MONITORING PROGRESS IN NATIONAL INITIATIVES ON DIGITISING INDUSTRY

Country report

Latvia

July 2019

Table of contents

TABLES

FIGURES

BOXES

Summary

Latvia belongs to the medium-performing cluster of countries regarding digitalisation. Latvia is ranked 19th in the DESI 2018 ranking, a position that has remained mostly unchanged over the last two years. In terms of digital transformation, Latvia has progressed in line with the EU average. The most notable progress has been achieved in connectivity and the digitisation of services in the public sector. In the future the challenge for Latvia will be to improve the overall digital skills, as Latvian citizens and entrepreneurs currently have average or medium digital skills.

Latvia's Gross Domestic Product (GDP), has increased by 4.8%, in 2018 compared to 2017, reaching the fastest growth in the last seven years, according to the Central Statistical Bureau (CSB). The rapid growth of investment and the construction sector has contributed to the economic growth in Latvia last year along with the strong growth of the European Union funds, as well as the growth of private investment activity. The second largest contribution to economic growth was provided by information and communication services.[1]

Although Latvia does not have a specific strategy for digitising industry, the National Industrial Policy Guidelines 2014-2020[1] (NIP) aim to promote structural economic changes, including an improvement of education systems and skills of the workforce, and fostering of innovation. In addition, the “Data Driven Nation Action Plan” has been developed with the aim to build a society and economy where decisions are taken with intensive use of data generated in public administration, science and the private sector as well as to promote cross-sectoral partnerships.

Several initiatives have been launched across the pillars of the Digitising European Industry (DEI). Under Pillar 1, Latvia has established an Industry 4.0 Implementation Package, which aims to raise awareness about the Industry 4.0 concept, emphasizing the benefits of cross-sectoral collaboration based on the use of ICT solutions for the development of innovations. Three initiatives have been identified to boost innovation capacity (pillars 2&3 of the DEI): the Technology Transfer Programme and the Competence Centre Programme, both starting in 2016, and the Smart-city ecosystem development project launched a year later. Two initiatives recently established within pillar 4 focus on the regulation of digitalisation in the construction industry and the regulation of the legitimacy of electronically signed documents. Most of the initiatives within pillar 5 have been developed by public authorities to improve the digital skills for specialists of various fields as well as the general public. These initiatives include “Support for Small and Micro ICT Skills Development and Implementation”, the Comprehensive communication and training programme "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)", the Project SKILLS+, the E-skills partnership and the implementation of vocational education, upskilling and non-formal programmes with voucher method. The overall budget identified across all the initiatives is valued at approximately 148.71 million EUR, including at least 104.7 million EUR for Pillars 2 and 3, at least 40 million EUR for Pillar 5 and at least 3.7 million EUR from support mechanisms.

Table 1 below presents an overview of the main initiatives identified, that have had an essential role in the process of digitalisation. Table 2 presents a short SWOT analysis on digitalisation in Latvia.

Table 1: Overview of initiatives

Initiatives	Starting year	Overall strategy/ DEI Pillar/ support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
Data Driven Nation Action Plan	2016	General Strategy	General Strategy	ICT	All	All	Private sector: EUR 9 million. Public sector: EUR 5.6 billion from the European Structural and Investment Fund, EUR 16.7 million from the European Regional Development Fund (ERDF), EUR 7.7 million from the 'Promote training of employees' scheme. For "ICT and non-technological training" activities, the ERDF contributes another EUR 2.7 million, and the private sector EUR 0.7 million.
Competence Centre Programme	2016	Pillars 2&3	Competence Centre	Forestry, woodworking, agriculture, food production, biomedicine, smart materials, engineering systems, electronics, information and communication technologies, smart energy	Mobile Services, IoT, Robotics and Automation Machinery, Big Data and Data Analytics, 3D-Printing, AI	SME and larger businesses	64,314,892 EUR (EU funds) total funding (2016-2021)
Technology Transfer Programme	2016	Pillar2	Innovation vouchers, research and innovation support to commercialisation, start-up support	National RIS3 strategy sectors: ICT, bio-medicine, smart energy, bio-economy, smart materials	All	SME and larger businesses	40 million EUR (ESIF) for 2016-2022
Strategic project to develop the Smart-city ecosystem	2017	Pillar 3	Platform	N/A	N/A	N/A	397,402 EUR (EU funding)

Initiatives	Starting year	Overall strategy/ DEI Pillar/ support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
Changes to the Construction Law	2019	Pillar 4	Regulation on digitalisation in the construction industry	Construction	N/A	N/A	N/A
Changes to notary law	2019	Pillar 4	Regulation on the acceptance of electronically signed documents	Notaries, public administration	N/A	N/A	N/A
Project “Support for Small and Micro ICT Skills Development and Implementation”	2017	Pillar 5	Training courses	All sectors, except primary production of agricultural products, fisheries, the coal and steel industry, the production of synthetic fibres, the construction of ships and floating plants	ICT	Employees from small, micro enterprises and self-employed persons	2,000,000 EUR in 2017 from ERDF
Comprehensive communication and training programme "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)"	2018	Pillar 5	Promotion campaign and training courses	All	N/A	All	1,840,000 EUR +VAT from ERDF
Project “Supporting knowledge capacity in ICT among SME to engage in growth and innovation” (SKILLS+)	2016	Pillar 5	Developing Action plans	All	N/A	SMEs	147,863 EUR (Interreg) for 2015-2021

Initiatives	Starting year	Overall strategy/ DEI Pillar/ support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
E-skills partnership	2014	Pillar 5	Promotion campaign and training courses	Public administration, ICT, digital marketing, e-Commerce.	All	SMEs	2.3 million EUR (national and EU funding)
Implementation of vocational education, upskilling and non-formal programmes with voucher method	2014	Pillar 5	Educational and Training project	SEA, ICT	ICT	N/A	33,968,828.46 EUR (EU funds – ESF, national funding, private funding)
Innovation voucher support services	2016	Support mechanisms	Grants, innovation vouchers	All	All	SMEs	EUR 3,741,885 (EU funds : ERDF)

Table 2: SWOT analysis of Latvia on digitalisation

Strengths: • Well-developed communication and IT infrastructure in industrial centres; • Ability to adapt to specific market needs; • Continuous progress has been achieved with the efforts of various ministries and institutions to support the digitalisation projects in the country; • Significant EU funding support is available; • High quality of eGovernment and digital public services.	**Weaknesses**: • Poorly developed business culture and capital market; • Poorly developed clusters and insufficient innovation performance • Lack of workforce/qualified specialists; • Large distances and low population density increase the cost for provision of connectivity.
Opportunities: • Improvement of regional capacity in attracting productive investments; • Stimulation of technology transfer and innovation by focusing on cost/risk reduction; • Improve the average digital skills for general public and entrepreneurs (Improve ICT literacy) to develop more competitive human capital; • Increase use of ICT to increase efficiency and competitiveness.	**Threats**: • Recent change of the political environment at national level; • Political instability and possible changes in global currency systems; • Possible rapid increase in labour costs due to faster internationalisation of ICT sector; • Increased competition from low cost countries like India, Ukraine etc.; • Increased and more advanced global cyber security threats.

1 General context

The objective of this report is to analyse the current status of national initiatives on digitising industry in Latvia. The analysis has been conducted against the background of the Digitising European Industry (DEI), which was the first industry-focused initiative of the Digital Single Market launched by the European Commission in 2016.

Similar country reports will be produced for each of the 28 EU Member States. These national reports allow to:

- Monitor the development of national initiatives on digitising industry;
- Compare different national approaches; and
- Identify best practices of national initiatives.

Monitoring and reporting back on the development of the existing national initiatives is an important element of the DEI initiative, and this report should be seen as one part of it.

