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DIGIBEST REGIONAL STUDY ON THE STATE OF DIGITAL TRANSFORMATION AND ITS IMPACT ON THE REGIONAL BUSINESSES IN LATVIA

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DigiBEST (PGI05981)
Jūlija Kovalska
Project coordinator
julija.kovalska@varam.gov.lv

Structure of the Study

1. Introduction

Republic of Latvia (origin - *Latvija, Latvijas Republika*) (further – Latvia), the middle one of the three Baltic States[1], is located on the east coast of the Baltic Sea at the crossroads of Northern and Eastern Europe. The capital and largest city in Latvia is Riga.

Latvia lies on the bank of the Gulf of Riga of the Baltic Sea. The territory of country is 64,589 km^2 and the total length of Latvia's coastline is 498 km. Latvia is surrounded by Estonia to the north, Russia to the east, Belarus to the southeast, and Lithuania to the south. It is also bounded with a maritime border with Sweden to the west.

Fig. 1. Map of Latvia

Source: ENCYCLOPÆDIA BRITANNICA

The population of Latvia is almost 2 million inhabitants, of whom 1 million 306 thousand are urban population (68%) and nearly 602 thousand – rural population (at the beginning of 2020). The population of capital Riga comprises ~33% (627 487 inhabitants) of the total population, the second largest city is Daugavpils (82 046 inhabitants) and the third - Liepāja (68 535 inhabitants).[2]

The official language of Latvia is Latvian, however, nearly 1/3 of the population speaks Russian.

Industrialization in Latvia began in the latter part of the 19th century, and by the late 20th century the country was the most heavily industrialized of the Baltic States. Substantial economic changes occurred following Latvia's independence in 1991, as the country transitioned to a market economy. The production of furniture, foodstuffs, beverages, and textiles had replaced machine building and metal engineering as Latvia's leading manufacturing activities by the late 1990s. The manufacture of

[1] https://www.britannica.com/place/Latvia#ref37298
[2] https://www.csb.gov.lv/lv/statistika/statistikas-temas/iedzivotaji/iedzivotaju-skaits/meklet-tema/417-demografija-2020

chemicals and pharmaceuticals became important in the 21st century. Latvia's favourable geographic location and temperate climate allow for year-round freight transport. Major ports are located in Riga, Ventspils, and Liepāja, and there are several smaller ports located along the coast. An east-west railway corridor allows for the easy passage of freight from inland Latvia out to its main ports. [3] Also, Riga has the largest international airport in Baltic States.

Latvia possesses a relatively small market, but its advantageous location provides an access to its neighbours. The population of the three Baltic States totals almost 6.0 million, approximately equal to the population of Denmark. On its doorstep are the Scandinavian countries, with 27 million people; Russia and the independent CIS states, with a combined population of about 280 million; and Eastern Europe, with about 100 million inhabitants. Latvia stands out for two major criteria eligible for any investor – infrastructure and labour force.

Latvia's skilled and multilingual labour force, abundant natural resources, and strategic location form a solid foundation for the country's economy and make Latvia the perfect place to develop business.[4]

Latvia has a unitary form of government. The head of state is the president, who is elected for four years by the unicameral parliament (Saeima), with a maximum of two consecutive terms, and who plays a largely ceremonial role. The government is headed by a prime minister, who appoints officials of the Cabinet (ministers) and is responsible to the parliament (Saeima). The Saeima consists of 100 members, who are elected by citizens to four-year terms.[5]

Since the administrative territorial reform of Latvia in 2009, the country has been divided into 110 municipalities and 9 cities. Municipal elections are held every four years to elect The Republic City Council and Municipality Council (hereinafter – Council). Citizens of Latvia have the right to elect the Council. The number of deputies to be elected to the Municipality Council determined in compliance with the number of inhabitants registered in the Population Register in the administrative territory.[6] All 119 local governments have the same competences aside from the capital Rīga, which fulfills a range of additional functions. Regional governments – planning regions – are voluntarily organised by local government cooperation bodies, which are recognized in the legislation[7]. Because the local administrative units are so numerous, many of them lack sufficient staffing and funds, and the Latvian government has attempted to consolidate the country's administrative structure. On 10th of June, 2020, the Saeima adopted the new Law on Administrative Territories and Residential Areas, which determines the establishment of 42 municipalities instead of the current 119 local governments. This reform of municipalities is one of the most important priorities of recent years to establish municipalities with strong development centers that will provide greater opportunities for economic activity and better services for citizens regardless of residence[8].

