale.

2020, which is based on it. Its priorities taken together had a large-scale positive impact on the innovation ecosystem and, more broadly, the economy of Moldova. However, these strategies generally represent a vision just for the government of the country as they provide a little space for the private sector or other stakeholders to take up a role other than passive beneficiary or service provider.

Based on the results of the strategies implemented and the identified gaps, the strategic framework was completed by the Strategy for the “IT Industry Competitiveness and Growth” for 2015-2021 which was followed by the Strategy on the IT industry and digital innovation ecosystem development for 2018-2023.

However, most of the currently existing soft infrastructure, such as Tekwill, ArtCOR,



Moldova is in the process of developing a robust ICT-centric innovation ecosystem. There are clear strengths to build on. However, the Global Innovation Index (2020) ranks the country 59th out of 131 countries, and the Global Entrepreneurship Index (2019) is 94th out of 137 countries. These performances are translated into similar competitiveness for the country as Moldova ranks 86nd out of 141 countries in the Global Competitiveness Index (2019).

There are widespread efforts at policy reform and steps toward the development of soft infrastructure resources. The primary strategy in Moldova related to the ICT-centric innovation ecosystem is called Moldova 2020, and subsequently the Digital Moldova

Dreamups, XY Partners, Generator Hub, iHub, Fablab, and Digital Park are clustered in Chisinau. This list is continuously expanding, bringing new soft infrastructure elements to the ecosystem like MediaCOR that will be launched in 2021. Getting outside of the city of Chisinau, there are two strategic initiatives under development: the regional Centre for Innovation and Technology Transfer in Balti and a Regional Innovation and Technology Centre in Cahul.

Besides, two initiatives are covering the entire country. The Novateca Libraries Programme created a network of resource centers throughout the country based on the existing space in libraries. The Moldova IT Park is a virtual IT park that provides a single

tax of 7% to IT companies and supports the skilled workforce attraction through the IT Visa Program. Yet, about 97% of all the Park residents are in the capital city.

Case study of success

The IT Parks Law has been a success of the recent policy developments in the country. It has lightened the tax burden for a wide number of IT and technology-based companies, eased their business operations and facilitated their attraction of foreign talent through a special visa. The reform has seen the number of newly established IT companies increase and attracted international actors to invest in the country. Moldova IT Park that operates under this law had 658 active residents with 12000 employees at the end of 2020. Moreover, in 2019, it was recognized by the ITU as one of the world's best practices in promoting and developing the IT ecosystem.

As the market in Moldova is supported by free trade agreements, the ability to work together with regional and global ecosystems provides significant opportunities for innovators. This fuels the interest in entrepreneurship in Moldova and many young people, especially in the tech sector are interested in developing innovations and businesses. Networks are doing good work in terms of representing, connecting, and supporting the ecosystem, but should be better coordinated and leveraged.

Nevertheless, there is a substantial brain drain, either through graduates seeking opportunities abroad or through businesses incorporating in the EU, USA, or CIS to avoid barriers to entry. Consequently, there is a small talent pool with the skills to allow Moldova to compete effectively on a global level.

To further develop an ecosystem, several issues must still be approached. For instance, soft skills are not well represented, and technical skills are often mismatched to the experience required. Moreover, financing for all phases of innovation is broadly unavailable, and there is no local VC fund in Moldova.

Regulatory Guidance:

- There is a general lacking of development of regulation on new digital technologies, which leaves an legal void that can be problematic once they are further developed and commercialized; A gap analysis can be done on what aspects are not yet being addressed in current regulations

CONCLUSION/VISION

In order to ensure a successful inclusive whole-of-society digital transformation process, clear and enthusiastic messaging must come from the Prime Minister and be echoed and reiterated by leadership around various parts of the government and sectors of society. We applaud the effort to strengthening of the high-level coordination of digital transformation at the level of the Government, having two Deputy-Prime Ministers covering digital agenda (i.e. Digital Transformation as well as Infrastructure and Regional Development).