For more details about the DEI and our methodological approach for the country report, please consult the document attached.

1.1 Economic context and status on digitisation

General economic context

In terms of GDP, Latvia faced a severe decline after the financial crisis in 2008. Only in 2014 did the country manage to return to its previous GDP levels (both total and per capita) of 2008. However, the GDP growth during the period 2010 to 2017 has shown a steady average of 3.5%.

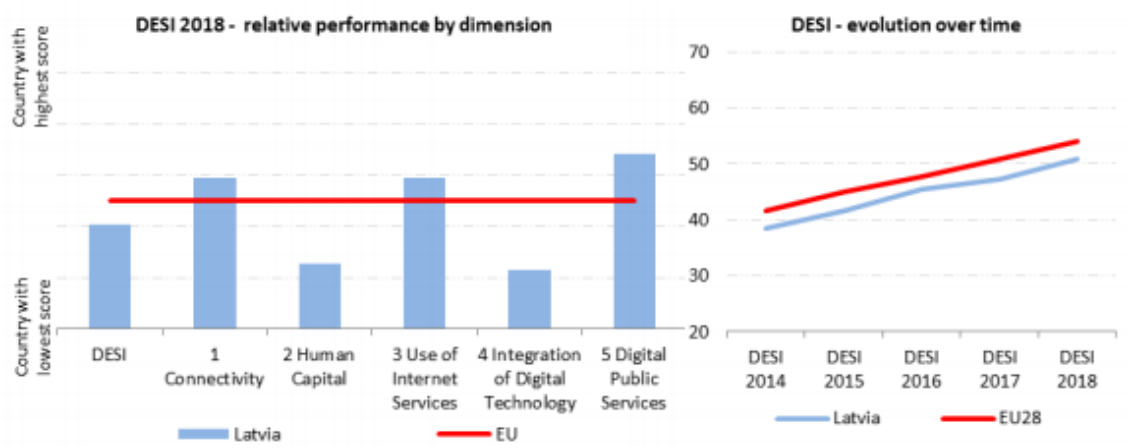
The industry sector represented 16.4 % of the gross added value (GVA) in 2017 and was the second sector behind trade, transport, accommodation and food services. The GDP from manufacturing decreased from 711.15 million EUR in the second quarter of 2018 to 679.952 million EUR in the third quarter of 2018.[2]

Status on digitisation

According to the Digital Economy and Society Index (DESI), Latvia ranked 19th in 2018, the same position as in the previous two years. Latvia's performance progressed roughly in line with the group of medium performing countries in terms of digitalisation. The figure below presents an overview of Latvia's position in the DESI ranking.

Figure 1: DESI ranking of Latvia (2018)

	Latvia		Cluster	EU
	rank	score	score	score
DESI 2018	**19**	**50.8**	**54.7**	**54.0**
DESI 2017	19	47.2	51.5	50.8



Source: DESI 2018 Country report - Latvia

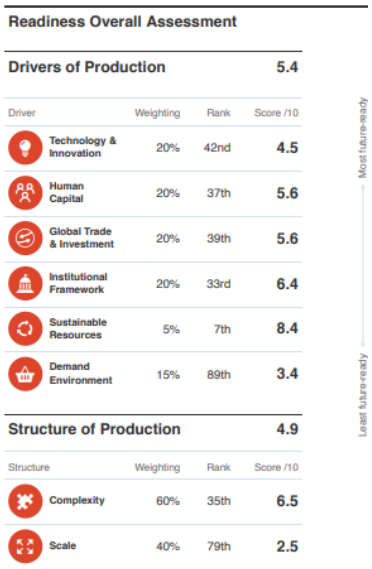
In terms of Human Capital Latvia performs below the EU average, having made no progress in the last year. Although the percentage of internet users is almost in line with the EU average, 52% of Latvian citizens do not have the basic digital skills needed to be effectively active online, with 19% having no digital skills at all (2 points higher than the EU average). However, the use of internet services continues to be above the EU average. The number of ICT specialists is stable but well below the EU average. The proportion of sciences, technology, engineering and mathematics (STEM) graduates has been decreasing in recent years (from 14.1 per 1000 in 2013 to 12.7 in 2016).

In the last year, Latvia has made good progress in the Integration of Digital Technology by businesses, improving its rank from 25th in 2017 to 23rd in the DESI ranking. However, it still lags behind most of the EU countries in this area.[3] The proportion of companies that acquire at least one of the following digital services: cloud computing, hosting of databases, accounting applications, etc., remains at 6%.

The DESI results are in line with the European Digital Transformation Scoreboard, where Latvia is part of the group of EU countries that are catching up regarding their digital transformation. In the context of digital transformation, Latvian companies are adopting different technologies to enhance productivity, such as sharing internal information electronically or using radio-frequency identification (RFID), e-Invoicing, social media and cloud computing. However, Latvian enterprises are exploiting technologies in a limited way.[4] This is mostly determined by the unwillingness to adopt digital technologies rather than technical limitations.

The World Economic Forum`s Readiness for the Future of Production Report 2018 points out six drivers of production: technology and innovation, human capital, global trade, institutional framework, sustainable resources and demand environment. Latvia ranks 42nd in the world in terms technology and innovation. At company level, to withstand competitive pressure, it is necessary to invest continuously in the training of employees and in new technologies. In general, the study of productivity-related aspects in Latvia is fragmentary and lacks systemic approach This limits the opportunities to develop research and science-based recommendations for structural policies. Figure 1 below illustrates the overall assessment for Latvia and indicates that the country is an average performer, with the exception for Sustainable resources where Latvia is ranked 7th.

Figure 2 : Readiness for the Future of Production Assessment (2018)[5]



Source: World Economic Forum, Readiness for the Future of Production Report 2018

An eGovernment Benchmark study shows that Latvia belongs to the countries that are delivering high-quality digital services with a score above 75% on important events of daily life such as moving, finding a job, starting a new business or studying. Latvia is also one of the outperforming countries in both digitisation and adoption of eGovernment services online.[6] In the study, Latvia has been evaluated as a country with a high level of digitalisation of services and a medium level of Internet coverage. The study shows that five countries - Latvia, Malta, Estonia, Austria and Denmark - have been able to provide public services online and easy to use on mobile devices, focusing on citizens and businesses. At the same time, Latvia has become one of the eight best performing countries in terms of accessibility of public services online.

The table 3 below summarises some of the economic and digital indicators for Latvia.

Table 3: General economic and digital indicators for Latvia

	% GDP from manufacturing (2017)	% increase GDP growth	DESI position and change	DESI sub-indicators Human Capital, Use of Internet, Integration of Digital Technology in 2018
Latvia	22.6[7]	3% in 2015, 2.1% in 2016, 4.6% in 2017[8] and 4.8% in 2018[9]	19th in 2016, 2017 and 2018	• Human Capital: 23th (22nd in 2017) • Use of Internet: 10th (same position in 2017) • Integration of Digital Technology: 23rd (25th in 2017)

1.2 National strategy on digitising industry

The table below presents an overview of the main national strategy on digitising industry.