The Ministry of Regional Development and Environmental Protection is the leading state authority responsible for implementation of Digital Agenda strategy in Latvia that has been addressed primarily in Information Society Guidelines 2014-2020 and currently in Digital Transformation Guidelines for

[3] https://www.britannica.com/place/Latvia/Economy#ref37308
[4] http://www.liaa.gov.lv/en/about/latvia-facts
[5] https://www.saeima.lv/en
[6] https://likumi.lv/ta/en/en/id/57839-law-on-elections-of-the-republic-city-council-and-municipality-council
[7] https://portal.cor.europa.eu/divisionpowers/Pages/Latvia.aspx
[8] https://www.varam.gov.lv/lv/administrativi-teritoriala-reforma

2021-2027. Latvian goals and objectives relevant to the Digital Agenda for Europe are set in close cooperation between public, private and NGO sectors. The other Ministry closely associated with the elaboration and integration of Digital Agenda targets in the area of SMEs competitiveness promotion through digital transformation is the Ministry of Economics. The issues under the competency of the Ministry of Education and Science include skills development activities, inter alia digital skills promotion, necessary for work (formal education and life learning programmes). The Ministry of Welfare is responsible for labour and employment policy. However, NGOs are one of the main players in bringing European activities to the industry at local level.

Latvia is well known for providing high-speed internet, with almost complete 4G coverage. In 2019, Latvia also became one of the first countries worldwide ready to introduce the 5G network coverage. Accordingly, such advanced broadband facilitates the development of digitised services and implementation of National digital strategy.

The Ministry of Environmental Protection and Regional Development provides ongoing support for National digital strategy related activities both at regional and local levels: Latvian State Portal (https://latvija.lv/en); Latvia's Open Data portal (https://data.gov.lv/lv); CEF eID Digital Service Infrastructure (DSI; EIDAS regulation) (https://ec.europa.eu/inea/en/connecting-europe-facility/cef-telecom/2017-lv-ia-0047) and Electronic Pocurement system (https://www.eis.gov.lv/EIS/). About portals and system responsible is The State Regional Development Agency - an authority operating under the supervision of the Ministry of Environmental Protection and Regional Development.

One of the leading electronic communication service providers in Latvia is State Radio and Television Centre that is a reliable certification service provider, issuing and maintaining the eSignature services - electronic identity (eID) card/ eSignature portal & mobile eParaksts (https://www.eparaksts.lv/lv/).

There are many other state institutions that provide their services fully online, for example:

- Web services for vehicle and driver management by Road Traffic Safety Directorate (CSDD), using innovative technologies such as push notifications, user-centric award-winning design, and the availability of online payments (https://www.csdd.lv/en/#).
- The Electronic Declaration System (EDS) owned by State Revenue Service (VID) provides the number of digital government services and applications for both citizens and businesses in concern to taxes proceedings (https://eds.vid.gov.lv).
- Register of Enterprises (UR) has a website providing start-up businesses with the possibility to submit documents (by using a digital signature) and follow the flow of information, as well as relevant e-services are developed and published in Latvian State Portal Latvija.lv. Recently, under circumstance of COVID-19, the institution announced on moving its customer service to fully online format (http://www.ur.gov.lv/).[9]

[9] https://joinup.ec.europa.eu/sites/default/files/inlinefiles/Digital_Government_Factsheets_Latvia_2019.pdf

2. Economic development, entrepreneurship and digitalization in Latvia

2.1. Economic development and entrepreneurship

Latvia is a small, open economy with exports contributing significantly to gross domestic product (GDP). Due to geographical location, transit services are highly developed, along with timber and wood-processing, agriculture and food products, and manufacturing of machinery and electronic devices.

The past decade has been a turbulent period for the Latvian economy. From acquiring double digit growth figures before 2008, the country for the first experienced a double-digit drop-in GDP before rebounding to a healthier economy and more focus on socioeconomic challenges.[10]

Table 1. General information, 2014-2019

Indicators	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Population[11] Millions	2 001 468	1 986 096	1 968 957	1 950 116	1 934 379	1 919 968
Active population, the working age population[12] *Age groups are calculated in accordance with the working and retirement age specified in the legislation of the respective years. From 2014, the retirement age is gradually raising, and in 2025 it will be 65 for both men and women. At the beginning of 2019, the working age is 15-62.*	1 252 164	1 231 739	1 211 413	1 212 246	1 193 125	1 176 596
Real GDP per capita, at current prices [13] *EUR* *GDP per capita is a measure of region's or country's economic output that accounts for its number of people. It divides the country's gross domestic product by its total population and is a good measurement of a standard of living.*	11 841	12 421	12 943	13 890	15 129	15 923
Real GDP growth[14] % change *Constant price estimates. In theory, the price and quantity components of a value may be identified, and base periods prices are substituted for*	2.4	2.7	2.0	4.5	4.3	2.2

[10] https://eacea.ec.europa.eu/national-policies/eurydice/content/political-and-economic-situation-40_en
[11] https://www.csb.gov.lv/en/statistics/statistics-by-theme/population/number-and-change/key-indicator/population-number-its-changes-and-density
[12] https://data.csb.gov.lv/pxweb/lv/iedz/iedz__iedzrakst/IRG010.px/table/tableViewLayout1/
[13] https://www.csb.gov.lv/en/statistics/statistics-by-theme/economy/gdp/key-indicator/gross-domestic-product-and-total-gross-value-added; https://ec.europa.eu/eurostat/databrowser/view/sdg_08_10/default/table?lang=en
[14] https://www.csb.gov.lv/en/statistics/statistics-by-theme/economy/gdp/search-in-theme/2639-changes-gdp-4th-quarter-2019 https://www.csb.gov.lv/en/statistics/statistics-by-theme/economy/gdp/search-in-theme/2639-changes-gdp-4th-quarter-2019