Covid-19 has shown that digital is not a choice but an inevitability. Embracing this through efforts such as with a digital-by-default policy for all new programmes and aligning outputs accordingly, or even a paperless government approach, can help catalyze modernization efforts in the fast manner that modern society requires. Therefore, in particular these days strong focus on digital inclusion wins extreme importance, ensuring that no one is left behind and excluded from society in the digital universe. Doing so in an efficient manner is critical and can be done by leveraging international efforts and best practices. A **digital public goods** approach has been endorsed by the UN Secretary-General as a means for improving international digital cooperation. Embracing at the national level can mean reduced costs and efficiencies in implementing. Similarly, embracing standards such as the **digital principles** can more easily support best practices on working on digital projects.

Moldova has been making significant progress in advancing connectivity as well as accelerating digitalization, recognizing the strategic importance of digital transformation for sustainable development. The following presents a series of short and mid-term actions to be undertaken as priority for advancing digital development. The implementation of all actions proposed must take into account the necessity of engaging the international donors' community to cover operational costs. Please note that this list is not exhaustive.

Short and Mid Term Actions

1. INFRASTRUCTURE: Research expanding (and securing) remote access to high-speed home internet and to removing cost

barriers to connectivity through a united infrastructure development plan across ministries. Conduct **feasibility study** based on the ITU toolkits, e.g. Last Mile Connectivity toolkit, identifying connectivity gaps, defining concrete technical solutions and financial models allowing to bridge digital divide. Carry out assessment of the enabling environment related to the mapping of the ICT infrastructure investment in the country, leading towards establishment of the **national broadband mapping system**, aiming at facilitation of investment in the non-served areas. Based on the results of the recent assessment on Collaborative Regulation Case Study for the Republic of Moldova: The Journey to G5 Regulation and Digital Transformation, take necessary steps leading towards bringing Moldova closer to the **standard of 5th Generation Regulation**.

2. PEOPLE: Address the difficulties in digital exposed by Covid-19 and explore opportunities to reignite excitement about the topic by encouraging and investing in STEM education, promoting entrepreneurship, supporting online protections for marginalized groups, and ensuring easy access to content via mobile. Carry out national assessment with the aim of elaboration of a **national strategy for digital skills development**, including implementation roadmap. Based on the national assessment on the Child Online Protection, accelerate development of the **national strategy on protection of children and young persons online**, including establishing of a dedicated coordination entity and mechanism facilitating implementation of a strategy. Focusing towards the achievement of total inclusion of members of society on the benefits of digital, in particular those most vulnerable groups including persons with disabilities and the elderly, carry out **national assessment on digital accessibility**, leading towards the identification of gaps and quick wins to be addressed. Taking into account findings of the recent assessment take necessary steps towards establishment of a **national programme** empowering girls and women

- across the country through digital while creating new job opportunities and strengthening their employability.
3. **GOVERNMENT:** Adopt a possibility of virtual-only and ideally mobile-first approach to accessing government services and create more **e-services as Digital Public Goods**, starting with most requested. Ensure standardization of toolsets and infrastructure across ministries to do so. Take necessary steps towards updating the **National Cybersecurity Strategy**, implementing an effective cybersecurity framework, compliant with the EU standards. Carry out **national readiness assessment for CSIRT**, aiming at identifying the way forward for strengthening the cybersecurity capacity and eventually establishing a national CSIRT.
 4. **BUSINESS:** Structure and allow access to public opportunities for local digital enterprises while deploying research to understand additional barriers that companies are facing for technology research and development as well as adoption. Through dedicated national programmes strengthen **support to the SMEs**, recognizing their potential in embracing digital technologies and through that streamlining national and cross border e-commerce flow as well as reinforcing their contribution to the economic growth. Update the **national strategy for digital agriculture**, ensuring greater deployment of digital technologies in the value chain as well as more effective collection of data and access to statistical information. Promoting the compliance to the high product quality standards and traceability requirements of the EU market.
 5. **WHOLE-OF-SOCIETY:** Unlocking cross-sectoral opportunities that can catalyze innovation, such as **finalizing the E-commerce roadmap** draft with a consumer-focused lens, easing issues around regulatory, administrative and lack of trust as well as establishing open data systems for increased ICT activity. Run a gap analysis on laws, policies and regulations to determine the removal of barriers to wider technology usage and implementation. Establish a **national ICT-centric innovation ecosystem strategy** aiming at providing a joint vision for all stakeholders and developing strong communities diminishing the brain drain and upskilling the labour. Strategy would pave the way towards establishment of new financial instruments supporting digital innovation and helping the country to transform from consumer to producer of digital goods and services, letting it compete effectively at the regional and global market levels.