Table 4: National strategy on digitising industry

Name	Data Driven Nation Action Plan
Type	General Strategy
Starting date	2017
Objective	Promoting innovation in the ICT sector – to build a society and economy where decisions are made with intensive use of data generated in public administration, science and the private sector. To promote Cross-sectoral partnership (commercialization and export of data driven, innovative IT solutions).
Ministry/ministries in charge (website, contact person)	Information Society Council Ministry of Economics Ministry of Environmental Protection and Regional Development Ministry of Education and Science The State Chancellery https://www.mk.gov.lv/lv/content/informacijas-sabiedribas-padome (https://likumi.lv/ta/en/en/id/243230-by-law-of-the-information-society-council) https://ec.europa.eu/growth/tools-databases/dem/monitor/sites/default/files/DTM_Latvia_vf.pdf https://www.em.gov.lv/files/uznemejdarbiba/finl_en.pdf
Scope of the strategy/action plan	Main principles in the overall framework for Latvia as a Data Driven Nation: 1. Data democracy and accessibility 2. Data enabled citizen engagement. 3. Data driven innovations / Innovative data commercialization. Key directions aiming to transform the national economy: 1. Align the supply of the workforce and education to the needs of economic development; 2. Boost manufacturing in industrial areas; 3. Improve the availability of financing; 4. Promoting an open, creative and innovative environment; 5. Stimulate export; 6. Reduce energy costs; 7. Promote development of export-able ICT solutions in Latvia and increase productivity, capacity and innovation of Latvian ICT companies; 8. Promote development of the digital economy in Latvia and strengthen Latvia competitiveness of economic sectors through ICT solutions; 9. Improve public administration, improving business and investment environment through modern, innovative governance processes and e-government solutions, removing barriers and promoting development of the digital economy; 10. Develop Latvia's brand of data-based government and economy by promoting solutions and technologies created in Latvia in export markets.
Measures included in the strategy/action plan	1. Industry 4.0 kick off measures/events 2. Promotion of cross-sectoral projects by the Competence Centre Programme that promote inter-sector collaboration on data and technology-based research. 3. Definition of pilot projects for developing the practice of using open data 4. Development of proposals for the development of RIS3 and the ICT sector, identifying the current state of the industry, developing development trends by 2025. 5. Development of sectoral foresight studies. 6. Determining the principles and frame of prioritization of open datasets. 7. Implementation of the project “Latvian Export and Investment Information System EIIS” 8. Provide focus on the development of identified projects. 9. Practical activities to promote a data driven nation and build synergies with local authorities. 10. Promotion of mutual cooperation and innovation among ecosystems

Name	Data Driven Nation Action Plan
Overall funding and distribution by volume and source of funding (public/private, EU/national)	The financing of the activities set up in the National Industrial Policy Guidelines 2014-2020 (NPI) is ensured by both the public and the private sectors despite initial hesitation of the private sector to invest. Whereas the private sector has invested EUR 9 million, public funds mainly stem from the European Structural and Investment Fund (EUR 5.6 billion), the European Regional Development Fund (ERDF) (EUR 16.7 million), and the 'Promote training of employees' scheme (EUR 7.7 million). For "ICT and non-technological training" activities, the ERDF contributes with another EUR 2.7 million, whereas the private sector provides EUR 0.7 million.

Impacts, challenges and perceptions

The **Data Driven Nation Action Plan (DDNAP)** was approved by the Information Society Council (Informācijas sabiedrības padome), which is a consultative body set up by the Cabinet of Ministers and led by Prime minister, aims at promoting the formation of the information society in Latvia and at coordinating the integration of the information society into the global and European development processes. Although Latvia does not have a specific strategy for digitising industry in place, the National Industrial Policy Guidelines 2014-2020[1] (NPI) aim to promote structural economic changes that would favour a higher added value production of goods and services. This should be achieved by increasing the role of a more modernized industry and expanding exports. So even if it is not stated explicitly in the NPI that digitising is an important cornerstone for the achievement of the stated goals it can be concluded that DDNAP is playing an important role for the implementation of NPI. Regarding the implementation, three main areas of activity or targets were identified: the elimination of market failures, the development of particular sectors and the exploitation of existing regional strengths.

Finally, the smart specialisation strategy of Latvia aims to facilitate growth in the production of higher added value products and focuses on the following areas: 1) Knowledge-intensive bio-economics; 2) Biomedicine, medical technologies, 3) Bio-pharmacy and biotechnologies; 4) Smart materials, technologies and engineering systems; smart energetics; 5) Information and communication technologies (ICT).[10]The ICT sector is one of the government's defined priorities. To succeed, the capacities of Latvian science, the competence of IT sector and competitiveness will be stimulated, in line with the global technology development tendencies, such as big data, machine learning, robotics and other areas, where Latvia has already demonstrated strong capabilities.[11]

The Latvian Ministry of Economics had the preconceived idea that different industrial sectors (textile, automotive, agricultural, etc) face sector-specific challenges. Following the same line of thought, it was assumed that the different Latvian regions would also have different region-specific challenges. Although there are specific problems for each sector and region, a thorough analysis carried out during the first implementation phases of the NPI proved that the majority of sectors and regions are facing very similar problems all over the country. In other words, thanks to the micro level analysis of the industry, policy makers were able to gain a better understanding of the Latvian state of play in terms of digitisation. Therefore in the future, one can expect a more coherent approach from different stakeholders to solve the issues related to digitisation.[12]

1.3 EU cooperation in the field of digitising industry initiatives

The international cooperation in Latvia is coordinated by the Ministry of Regional Development and Environmental Protection. In cooperation with other institutions such as the Ministry of Economics, the participation in the implementation of different EU initiatives is ensured. The main cooperation area identified is the **Industry 4.0** initiative.

Considering the EC and Europe-wide guidelines, Latvia pays special attention to the integration of new technological solutions into Latvian manufacturing companies. Latvia intensifies its focus

on updating digitisation activities by providing manufacturing companies with the opportunity to work with smart technology developers, mainly companies of ICT industry, to collaborate on the implementation of new technologies and the improvement of existing ones awarding the latest available technology and data processing capabilities. In 2017, the Ministry of Economics started collaboration with the AHK- German-Baltic Chamber and several German smart technology developers and providers to develop digitization. The Erasmus + project brings together a number of collaborators, including industry associations, vocational education institutions, training centres, public institutions and private companies in Latvia, Lithuania, Estonia and Germany. The initiative Industry 4.0 is implemented as a pilot project in the field of Mechanical Engineering. The goal of the project in Latvia is to raise awareness of the concept of Industry 4.0 and emphasize the benefits brought by the cross-sectoral collaboration based on the use of ICT solutions.

The aim is to develop a Computer Numerical Control (CNC) training programme and training materials based on the existing and future skill demands from the metalworking industry, providing a unified and highly qualified CNC specialist training in the project countries – Latvia, Lithuania, Estonia and Germany. Project tasks for the Industry 4.0 include the existing industry profession benchmarking, the development of new qualification standards and learning outcomes-based curriculum, the interactive e-learning development of platform and teaching materials for educators and students, and also the development of a new computer numerically controlled machine (CNC) simulation software. The project implementation has been rather successful so far. Challenges for the beneficiaries and service providers include lack of information about the latest technological achievements and the provided opportunities thereof. According to the national authorities, sometimes enterprises are not aware of what is needed for their development and improvement, therefore they cannot fully perceive the benefits of digitalisation.

Latvia is also a part of the **Digital Innovation Network of Interreg Baltic Sea Region project (DIGINNO)** with the aim to promote the digital economy and create a digital single market in the Baltic Sea region. The focus of the project is to help policy makers, industry associations and SMEs to implement digital solutions more effectively in the public and private sectors. Special attention in the project will be given to ICT technologies in business to promote innovative and interoperable public e-services and to develop a discussion on Digital Single Market policy in the Baltic Sea Region. Although Latvia is not the lead partner of DIGINNO, Latvia is represented in this cooperation project by the Ministry of Environmental Protection and Regional Development (MEPRD) as partner, the Latvian Information and Communication Technology Association as partner and the Ministry of Economics (associate partner).[13]

The DIGINNO project will also produce a number of workable results that are closely related to the MEPRD's ICT Policy:
1. Identified and analysed cross-border e-services to be developed, 4 concepts of pilot projects developed.
2. An instrument has been created for enterprises to identify their maturity in the use of ICT opportunities (Industry 4.0 maturity), developed national industry 4.0. communities, transnational cooperation.
3. A compendium of good practices and recommendations for policy makers on cross-border e-services and Industry 4.0. promotion.
4. Information campaign on the Baltic Sea Region, including Latvia's role as a forerunner in the implementation of cross-border e-cooperation.[14]

At EU level, Latvia is a part of the EU coordinated plan on artificial intelligence and the Blockchain Partnership. Some of initiatives related to the plan and involving cross-border cooperation are also described in further sections (e.g. SKILLS+ in Pillar 5).