those of the current period. Methods are used in practice to calculate variables at constant prices. Another method, commonly referred to as price deflation, involves dividing price indexes into the observed values to obtain volume estimates. The price indexes used are constructed from prices of the major items of each value. Please make sure these series are in line with "GDP at constant prices".						
Population of active enterprises (from 1 to 9 employees)[15] number	-	-	68.362	70.733	-	-
Population of active enterprises (10 employees and more)[16] number	-	-	9.594	9.625	-	-
Net business population growth[17] %	-	-	-	-2.81	-	-
Unemployment rate % of labour force *Percentage of the civilian labour force which is unemployed. The government defines unemployed as people who are jobless, looking for jobs, and available for work. Unemployed persons comprise persons aged 15 to 64 who were: without work during the reference week, i.e. neither had a job nor were at work (for one hour or more) in paid employment or self-employment; currently available for work, i.e. were available for paid employment or self-employment before the end of the two weeks following the reference week; actively seeking work, i.e. had taken specific steps in the four weeks period ending with the reference week to seek paid employment or self-employment or who found a job to start later, i.e. within a period of at most three months.*	10.08	9.9	9.6	8.7	7.4	-

Source: Eurostat data base, Central Statistical Bureau of Latvia

To sum up briefly Latvian economic indicators, the main challenges are related to demographic situation - Latvian population is declining fast due to ageing and migration, having an effect on labour force, skills shortage and overall economic growth.

Latest data compiled by the Central Statistical Bureau of Latvia (CSB) show that at the beginning of 2020 population of Latvia accounted for 1 million 908 thousand people, which is 12.3 thousand people fewer than a year ago. In 2019, as a result of international long-term migration population of

[15] Please, use: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bd_size_r3&lang=en
[16] Please, use: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bd_size_r3&lang=en
[17] Please, use: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=bd_size_r3&lang=en

the country dropped by 3.4 thousand people, which is the lowest indicator recorded since 1989, whereas the negative natural increase resulted in reduction of 8.9 thousand people.[18]

In the context of entrepreneurship and digitalization in Latvia, these economic issues, high level of migration, have a negative impact on country's overall performance in human capital/digital skills as a result of brain drain, and naturally downgrading in integration of technologies for business purposes.

As per Enterprise Register (data of 22.11.2020[19]), there are 188 265 enterprises registered in Latvia, including all legitimate types of entrepreneurship like limited-liability companies, individual entrepreneurs, farms, etc. In addition, the below table presents local statistical data of economically active enterprises of the market sector in the region by size as per number of employees without referring to any kind of activity (NACE Rev. 2)[20]

Table 2. General information about Latvian active enterprises, 2015-2019

	2015	2016	2017	2018	2019[21]
TOTAL	172567	181424	175716	174792	172382
0-9	161603	170991	164708	163293	161304
10-19	5755	5345	5733	6051	5711
20-49	3368	3252	3429	3548	3488
50-249	1603	1598	1611	1649	1628

Source: Central Statistical Bureau of Latvia

2.2. Digital economy and society

According to the Digital Economy and Society Index (DESI) 2020, Latvia ranks 18th out of the 28 EU Member States - that is three places down compared to previous two years[22].

As per DESI last years' reports, Latvia performs well in digital public services (5th place) and connectivity (4th place) thanks to the wide availability of fast and ultrafast fixed and mobile broadband networks and the increased take-up of e-government services. The quality of e-government services continued to improve and the number of users increased every year (more than 1 million users, 2020). Latvia has very good broadband coverage with fast and very high capacity networks and has already allocated a radio spectrum for 5G. Although fixed broadband take-up is generally low, 38% of households subscribe to at least 100 Mbps broadband compared to the EU average of 26%.

Nevertheless, the Latvian business sector still fails to take advantage of the opportunities offered by digital technologies. The country ranks 23rd on the integration of technology by business. Latvia also scores below average in digital skills - more than half of the population still lack basic digital skills and ICT specialists represent 1.7% of total employment (EU average: 3.9%).

[18] https://www.csb.gov.lv/en/statistics/statistics-by-theme/population/number-and-change/search-in-theme/2694-number-population-latvia-2019
[19] https://www.ur.gov.lv/lv/jaunumi/statistika/
[20] https://data.csb.gov.lv/pxweb/lv/uzn/uzn__01_skaits/SRG030.px/table/tableViewLayout1/
[21] preliminary data
[22] https://ec.europa.eu/digital-single-market/en/scoreboard/latvia

As regards the DESI indicators that are especially relevant for the economic recovery after the COVID-19 crisis, Latvia performs well in digital public services, 5G and Very High Capacity Networks (VHCN), but weaker performance demonstrates in digital skills and digital integration in businesses.

Table 3. DESI index and DESI areas[23], Latvia, 2016-2020 Country Profiles

Indicators	2016	2017	2018	2019	**2020**
DESI Index (overall)	0.49	0.47	50.8	50.0	**50.7**
DESI: connectivity	0.65	0.64	65.9	65.3	**61.8**
DESI: human capital/ digital skills	0.46	0.44	43.8	40.4	**35.0**
DESI: use of internet services by citizens	0.54	0.54	54.8	49.1	**54.0**
DESI: integration of digital technology by business	0.22	0.23	27.0	25.9	**28.3**
DESI: digital public services	0.57	0.51	65.2	73.7	**85.1**

Source: https://ec.europa.eu/digital-single-market/en/desi

Integration of digital technology by business is the 4th dimension of the whole DESI Index report that includes several sub-categories essential to be mentioned in relevance to DigiBEST project goals and objectives. They are shown in the figure below.

Figure 1. Latvia's performance in DESI 4th dimension "Integration of digital technology"

	Latvia			EU
	DESI 2018 value	DESI 2019 value	DESI 2020 value	DESI 2020 value
4a1 Electronic information sharing % enterprises	25% 2017	25% 2017	32% 2019	34% 2019
4a2 Social media % enterprises	13% 2017	13% 2017	19% 2019	25% 2019
4a3 Big data % enterprises	NA 2016	8% 2018	8% 2018	12% 2018
4a4 Cloud % enterprises	9% 2017	11% 2018	11% 2018	18% 2018
4b1 SMEs selling online % SMEs	11% 2017	10% 2018	11% 2019	18% 2019
4b2 e-Commerce turnover % SME turnover	9% 2017	5% 2018	5% 2019	11% 2019
4b3 Selling online cross-border % SMEs	5% 2017	5% 2017	7% 2019	8% 2019

Source: DESI Index 2020

[23] National level data. To improve the methodology and take account of the latest technological developments, a number of changes have been made to the DESI for 2018 and 2019. The DESI was re-calculated for all countries for previous years to reflect the above changes in the choice of indicators and corrections to the underlying data. Country scores and rankings may thus have changed compared with previous publications.

DESI 2020 Annual Report shows that Latvia got 28.3 score in integration of digital technology and improved its ranking position from 24th to 23rd place among EU countries. In relation to the 4th dimension sub-categories as Electronic information sharing and social media usage in enterprises there is a significant improvement in value performed in comparison to DESI 2018 & 2019, but is still below the EU average. As to data provided in the above image Latvian enterprises do not make sufficient use of the opportunities provided by big data and cloud computing. Only 8% of companies use big data and 11% rely on cloud services. In addition, crucially below the EU average is Latvian performance on e-commerce, only 11% of SMEs sell online and only 5% of SME turnover is from e-commerce. However, the share of SMEs engaged in e-commerce across border to other EU countries increased in the last 2 years, getting closer to the EU level (7% vs 8%).

The Table 4 below reflects the statistical data available on the general regional digital economy and society available from the Eurostat database.

Table 4. General regional digital economy and society statistics, 2014-2019.

Indicators	2014	2015	2016	2017	2018	2019
Households that have internet access at home[24] % of households with at least one member aged 16 to 74 *The access of households to internet is measured as % of households where any member of the household has the possibility to access the internet from home.*	73	76	77	79	82	85
Households that have broadband access by NUTS 2 regions[25] % of households with at least one member aged 16 to 74 *The availability of broadband is measured by the % of households that are connectable to an exchange that has been converted to support xDSL-technology, to a cable network upgraded for internet traffic, or to other broadband technologies.*	73	76	77	79	82	85
Individuals regularly using the internet by NUTS 2 regions[26] % of individuals 16-74 *Regular users of the internet are persons who use the internet on average at least once a week, every day or almost every day.*	72	75	77	78	81	84
Individuals who have never used a computer by NUTS 2 regions[27] % of individuals 16-74 *Persons who have never used a computer (at home, at work or any other place).*	20	18	-	16	-	-
Individuals who accessed the internet away from home or work[28] % of individuals	35	44	48	57	59	67

[24] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00047&plugin=1
[25] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00047&plugin=1
[26] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00050&plugin=1
[27] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00051&plugin=1
[28] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_r_iumd_i&lang=en

Individuals who ordered goods or services over the internet for private use in the last year by NUTS 2 regions[29] % of individuals 16-74 *Persons who bought or ordered goods or services (i.e. food, groceries, household goods, films, music, books, magazines, newspapers, clothes, sports goods, computer software or hardware, electronic equipment, shares, financial services, insurances, travel or holiday accommodation, tickets, lotteries or betting and other) over the internet during the last year.*	34	38	44	46	45	47
Individuals, who used the internet.[30] % of individuals *Frequency of internet access: once a week (including every day)*	-	75	77	78	81	84
Individuals who used the internet, frequency of use and activities [31] % of individuals *Internet use: selling goods or services*	-	6	5	8	10	9
Individuals who used the internet, frequency of use and activities[32] % of individuals *Internet use: civic or political participation*.	-	7	-	10	-	13
Individuals who used the internet, frequency of use and activities[33] % of individuals *Internet use: Internet banking*	-	64	62	61	66	72
Individuals who used the internet for interaction with public authorities[34] % of individuals *Internet use: interaction with public authorities (last 12 months)*	54	52	69	69	66	70
Individuals who used the internet for interaction with public authorities[35] % of individuals *Internet use: submitting completed forms (last 12 months)*	19	29	31	39	50	56
Individuals who used the internet, frequency of use and activities[36] % of individuals *Internet use: participating in social networks (creating user profile, posting messages or other contributions to Facebook, Twitter, etc.), percentage of individuals.*	-	58	57	60	61	65
Broadband and connectivity Enterprises with broadband access (fixed or mobile)[37] % of SMEs (10-249 persons employed), without financial sector	95	97	97	99	-	-