Latvia is also part of the **Electronic Components and Systems for European Leadership (ECSEL) Joint Undertaking**, and has been involved in five projects related to digital innovation:

- Integrated Components for Complexity Control in affordable electrified cars (3Ccar);
- Advancing fail-aware, fail-safe, and fail-operational electronic components, systems and architectures for fully automated driving to make future mobility safer, affordable and end-user acceptable (AutoDrive);
- Intelligent Motion Control Platform for Smart Mechatronic Systems (I-MECH);
- Programmable Systems for Intelligence in Automobiles (PRYSTINE);
- Aggregate Farming in the Cloud (AfarCloud).[15]

Moreover, Latvia is part of the Interreg project "**InnoCAPE**" with the aim to learn best practices from Nordic DIHs and develop the guidelines for criteria to design new DIHss in the Baltic Sea Region (BSR). The aim of the project is to increase the capacity of DIHs by reinforcing the ecosystem of innovation around BSR. InnoCAPE will provide DIHs with knowledge, visibility and efficient tools for interacting with their target group (SMEs). Altogether the project is set up to develop and pilot a collaboration model of DIHs in the BSR enabling them to increase their role and influence on the competitiveness and continuous growth of the BSR.

Additionally, the Ministry of Economics strongly supports the European Commission (EC) Digital Innovation Hubs (DIH) initiative with the aim to foster digitalisation of industries thus promoting innovation and global excellence centres. The Ministry of Economics is planning to include the DIH initiative as one of the elements of the National Development Plan (NAP), National Industrial Policy Guidelines (NIP) and Digitisation strategies after 2020, thus promoting digitisation of industry in Latvia.

The IT Cluster of Latvia was involved in the EC initiative "**Smart Factories training programme**" with the aim to develop skills of DIH management and business plan development. The Ministry of Economics has already organised meetings with the IT cluster to discuss their experience in the "Smart Factories training programme" and to better understand the DIH initiative. Additionally, the IT Cluster of Latvia has received the approval of a Horizon 2020 project proposal “BOWI”. The “BOWI” project proposal aims at creating technologies and support mechanisms, that are channelled through regional Digital Innovation Hubs (DIH’s).

At the same time, there are ongoing discussions with potential stakeholders who could possibly fit in a DIH consortium and develop a DIH ecosystem in Latvia after 2020. The Ministry of Economics is participating in DIH working groups organised by the EC as well as implementing many support programs related to the DIH initiative with the aim to educate the business sector on digital skills and develop Clusters and Competence centres.

Starting from 2018 Ministry of Economics is developing three strategic projects in fields of smart materials, biomedicine and smart city where Latvia has excellence in both industry and science sectors. Thus, the Ministry is planning to integrate the Smart material ecosystem in the DIH network by developing a Photonic Innovation Hub via H2020 open calls.[16]

2 Other policy support to digitising industry

2.1 Boosting innovation capacity

In Latvia three initiatives related to the boosting innovation capacity (Pillars 2 and 3 of the DEI) have been identified, namely the Competence centre programme, the Technology transfer programme and the development of the Smart City Ecosystem described in more details in the table below.

Table 5: National initiatives to boost innovation capacity

Name	Competence Centre Programme	Technology Transfer Programme	Strategic project to develop the Smart-city ecosystem
Type	Competence Centres	Innovation vouchers, research and innovation support to commercialisation, start-up support	Platform
Starting date	2016	2016	2017
Objective	The purpose of the initiative is to increase the competitiveness of enterprises by facilitating research and industrial cooperation in new product and technology development projects.	The aim of the initiative is to: - promote innovation activities in SMEs and to help them by transferring technology for the development of new or significantly improved products - develop the practice of commercialising research results, to promote the practice, and to assist in the transformation of research results into successful entrepreneurship - promote the establishment of start-up companies in Latvia	The main goal is to accelerate the process of cooperation between the main players of the Smart city ecosystem with the purpose to attract investments for R&D.
Relevant for Pillar 2[17] or Pillar 3[18] or both	Pillars 2 and 3	Pillar 2	Pillar 3
Short description	The Competence Centre programme is implemented to encourage digital modernisation. To this effect, eight Competence Centres are to be supported in areas of sub-areas of Latvia's Research and Innovation Strategy 3 (RIS3).	To support technology transfer, the programme intends to support a variety of activities through three distinct channels: innovation vouchers, research and innovation support, and start-up support. Supported activities for innovation vouchers: (i) feasibility study; (ii) industrial research; (iii) experimental development; (iv) product design development; (v) strengthening of industry property rights; (vi) certification and testing of products and technologies; (vii) attraction of highly qualified personnel; and (viii) designer activities. Supported activities for research and innovation support to commercialisation: (i) feasibility study; (ii) development of commercialisation strategy; (iii) strengthening of industrial ownership rights; (iv) development of commercialisation offers; and (v) participation in exhibitions and conferences.	Smart city cluster is a platform that gathers the Latvian entrepreneurs and research organisations to work together to enable enterprises to develop competitive products and services that are related to smart cities or a smart city concept. The initiative is implemented to develop the cooperation between the key-players of the Smart-city ecosystem with the aim to raise investments (public (H2020, etc.) and private) into the R&D processes of the local ecosystem.

Name	Competence Centre Programme	Technology Transfer Programme	Strategic project to develop the Smart-city ecosystem
		Supported activities for start-ups: (i) participation in exhibitions and conferences to promote the product or technology; and (ii) visits with potential investors.	
Granting organisation	Central Finance and Contracting Agency	Latvian Investment and Development Agency	ERDF
Participating organisations	Competence centres	Small, medium, and large enterprises, research organisations	Founder of the initiative: Auto Association[19] Participants: 25 private enterprises, 3 research organisations[20]
Sectors targeted	Forestry, woodworking, agriculture, food production, biomedicine, smart materials, engineering systems, electronics, information and communication technologies, and smart energy sectors.	Information and communication technologies, bio-medicine, smart energy, bio-economy, smart materials	All sectors related to cities, ranging from energy to housing, mobility, healthcare, education, as well as government and defence.
Technologies targeted	Mobile services, the Internet of things, robotics and automation machinery, big data and data analytics, 3D-printing, and artificial intelligence.	All	Energy, construction, transport, healthcare, infrastructure (e.g., telecommunications, sewage systems), public administration, security.
Funding (split by private/public and national/EU), state period/annual funding	Funding is attributed to the Competence Centre programme under 1.2.1.1. activity "Support for new products and technologies development in competence centres" granted by EU funds. The total funding for the Competence Centre programme is 64,314,892 EUR. The programme implementation period is from 2016-2021, with three calls during this period: first call for Ministry of Economics with 1 million EUR (2016-2021), second call for Competence Centres with 26.6 million EUR available (2016-2018) and third Call for Competence Centres with 37.6 million EUR (2019-2021).	EU Structural and Investment Fund funding is distributed over the whole programme period of 2016-2022. The total funding is 42,352,941 EUR, including ERDF funding (34,500,000 EUR), public funding (6,088,235 EUR) and private co-financing (1,764,706 EUR).	EU funding provides 397,402 EUR
Current status of initiatives	Out of 17 instruments, only seven have been currently applied in practice. In spite of this, only three out of nine key technologies remain unaddressed by the initiative. Currently, 175 R&I PPP projects have been completed	A total of 23 vouchers have been distributed, 40 commercialization projects approved, 57 start-ups granted.	The participants of the Smart-city ecosystem cluster currently consist of 25 private enterprises and 3 scientific research partners that are benefitting from the programme (e.g., have received funding for product development).