[29] https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tgs00052&plugin=1
[30] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_r_iuse_i&lang=en
[31] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[32] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[33] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[34] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_r_gov_i&lang=en
[35] https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_r_gov_i&lang=en
[36] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[37] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

Use any social media[38] % of SMEs (10-249 persons employed), without financial sector	18	27	25	29	-	40
E-commerce sales % of enterprises[39] Small enterprises (10-49 persons employed)	7	8	9	11	12	13
E-commerce sales % of enterprises[40] Medium enterprises (50-249 persons employed)	15	16	14	17	19	17
Enterprises with e-commerce sales of at least 1% of turnover[41] All enterprises, without financial sector (10 persons employed or more), %	7	9	8	11	11	11
Integration of internal processes *Enterprises who have ERP software package to share information between different functional areas* [42] % of SMEs (10-249 persons employed)	9	15	-	24	-	31
Buy cloud computing services used over the internet[43] % of SMEs (10-249 persons employed), without financial sector	5	8	8	11	14	-
Enterprises providing training to their personnel to develop their ICT skills[44] % of SMEs (10-249 persons employed), without financial sector	10	11	11	9	10	17

Source: Eurostat database https://ec.europa.eu/eurostat/help/first-visit/database

Outlining the above given statistical data, the main points of attention refer to the fact that, although the Latvian citizens have access to good internet coverage, as well as the use of internet for private purposes at quite high level, but the uptake of digital opportunities are relatively low in businesses. However, it should be noted that both the Enterprise Register and the State Revenue Service communicate with entrepreneurs and proceed with their services electronically only. The reasoning behind such gaps in statistics could be explained by the assumption that SMEs have outsourced their operational processes (accounting, lawyer, etc.) that require from business to submit online forms (reports) to above mentioned public authorities. Besides, it can also be mentioned that DESI indicators demonstrate high performance in the availability of digital public services, as well as digital infrastructure is actually good enough that is necessary to the present information technology capabilities of the region and its entrepreneurs, but skill levels are low. It means that entrepreneurs do not use all the opportunities that can contribute to their digital transformation, for example, e-commerce. Moreover, SMEs invest very little in improving digital skills for employees.

3. Barrier and solution analysis of the digital transformation of SMEs

The SMEs digital transformation barrier and solution analysis is based on the literature and document review described further in this chapter. This analysis is complemented by the Business Digital Transformation Survey findings described in the Chapter 8.

[38] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[39] https://ec.europa.eu/eurostat/databrowser/view/isoc_ec_eseln2/default/table?lang=en
[40] https://ec.europa.eu/eurostat/databrowser/view/isoc_ec_eseln2/default/table?lang=en
[41] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[42] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[43] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
[44] https://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

On the 1st of July 2016 the Republic of Latvia became a full member of the Organisation for Economic Co-operation and Development (OECD). As a result of positive assessments of Latvia's position with respect to OECD legal instruments, standards and benchmarks, Latvia has got an access to unique forum and knowledge hub for data and analysis, exchange of experiences, best-practice sharing, and advice on public policies and international standard-setting. Among various OECD surveys[45] of Latvia the recent one and most relevant within the context of DigiBEST topic are OECD reviews of Digital Transformation "Going Digital in Latvia[46]" (Second draft – 7 April 2020) that examines recent changes in key policies, regulations and initiatives related to digitalization identifying major issues and proposing a new integrated framework for Digital Economy Policy/Digital Strategy. Therefore, this document has been used as the main source for this section, i.e., for barriers or solutions statement matching both OECD findings and DigiBEST Stakeholder group conclusions with a focus on SMEs performance/competitiveness.

The table below of barriers and solution matrix (Table 5) reflects the analysis of main obstacles identified in regard to business digital transformation of Latvian SMEs, separating them into five categories: awareness rising & collaboration, enabling corporate environment & capacity building, administrative & technical & legal obstacles, financial & economic reasons, as well as policy and security barriers.

Table 5. Barrier & Solution Matrix

Title of barrier	**Brief barrier description** (up to 25 words per each barrier)	**Identified solutions, if any** (up to 40 words per each solution)	**Where to find it in a particular document or publication** (e.g. page No., or Table No.)
Awareness Rising & Collaboration			
Low adoption of technology, specifically micro & small enterprises	Latvia has a large share of micro and small enterprises, which have lower rates of adoption of ICTs in comparison to other EU countries. The use of digital technologies of Latvian enterprises is limited to basic tools. Smaller firms face barriers in the adoption of ICTs, and Latvia's SMEs been reluctant to adopt even basic technologies such as the use of social media. Latvia lags further behind in the use of more sophisticated technologies such as Enterprise Resource Planning (ERP) software; using Customer	Showcasing the benefits of digital transformation, for example, by developing a "digital champions" programme whereby a number of SME's from sectors with a low usage of ICTs are assigned individually tailored support programme. Grants and mentorship programmes for integrating digital technologies in enterprises. Training programmes for NGO's, municipalities, front offices of state institutions, facilitating 'train the trainer' support to SME's.	OECD Report, §8; 256-257; 259; 262; 268; 269 DESI index 2020, Latvia Country profile, p.10 VPP p. 39

[45] https://www.oecd.org/latvia/
[46] https://www.oecd.org/latvia/going-digital-in-latvia-8eec1828-en.htm

Title of barrier	**Brief barrier description** (up to 25 words per each barrier)	**Identified solutions, if any** (up to 40 words per each solution)	**Where to find it in a particular document or publication** (e.g. page No., or Table No.)
	Relationships Management (CRM) software etc.		
Low e-commerce performance / lack of enterprises selling online	Latvia lags behind in the number of enterprises who have websites, and although the number of enterprises that make e-purchases is in line with the OECD average, the share of enterprises turnover generated from web-sales is amongst the lowest in the EU. Enterprises engage relatively little in e-commerce, especially with consumers.	Raising awareness about e-commerce and enhancing digital skills of employees and managers in all sectors to enable the use of digital technologies for selling online. Expanding workshops and short online video (educational tutorials), which teach small enterprises simple ways to engage in e-commerce (such as through the use of online platforms), could help boost the adoption of such technologies and help more efficient firms gain market share.	OECD §245, 258-259, 268
Decentralised activities & communication	There are various actors in stimulating digital transformation process for business, but low strategic partnering relations in coordinating activities. Events organized to promote digitalisation in general and business sector, such as communication campaigns and workshops for enterprises appear to duplicate activities of each other. There is no common platform who consolidates all information available for entrepreneurs in one place.	Creating a one-stop-shop for those who wish to know more about digital transformation (EDIH) as part of Digital Europe Programme. Develop and implement a single business services platform, ensuring proactive and adapted to life situations information, as well as integrated provision of business-related services. For successful digital transformation, businesses have to be willing to try something new, and to try it quickly. Therefore, coordinated communication channels should be developed to increase awareness of SMEs and disseminate information on digital innovation and its offered benefits for enterprises. For example, larger networking events, including collaboration between the key actors implementing these activities.	OECD p.120
Enabling Corporate Environment & Capacity Building			
Lack of incentives for digitalization	Digital transformation initiatives require a risk-aversive culture and enterprises willing to explore and experiment with	Creating a culture where innovation is being encouraged, e.g., promoting collaboration between various stakeholders (Triple Helix, Quadra Helix,	OECD §273 p.119

Title of barrier	**Brief barrier description** (up to 25 words per each barrier)	**Identified solutions, if any** (up to 40 words per each solution)	**Where to find it in a particular document or publication** (e.g. page No., or Table No.)
	changes. Organizations need to be sure they are supported by the government for facilitating business model changes from the inside out.	Penta Helix models), especially in EU funded projects. Offer mentorship and consultations for businesses. Create a disincentive for businesses interacting with government offline by prioritising businesses that access services digitally (for example by issuing permits or payments more quickly or with lower price services to enterprises that interact online).	
Lack of skills required for business digital transformation implementation	Latvia has a lack of the basic skills necessary for the digital transformation. In addition, there is a shortage of complementary skills, such as administration and management, as well as workers with advanced literacy and numeracy skills and workers with a tertiary education, to take advantage of the new methods of working brought about by digitalisation.	Separate strategies for different skill levels and individual purposes need to be developed. A broad mix of skills developing programmes need to be offered to the workforce matching the changing demands of the labour market in line with accelerating technology development and its impact on both creating new jobs, but destroying others. For example, new training policies aimed specifically at SMEs digitalization, not for the digitalization in general, which can help to adapt and find higher-quality solutions. Improve educational system with skills which are important for further entrepreneurs or workforce (well-prepared after school graduation).	OECD § 271, 272, 274 p.96
Enterprises lag behind in providing in-work training	There is a lack of work-based learning which is hindered by the requirement that entrepreneurs offering such as learning do not have a tax debt, and although firms receive a subsidy for the salary paid to students the administrative burden of claiming this is high. Therefore, Latvia should simplify procedures to receive this incentive.	Introduce a legal framework for work-based learning, simplifying procedures to receive the incentive for providing work-based learning. Strengthen links between vocational schools and enterprises employing ICT specialists and increase the proportion of work-based learning. Development of a national programme of apprenticeships in ICT, including SME's needs, to be considered in scope of national Recovery and	OECD p.118-119 RRF p.14