Impacts, challenges and perceptions

Since all initiatives have started recently, it is difficult to identify a broader macroeconomic impact that would spark a non-government-supported digitisation trend. However, a smaller scale footprint of the initiatives can already be noticed in the specific fields of implementation. All of the initiatives under Pillars 2 and 3 are top-down initiatives and are linked to the Data Driven Nation action plan, the Industry 4.0 project or established within the EU support programmes.

The interviewed industry stakeholders had a positive perception of researchers' knowledge-sharing in both the Competence Centre Programme as well as the Technology Transfer Programme, indicating that the researchers are highly qualified and able to conduct high quality applied research. One the industry partners interviewed had developed a product with the support of the Competence Centre Programme. The interviewee indicated that the underlying structure of the initiative has been well-made and is working properly. However, they also note that, to their mind, there is not enough support for medium sized companies. This notion has been echoed by other industry associates about the Technology Transfer Programme, however they generalise the perception across the whole programme.

There are currently eight digital competence centres in Latvia which have been used by 138 enterprises until 2019, a considerable number considering Latvia's market size. The centres have held two innovation competitions and numerous conferences. Furthermore, a total of 175 research and innovation public-private partnership projects have been completed and 23 innovation vouchers have been granted to enterprises. It is clear that these activities have contributed to the digitisation of Latvian businesses, yet the precise extent of this contribution is difficult to estimate. At the moment here are three digital innovation hubs operating in Latvia.[21]

The Latvian private sector still trails the EU average in terms of digitisation. Although the overall digital score is considerably lower in Latvia, there are some aspects where the country is above the EU average. Latvia's greatest deficit is identified in Human Capital, which is below the EU average level. This indicator is not only significantly lower, but the gap has also increased over the last four years. On the other hand, the use of Internet, digital public services and connectivity is moderately higher in Latvia than the EU average, however Latvia is losing its lead in terms of use of internet due to other EU nations catching up. Latvia's score for Integration of Digital Technology is significantly lower than the EU average but has been developing at the same pace.

Use of the Internet and social media is taking a much larger part of Latvian private sector activity; however, it is difficult to determine if this underlines a broader trend of digitisation and if it will spark a deeper integration of technology into businesses' operations. While many indicators show a positive picture, like job applicants' growing rates of using the Internet for job search or the growing share of enterprises doing sales online, there are other indicators that show a grimmer picture as the share of hired ICT specialists has decreased significantly in the past years.

While the number of enterprises with online sales has grown, the percentage of turnover that is earned from e-commerce is stagnating and/or has dropped recently. Latvia is on the lower end in terms of ICT spending, with only 1.6% of its GDP spent on ICT-related investments while the OECD average is 2.3%. In spite of this, the industry does not evaluate the digitisation processes in Latvia as low as the figures would suggest. For non-ICT sectors, industry associates evaluated the take-up of digital technologies at 2 (on a scale of 1-5 where 1 is low and 5 is high) if compared to the Latvian ICT sector and 3 if compared to other EU peers. Overall, the evaluation puts the level of innovation in digital industries at 4 on a 1-5 in Latvia, with a nod towards the Latvian ICT-related companies working abroad.

Based on the feedback from surveys, industry representatives have assessed the level of innovation in digital industries with an average score of 4 on a 1-5 scale, which is relatively high.

Although the rating of take-up of digital technologies in Latvia is scored as medium (3 on a 1-5 scale), the same score marks the governmental support for digital transition, proving that there is a room for growth and improvement within the industry. Also enhanced support from the government would be considered beneficial. The industry representatives noted that the key opportunity related to the take-up in digital technologies is the creation and implementation of new digital technologies, but with a specific focus on streamlining processes and making them simpler, faster, and more accessible.

On the other hand, industry stakeholders recognized that the key obstacle and challenge related to the take-up in digital technologies is a severe lack of qualified personnel. The partners indicated that this is likely due to the weak education system in Latvia. They explained that the education programmes must be overhauled and upgraded to adapt the potential employees to the process of working with digital technologies. Furthermore, they considered that older residents should receive additional specially designed training to allow and encourage senior citizens to work with new technologies. It was also noted that the government might be able to find an entry point into greater digitisation by making some digital aspects mandatory to guide the industry towards greater investment in digitisation and personnel education.

2.2 Regulatory framework for digital age

An overview of initiatives to make the regulatory framework fit for the digital age (Pillar 4 of the DEI) is provided in the table below.

Table 6: Main initiatives for a regulatory framework fit for digital age

Name	Changes to the Construction Law	Changes to the Notary Law
Type	Regulation on digitalisation in the construction industry	Regulation on the acceptance of electronically signed documents
Starting date	1 January 2019	1 January 2019
Objective	To promote the transition to electronic documentation in the construction industry.	To promote the use of digital signature technologies.
Short description	With the implementation and enforcement of this law, all documents related to the process of constructing a new building will have to be submitted to an electronic platform hosted on the Internet.	With this law in place, any digitally signed document, given that the signature meets all security criteria, submitted to the Latvian Council of Sworn Notaries must be accepted, for example, by credit institutions.
Sectors targeted	Construction	Public Administration

Impacts, challenges and perceptions

Industry associates interviewed had a generally positive view on the improvements made to the regulatory framework, making it more fit for the digital age. Specific emphasis was put on how digitising government services can speed up various processes, such as building permit applications or tax returns. The industry partners did, however, note that the framework's current state should not be viewed as final and should be adjusted since more information will follow regarding its flaws and strengths. Industry stakeholders indicated that there are still governing institutions where documentation has to be submitted in paper form, which is viewed as an outdated way of working and a progress there is still necessary. Another area that requires significant improvements is the difficult processes of regulatory changes and implementation

thereof, causing those regulatory systems and their amendments to be confusing and hard to understand.

2.3 Skills development

An overview of initiatives for digital skills development (Pillar 5 of the DEI) is provided in the table on the next page.

Table 7: Main initiatives to develop digital skills in Latvia

Name	E-Skills Partnership	Implementation of vocational education, upskilling and non-formal programmes with voucher method	Project "Supporting knowledge capacity in ICT among SMEs to engage in growth and innovation" (SKILLS+)	Project "Support for Small and Micro ICT Skills Development and Implementation"	Comprehensive communication and training programme "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)"
Type	Promotion campaign and training courses	Educational and Training project	Developing action plans	Training courses	Promotion campaign and training courses
Starting date	2014	2014	2016	2017	2018
Objective	The Partnership was created with the following goals in mind: • develop an education with regard to labour market needs; • attract youth to the ICT sector; • modern and interactive education process and digital content; • educate the general population of the necessity of digital skills and e-inclusion.	To provide training for the unemployed and job seekers in ICT-related skills and competences using upskilling programmes, training vouchers and vocational training programmes.	The overall objective of SKILLS+ is to enhance the competitiveness of rural areas' SMEs through the promotion of the uptake and integration of modern ICT tools in daily business routines. The first expected result of the project is a developed Action plan to fulfil the programme's goals.	To support ICT skills development for employees from small, micro enterprises and self-employed persons	1. To increase the share of citizens using e-services for cooperation with national and local authorities including electronic submission of documents; 2. To increase the share of entrepreneurs using e-services for cooperation with national and local authorities including electronic submission of documents; 3. To explain and motivate on practical and security aspects of the use of e-services.
Short description	The Partnership brings together a large variety of private sector companies, ministries, and other governmental organisations to create a comprehensive and targeted programme to promote digital skills,	It includes the European Social Fund (ESF) project "Support to Education of Unemployed Persons", and within the Operational programme "Employment and labour mobility" 7.1.1. the specific support target	Programmes aimed to promote small businesses' ICT uptake are often unable to overcome this digital gap as they are designed on regional or national levels, not matching the specific needs of rural areas'	Training courses on ICT skills development in three thematic blocks: • Digital technology and safety; • Digitalisation of companies' internal processes; and	Programme involves the development of a "Digital friendly" visual identity, extensive information and training activities in national and regional events, as well as training of at least 6,000 national and local government