Title of barrier	Brief barrier description (up to 25 words per each barrier)	Identified solutions, if any (up to 40 words per each solution)	Where to find it in a particular document or publication (e.g. page No., or Table No.)
		Resilience Facility (RRF) planning documents.	
Administrative & Technical & Legal			
Low innovation in businesses as a factor of slow productivity growth	Only few Latvian enterprises adopt new production technologies, launch new products or introduce new organisational methods. The share of innovating SMEs is among the lowest in the OECD. Research and Development (R&D) expenditures in Latvia are low, with almost a quarter of R&D funded by the EU. Latvian businesses have also amongst the lowest rates of R&D in Europe, particularly in information industries. Due to SMEs business specifics as mentioned above and particularly described in the next item/raw, limited capacity of those entrepreneurs to participate in learning opportunities results in lower level of readiness to face digital transformation and create innovations.	In order to raise innovation in private sector, Latvia has established several programmes to increase R&D as part of the National Development Plan for 2021-2027. As per Examples of component of reforms and investment – reskill and upskill (Recovery and Resilience Plans[47]) published the European Commision, investments required in adult training opportunities with a special focus to SMEs needs tailored training offers, inter-company training programmes, providing guidance/mentoring linked with job placement, as well as support with tracking/monitoring and evaluation.	OECD §8; 10; Chapter 4.
Adoption of ICT is held back by a variety of factors: tax policies that favour small enterprises, lack of capacity/time, lack of workers with adequate skills to take full advantage of ICTs, and those with complementary skills (such as management) required to transform work practices in business..	Digitalization initiatives could be particularly sensitive to administrative barriers placed by legislative framework, bureaucracy, tax policy, procurement, lack of experience or resources, etc. The size of the company is another drawback of business digitalization, small enterprises are hampered by the fact that there are few employees only running business operations. It means that introduction of new technologies, processes or digital solutions requires	In the National Recovery and Resilience plan the framework of a full support, a cycle for the digitalization of businesses is proposed for consideration (with an emphasis on SMEs). It will include support for digitalization of business processes (e.g. CRM, HR management systems etc.), employee training, new technologically advanced ICT products, R&D and innovation. In addition, it is necessary to reduce bureaucracy in applying documents for calls of the EU Funds'	OECD §260

[47] https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en
https://ec.europa.eu/info/files/examples-component-reforms-and-investment-reskill-and-upskill_en

Title of barrier	Brief barrier description (up to 25 words per each barrier)	Identified solutions, if any (up to 40 words per each solution)	Where to find it in a particular document or publication (e.g. page No., or Table No.)
	losing significant resources for core business activities. Multitasking personnel is not capable (don't have enough time) to overtake digitalization initiatives. A failure to change legacy systems for new technology will continue to act as a significant blocker for SMEs digital transformation.	projects related to the digitalization of SMEs. In the context of RRF investments in reskilling and upskilling of adults need to be observed in particular for SMEs, microenterprises, self-employed, low income earners to get the training required to be competent on the changing labour market, by increasing awareness and reducing access to training support programmes.	
Financial & Economic			
SMEs have difficulties accessing finance to invest in ICT.	Digital transformation costs can be high, and businesses should be both willing to invest in the process and have financial capability to implement it. More often SMEs simply lack funding, but sometimes it may also be the unwillingness of senior management to invest budget into digital transformation projects.	Develop a nationally funded programme to promote the adoption of existing technologies among Latvian SMEs and offer a number of grants across different sectors, so that such firms can act as an impetus for competitors to adopt more efficient technologies and business practices. In addition, tax incentives could be offered to encourage small firms to invest in ICT.	OECD §262, 268
Policy & Security			
Latvia lacks policies to increase the use of digital technologies among small and medium enterprises and lacks a strategy for digitising the private sector	Latvia does not currently have an overarching strategy in place for the digitalisation of business. Diffusion and effective use of digital solutions crucially depend on investments in ICTs complemented by investments in knowledge-based capital (KBC), including data and organisational change; on a favourable business environment, e.g., one that fosters business dynamism; on the availability and allocation of skills and on trust.	Digital Transformation Guidelines 2021-2027 (in development) incorporate multiple policy domains under consideration: digital government, investment, business dynamism and SMEs, education and skills, and digital security and privacy. Collaborative approach needs to be established for updating the existing policy documents of the Ministry of Economics, Ministry of Education and Science and Ministry of Welfare in relation to above mentioned DT Guidelines, addressing related subjects like life learning programmes and promotion of business digitalization by matching such	OECD §33; 38; Chapter 6 p.118