Name	E-Skills Partnership	Implementation of vocational education, upskilling and non-formal programmes with voucher method	Project "Supporting knowledge capacity in ICT among SMEs to engage in growth and innovation" (SKILLS+)	Project "Support for Small and Micro ICT Skills Development and Implementation"	Comprehensive communication and training programme "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)"
	attract young minds to such education as well as assist in training of said youths and financially supporting SME initiatives. The partnership is an umbrella-organisation under which forums, training courses, incubators, and other activities are launched. The partnership is made in coordination with the EC's Digital Skills and Jobs Coalition as well as the All Digital Week.	project "To raise the qualification of the unemployed and improve their skills according to the demand of labour market". It is also based on the ESF project "Youth Guarantee" and within the Operational programme "Employment and labour mobility", the specific support target project "Sustainable integration into the labour market of young people, in particular those not in employment, education or training, including young people including through the implementation of the Youth Guarantee". The vocational training (for the acquisition of the professional qualification of the first, second or third level (3 – 4 EQF) of professional qualification), upskilling programmes and non-formal education programmes are implemented with the voucher method.	SMEs. SKILLS+ therefore aims to optimize these policy instruments by either giving more priority to the specific needs in rural areas or by proposing complementary measures to increase the share of available funding spent to the benefit of rural areas.	• Digital tools for manufacturing and development of services	officials in order to provide them with better knowledge of digital solutions so they can further assist clients who are accustomed to receiving on-site services to try the services digitally.

Name	E-Skills Partnership	Implementation of vocational education, upskilling and non-formal programmes with voucher method	Project “Supporting knowledge capacity in ICT among SMEs to engage in growth and innovation” (SKILLS+)	Project “Support for Small and Micro ICT Skills Development and Implementation”	Comprehensive communication and training programme "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)"
		The training vouchers are issued by the State Employment Agency (SEA) for unemployed who meet the eligibility criteria. Vouchers can be used to choose a training organised by training providers.			
Granting organisation	National funds and ERDF	European Union funds (ESF), national budget and private co-financing	Interreg Europe	The European Regional Development Fund	The European Regional Development Fund
Participating organisations	The Partnership was signed by the Ministries of Economics, Education and Sciences, Welfare, Environmental Protection and Regional Development, the Latvian Information and Communication Technology Association, the Latvian Internet Association, the Latvian Open Technologies Association and the Latvian Trade and Industry Chamber. Additionally, the Partnership's main partners are the Centre for Cultural Information Systems, Microsoft	European Social Fund State Employment Agency (SEA) Ministry of Economics Ministry of Welfare Ministry of Education Latvian Information and Communications Technology Association (LIKTA)	Ministry for Regional Development and Transport of Saxony Anhalt, Kainuun Etu Ltd., Ministry of Environmental Protection and Regional Development of the Republic of Latvia, Managing Authority of Regional Operational Programme of Western Macedonia Region, Malopolska Regional Development Agency, Trøndelag County Authority, Zadar County Rural Development Agency, Bulgarian Chamber of		More than 30 government institutions

Name	E-Skills Partnership	Implementation of vocational education, upskilling and non-formal programmes with voucher method	Project “Supporting knowledge capacity in ICT among SMEs to engage in growth and innovation” (SKILLS+)	Project “Support for Small and Micro ICT Skills Development and Implementation”	Comprehensive communication and training programme "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)"
	Latvia, and the Latvian Centre of Radio and Television. The Latvian Information and Communication Technology Association and the Ministry of Environmental Protection and Regional Development are the national coordinators in Latvia.		Commerce and Industry (BCCI), Castilla y Leon Regional Government Regional Ministry for Culture and Tourism, Pannon Novum West Transdanubian Regional Innovation Non-profit Ltd., University of Latvia, Technical University of Ostrava. There are also stakeholders involved in each country to participate in the project.		
Sectors targeted	Public administration, ICT, digital marketing, e-Commerce.	Employment, education, VET, ICT	All SMEs in any sector who will be interested in increasing the ICT competences	All sectors, except primary production of agricultural products, fisheries, the coal and steel industry, the production of synthetic fibres, the construction of ships and floating plants	Not specified/society at large
Funding (split by private/public and national/EU), state period/annual funding	Funding is not attributed to the partnership as a stand-alone project but to the various activities and initiatives that it hosts, therefore there are no reliable estimates of the overall allocated funding. It could be confirmed that at least 2.3 million EUR have	Total budget – 33,968,828.46 EUR Special allocation from the European Union budget to finance the Youth Employment Initiative - EUR 15,511,561.08; - European Social Fund funding: EUR 15,688,361.08;	For the Latvian part of the project, Interreg Europe has provided: 11,172.92 EUR in 2015 43,976.27 EUR in 2016 43,535.43 EUR in 2017 However, total funding for Latvia is 147,863 EUR. Thus, there is an additional 49,178.38 EUR	2 million EUR were distributed in 2017 by the EU funds	The European Regional Development Fund has provided 1.8 million EUR (+ VAT) under the co-financed project Nr. 2.2.1.1/16/I/001 "Public Administration Information and Communication Technology Architecture Management System" (PIKTAPS) funding and

Name	E-Skills Partnership	Implementation of vocational education, upskilling and non-formal programmes with voucher method	Project “Supporting knowledge capacity in ICT among SMEs to engage in growth and innovation” (SKILLS+)	Project “Support for Small and Micro ICT Skills Development and Implementation”	Comprehensive communication and training programme "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)"
	been allocated through the partnership's hosted events and projects.	- national budget co-financing - EUR 1,275,345.81[xxii] - private co-financing of at least EUR 1,493,560.49 (13.7 million EUR including national funding and ESF in 2017)	to absorb until the end of the project (31 March 2021).		Nr. 2.2.1.1/17/I/015 “Platform for the provision and management of services”
Current status of initiatives	The Partnership has produced a number of successful programmes and initiatives. The latest large-scale upcoming event is the “All Digital Week” of 2019 on 25-29 March. More than 24,000 people participated in the campaign “All digital week” in 2018 and 28,552 people in 2019.	The total number of entrants in 2017 is 19,969 unemployed and job seekers. It includes also 4,399 participants of Youth Guarantee. The project will end in September of 2019.	The government survey indicates that a total of eight employees have been covered by this programme and that its funding period ended in 2017.	The campaign was successfully implemented in 2017 and helped 689 employees (including some more than once) receive training in digital technologies. These employees came from 252 different companies that participated in the programme.	The programme is being implemented

Impacts, challenges and perceptions

A World Bank Study "Latvia: Who is Unemployed, Inactive or Needy? An Assessment of PostCrisis Policy Options"[23] showed that all types of professional training and non-formal education programs for unemployed significantly improve participants' employment rates — both soon after training completion and in the medium term, including in software, in IT (basic skills). In Latvia, those with a higher level of education have significantly lower unemployment rates than persons with lower qualifications or education level. In 2017 in total 7,903 unemployed and jobseekers including low-skilled jobseekers accomplished (including Youth Guarantee) non-formal education (such as state language and foreign language courses, ICT) programmes which is 11.5% of the average number of registered unemployed (68,238) in 12 months of 2017. E-learning is also provided by the State Employment Agency (SEA) and it will be provided in a larger scale in future, especially for target groups such as mothers during child care leave (within ESF projects).

The OECD review “Connecting People with Jobs” empirically evaluates the effectiveness of these training programmes, for both longer training programmes that lead to a formal qualification and for short workshops that seek to raise job seekers’ basic competencies and job-search skills. Separate analysis is conducted for a number of groups, notably the long-term and low-skilled unemployed as well as the unemployed in rural areas. The evaluation is placed in the context of the demand for skills in the Latvian economy. The review was published in April 2019.

The interviewed industry stakeholders indicated strong support for all employee training initiatives, emphasising that good knowledge and understanding of the digital world is a necessity for today’s labour markets. They were aware of the initiatives and gave an overall positive evaluation of the usefulness of the initiatives assessing most of the initiatives with the average score of 3 and 4 on a 1-5 scale. Even though these programmes have been rather limited in scope, the industry partners noted that it is very important to assist potential employees to understand how to use digital devices. The main challenges in the area are:

- The lack of skilled labour;
- The necessity to cooperate with large partners to increase the scope;
- Advanced training programmes still lacking;
- Currently, self-selection bias in terms of potential users of the programmes— only those that have some knowledge in the programmes will apply (need for wider marketing);
- Necessity to expand into rural areas.

Latvia demonstrates a poor performance in human capital compared to the EU average, both in current absolute value as well as development over the last years. This can be observed in many areas of the digital economy. The proportion of the population that possesses basic or above basic skills has fluctuated below 50% of the population over the last three years, while the same metric grew by 1% per year in the EU on average. On the same note, the proportion of enterprises that provided training to develop ICT skills to their personnel has variated around over the last six years, while the EU average increased over the same period. This indicates that the government must step in to assist the labour market due to the severe lack of private interest in upskilling their employees.

2.4 Support mechanisms

Investment plans:

In general, it can be stated that investment plans in Latvia are unclear for 2019. The reason for such uncertainty is the fact that after the election in 2018, Latvia still does not have an operational government and approved budgets[24]. Therefore, the investments are made according to the previous budgets and agreements with EU financial support institutions such as ERDF, ESIF, CF etc.

One of the major institutions administering investments in ICT sector is the State Regional Development Agency (SRDA). This institution has been responsible for the development of significant ICT projects such as state and local government's service platform Latvia.lv, regional development and territorial planning instruments. Currently this institution is implementing the following ICT projects:

Table 8: ICT projects implemented in Latvia

Programme	Goal	Start	Budget EUR million	EU funding	State funding
Public Administration Information and Communication Technology Architecture Management System (PIKTAPS)	The aim of the project is to increase the coordination of system architecture development that is supported by ERDF.	2016	4.5	3.8	0.7
Service provision and governance platform	Further develop state governance ICT system	2017	4,5	3.8	0.7
Development of territorial planning information system	Develop and maintain the functionality of TAPIS system	2017	1	majority	
Single Data Space	Develop information and data exchange between governmental institutions in Latvia	2017	4	3.4	0.6
Total million EUR			9.5	12	2

Tax incentives:

Currently in Latvia, there are no general tax incentives provided for the ICT sector. In some cases, tax reliefs are provided based on the size of the investment made. However, this is not a particular benefit for the ICT sector since any company can apply for this support instrument.

Innovation Support:

The main innovation support is provided via LIDA (Latvian Investment and Development agency) with the purpose to facilitate the development of innovative solutions and start the production of new products. The programme started in November 2016. As National

Technology Transfer Centre, LIDA provides various activities aiming to contribute to innovation growth by supporting technology transfer and by developing a platform for long-term cooperation between research and industry. These activities include grants for public research institutions aiming to turn academic research results into commercialized technologies and products, as well as innovation vouchers for SMEs to encourage cooperation between research and industry to develop new products and technologies as well as other activities aimed at boosting technology transfer ecosystem.[25]

Innovation voucher support services:

The Latvian Investment Development Agency (LIDA) has developed an innovation voucher programme aimed at strengthening cooperation between business and science. Innovation vouchers of EUR 25,000 are intended for micro, small and medium-sized businesses that develop new products or technologies. A new product in this programme is considered as goods and services that are brand new or have improved functional features and predictable uses that are new or improved at the business level. The activities supported by the programme include the development of a new product or technology, the strengthening of industrial property rights and the certification and testing of a new product or technology. The programme supports the financing of activities related to the development of new products and technologies by LIDA:

- Technical feasibility study;
- Industrial research;
- Experimental development, including prototyping;
- Development of industrial design of products;
- Testing and certification of a new product or technology;
- Strengthening of industrial property rights for the following industrial property objects: patent of invention, design and topography of semiconductor products.

The total funding available is EUR 3,741,885.00, which is financed from the European Regional Development Fund and from the state budget. Support is provided for in the planning document - Operational Programmes 1.2.1. Specific Support Objective "Increase Private Investment in R&D" 1.2.1.2. within the framework of the measure "Support for Improvement of the Technology Transfer System" (LIDA project No.1.2.1.2 / 16 / I / 001 "Technology Transfer Programme").[26]

The company can qualify for the voucher support if:

- The new product or technology has a reasonable demand and identifies the benefits that can enhance the merchant's competitiveness and productivity;
- It has developed a business or development plan for new products or technologies from the development of a new product or technology to production;
- The project will be implemented in the supported sectors and the supported activities will be carried out within the project. [27]

The voucher support services promote innovation activity in companies with technology transfer and highly qualified employees supporting the development of new or significantly improved products or technologies that contribute to achieving the goals of the Latvian Smart Specialisation Strategy.

3 Conclusions

The following table provides an overview how the different digitalisation initiatives implemented in Latvia have been funded.

Table 9: Breakdown for the financing of the initiatives

	Pillar 2	Pillar 3	Pillar 4	Pillar 5
	Digital Innovation for all	**Partnerships and industrial platforms**	**Regulatory framework for digital age**	**Preparing for digital future (skills)**
Competence Centre Programme	EUR 64,314,892			
Technology Transfer Programme	EUR 40 million			
Smart City project to develop smart city ecosystem	EUR 0.4 Million			
Changes in construction Law			N/A	
Changes in Notary Law			N/A	
Project “Support for Small and Micro ICT Skills Development And Implementation”				EUR 2 million
Comprehensive communication and training programme "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)"				EUR 1.84 million
Implementation of vocational education, upskilling and non-formal programmes with voucher method				EUR 33,968,828.46
Project “Supporting knowledge capacity in ICT among SMEs to engage in growth and innovation” (SKILLS+)				147,863 EUR
E-Skill partnership				EUR 2.3 million
Innovation voucher support services	EUR 3,741,885			
Total spending	At least 148,71 million EUR			

Compared to the other countries in the DESI index, Latvia is lagging behind in the area of human capital and integration of digital technology, but performs above the EU average in digital public services, connectivity and use of internet services. Considering the significant depopulation that is estimated to be higher for highly skilled and educated people, the human capital issue will remain as the main challenge in the future. The overall progress of Latvia in digitisation is also determined by the increase in the share of high-speed broadband connections and improvements in public service. More and more people in Latvia use the Internet resources and eGovernment services, although half of the population has low or no digital skills.

In order to boost the digitisation of the country a number of initiatives have been launched. The general assessment about the different initiatives is positive, but the hard evidence about the results is still not available as many of the initiatives were launched recently and will require more time to assess their impact. More specifically, the

initiatives to boost digital innovation (Pillars 2-3 of the DEI) include the development of Competence Centres and Technology transfer centres, and a Strategic project to develop the Smart-city ecosystem. The aim of those initiatives is to boost the competitiveness and innovations. The quantitative results so far as well as the positive assessment from the industry representatives indicate that those initiatives will have a positive impact on digitisation in the future.
In terms of regulation (Pillar 4) the initiatives identified include changes to the Notary and Building market regulation. These initiatives will allow the involved stakeholders to integrate into the digital systems of the related industries according to clear rules. This is just a small part of the regulations related to digitisation, but the acquired experience so far indicates the positive impact of the initiatives. Thus, more similar regulatory activities should be conducted in other areas and industries. For Pillar 5 on skills development, five initiatives were identified in Latvia, including Support for SMEs in ICT skills development, Latvia - Do digitally!, and support for e-skills and knowledge development. Those initiatives in the future will facilitate the use of ICT in the target groups (e.g. SMEs) and enhance competitiveness of the companies in rural areas.

Overall, Latvia has achieved some positive results in the digital field and gained high appreciation among other countries, which confirms the right direction of the country's digital development policy and strategy. The steady progress in terms of digitalisation has been achieved due to the efforts of various ministries and institutions to continuously develop their business processes using digital technologies with the goal to promote the efficient and modern digitalisation of public administration and the wide availability of services for the citizens. However, it is also clear that the business environment expects even more active policy support to facilitate competitiveness, efficiency and sustainable growth of Latvian companies, especially in the areas where there are less favourable market conditions e.g. low population density, large distances to services etc.

Although the initiatives analysed in this report have been launched too recently to assess whether they can be considered as success stories, the following box presents an initiative that can be considered as a good practice.

Box 1: Good practice

Mana Latvija.lv Dari digitāli! / My Latvija.lv Do digitally!

To encourage society to use government e-services and to ensure that the majority of the population is informed about online services offered by the government and the benefits of eID (electronical identity), in April 2018, a comprehensive communication and training program "Mana Latvija.lv. Dari digitāli! (My Latvija.lv! Do digitally!)" was launched, to be implemented until 2020.The program involves the development of a "Digitally friendly" visual identity and implementing extensive information and training activities - national and regional informational events, training of at least 6000 national and local government officials (librarians, teachers, public servants) and journalists in order to provide better knowledge of digital solutions so they can further assist clients who are accustomed to receiving on-site services to try and use their services digitally. The program involves communication via more than 600 e-services and orchestrate cooperation of more than 30 government institutions.

Until the end of 2018 more than 2,000 digital agents – 1,402 librarians and 556 teachers and 133 public servants have attended the training.
In order to promote a better understanding of digital solutions - life situation descriptions are developed, that include video tutorials for the implementation of e-services (https://mana.latvija.lv/situacijas/). At the moment there are 24 life situation descriptions available (including 39 e-service video tutorials).

The program includes complete and integrated advertising, marketing and public relations activities — online channels (social media, online newsletters, infographics and banners) and offline channels such as print-out materials (posters, flags and stickers, info triangle, info pages), events, press articles, TV and radio commercials. The program's ambassadors are well-known musicians, actors, TV personalities, as well as successful entrepreneurs, students, social influencers and the most famous Latvian Paralympic athlete.

To conclude, the table below provides a general overview of the main digitalisation initiatives implemented in Latvia, the level of take-up and perception of their impacts as well as the overall progress Latvia has made so far with regard to digitalisation.

Table 10: Summary of the initiative outcomes

		Pillar 2	Pillar 3	Pillar 4	Pillar 5
		Digital Innovation for all	**Partnerships and industrial platforms**	**Regulatory framework for digital age**	**Preparing for digital future (skills)**
Application	Name of key initiatives (start dates in brackets)	Competence Centre Programme (2016), Technology Transfer Programme (2016), Smart-City Ecosystem strategy (2017)		Changes to the Building Law (2019) and the Notary Law (2019)	"Support for Small and Micro ICT Skills Development And Implementation" (2017), My Latvija.lv! Do digitally! (2018), Implementation of vocational education, upskilling and non-formal programmes with voucher method (2014), SKILLS+ (2016), E-Skill partnership (2014)
	Funding (total amount and period)	EUR 104.7 million between 2016 and 2022			EUR 40.3 million between 2015 and 2018
	Industries addressed	ICT, food production, medicine, pharmacy, energy, bio-economy, agriculture, robotics, electronics, Forestry, woodworking, smart materials, engineering systems, as well as city-related industries such as construction, sewage, education		Construction and Public Administration	Unspecified or targeted towards government agencies, VET training sector SMEs, or general upskilling of the workforce/populace
	EU programme involved	ERDF		National effort	ERDF, Erasmus+, Interreg Europe
Usage	Perception of initiative	Industry partners view the Government as a neutral influence on the digitisation of the Latvian private sector, noting that the funding that it provides is needed (score 3 out of 5)		The industry perceives the regulatory framework to have become moderately better	The industry perceives the government initiatives positively (4/5)
	Take-up	There are eight competence centres currently running that have served 138 enterprises and collaborated in 175 projects. In the context of TTP 23 innovation vouchers were approved in 2018, for the value of EUR 0.4 million.			One of the initiatives has trained 689 employees from 252 different companies, but the projects and activities under the e-Skills Partnership umbrella have contributed to upwards of 2000 persons. In VET program total of about 112 thousand students have can be considered as affected.

		Pillar 2	Pillar 3	Pillar 4	Pillar 5
Outcomes	Perception of outcomes	The level of take-up of digital technologies is perceived as neutral (3/5)	The level of innovation in digital industries is perceived as quite high (4/5)	The fitness of the regulatory framework is seen as manageable (3/5).	The industry believes that the labour market has developed some skills over the past years (score 2.5/5)
	Outcome metrics	Latvia spends 1.6% of GDP on ICT vs 2.3% in OECD. DESI overall rank: 20th		CAPEX spending grew by 14% in 2017, Latvia is one of Europe's entrepreneurial hotspots, ranking third after Estonia and Sweden. In terms of total early entrepreneurial activity in Europe it is the first, according to the World Economic Forum.	Latvia has increased its proportion of ICT specialists in employment from 1.7% in 2007 to 3.5% in 2016. However, the amount of enterprises that employ ICT specialists has dropped from 23% in 2012 to 15% in 2017.
	Change in outcomes	The ICT sector as a proportion of total economy has grown from 3.3% in 2008 to 4.6% in 2016. The DESI Integration of Digital Technology index performance improved from 25th in 2017 to 23rd in 2018.			
End-goal	Productivity growth	Labour productivity in Latvia has grown by 11.8% in 2015-2017 gradually reducing the gap between Latvia and the wealthier advanced European nations quite considerably (EU28 labour productivity growth in the same period was 3.0%)[28].			
Summary		Latvia has launched a number of initiatives in the last couple of years and, while it is rather early to expect results, the Latvian private sector seems to have become more competitive. How much of that is attributable to the programmes is debatable, yet the fact that the interviewed industry associates perceive the programmes as worthwhile indicates that they are worth pursuing.			

List of stakeholders interviewed

Type of stakeholder	Name of organisation
Government representatives	Ministry of Environmental Protection and Regional Development of the Republic of Latvia Ministry of Economics of the Republic of Latvia Ministry of Welfare of the Republic of Latvia
Industry representative	“Agile&Co” Ltd.
Industry representative	“Arčers” Ltd.
Industry representative	“Transparence” Ltd.
Industry representative	“Komerccentrs DATI grupa” Ltd.

Endnotes

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