Title of barrier	**Brief barrier description** (up to 25 words per each barrier)	**Identified solutions, if any** (up to 40 words per each solution)	**Where to find it in a particular document or publication** (e.g. page No., or Table No.)
		activities to labour market requirements. Offer consultancy advice (one stop shop point) to laggard enterprises in sectors with a number of digitally mature firms to help them catch up with leading enterprises. Consolidate funding of eGovernment projects into a single ministry that sets priorities according to a national digital strategy.	
Cybersecurity risks go hand in hand with digital transformation	Businesses need to be able to protect themselves as more and more information is moved to the cloud, and as organisations become increasingly reliant on technology. Therefore, the cybersecurity is presenting a very tangible threat to the success of digital transformation projects. If businesses are to survive in the digital age, they need to ensure that their security measures advance alongside their digital transformation initiatives. The main victims of digital security incidents in Latvia are small and medium companies, as well as municipalities (CERT.LV, 2018[1]).	This category of barriers requires to revise relevant legislative acts and normative documents, as well as policy documents and programmes. The framework of awareness raising campaigns, trainings and support instruments needs to be improved, involving SMEs as the focus group for planned activities. In September 2019, the Latvian Cabinet of Ministers adopted a Cyber Strategy that sets out the national priorities for digital security policy in Latvia and identifies upcoming challenges. The strategy's main objective is to strengthen and improve digital security capabilities by boosting resilience against attacks and enhancing public awareness of threats in cyberspace.	OECD p.126 § 353

Sources: OECD review of Digital Transformation "Going Digital in Latvia" (Second draft – 7 April 2020); local documents as described in chapter 6 outline the above listed barriers and solutions in correspondence to each document' s scope and area of competence.

4. Stakeholders of DigiBEST Latvia project

Main stakeholders of the DigiBEST project (further – DigiBEST) partners are external and internal bodies at senior and junior level who has proven or highlighted position and influence on digitalization in Latvia. The key DigiBEST stakeholders are national/regional institutions, regional and local authorities, business (SME) support organizations, ICT business representatives as target audience of the project activities, university & research body as advisory partner, NGOs. According

to the DigiBEST project's outcomes, during the 1st DigiBEST project semester, the KUMU stakeholders' map has been developed (https://kumu.io/JulijaK/lv-shs-updated).

Representatives of all organizations from the stakeholder group play a significant role in decision-making process regarding project incentives of relevant policy instruments, i.e., SME digitalization processes.

The Ministry of Environmental Protection and Regional Development of the Republic of Latvia (MoEPRD) as a Lead partner of DigiBEST project, is responsible for elaboration and implementation of policies in the three areas - environment protection, regional development as well as information and communication technologies[48]. MoEPRD tasks include overseeing the implementation of the information society (IS) management policy, integration of its principles into other development planning policy documents and regulatory enhancements, initiation, planning, evaluation, implementation, management, coordination, monitoring and control of support measures for the development of IS, including projects co-financed by EU funds. MoEPRD being appreciated by previous involvement and successful cooperation of institutions listed below (Table 6) in the implementation of other various projects, in the development of policy documents, including but not limited to the organisation of ICT skills activities, has selected and attracted not only reliable authorities/organisations but also new partners competent in and willing to contribute to the development and implementation of the policy change/Action Plan on facilitation of SME's digital transformation (in accordance with the DigiBEST project goals and objectives).

Involved stakeholders of the DigiBEST local partnership in their daily operation are linked or have connection with the business sector, in particular SMEs, as well as giving input on policy development in digital transformation and thus can play the main role during the 2nd phase of the project – Action plan implementation. The Action Plan is a document providing details on how the lessons learnt and exchange of experience from the interregional cooperation will be exploited in order to improve the regional policy instruments. The Action Plan specifies the nature of the actions to be implemented, their time frame, stakeholders involved, the costs and funding sources.

Table 6. List of the DigiBEST key stakeholders

Organization	Contact data
Ministry of the Economics of the Republic of Latvia	Str. Brīvības 55, Rīga, LV – 1519 ; Phone: +371 67013100; E-mail: pasts@em.gov.lv https://www.em.gov.lv/en
The Latvian Association of Local and Regional Governments	https://www.lps.lv/en
Kurzeme Planning Region Entrepreneurship center	Valguma str. 4a, Riga, LV – 1048; Phone: +371 67331492; E-mail: pasts@kurzemesregions.lv https://www.kurzemesregions.lv/en/kurzemes-planosanas-regions/
Riga Planning Region Entrepreneurship center	http://rpr.gov.lv/
Vidzeme Planning Region Entrepreneurship center	https://invest.vidzeme.lv/en

[48] https://www.varam.gov.lv/en

Zemgale Planning Region Entrepreneurship center	Katolu str. 2b, Jelgava, LV-3001; Phone: +37163028454; Email: zpr@zpr.gov.lv https://zuc.zemgale.lv/par-mums/
Jelgava city Municipality/Administration Office	https://www.jelgava.lv/en/municipality/contact-information/
Zemgale Region Human Resource and Competences Development Centre, Entrepreneurship	https://www.zrkac.lv/en/
Jelgava Municipality	http://www.jelgavasnovads.lv/lv/
Ventspils Municipality 'Ventspils digital centre'	https://www.digitalaiscentrs.lv/
Latvian Information and communications technology association	https://likta.lv/en/home-en/
Latvian IT Cluster	https://www.itbaltic.com/
The Latvian Chamber of Commerce and Industry	https://www.chamber.lv/en
Latvian Employers' Confederation	https://lddk.lv/en/
Latvian Open Technology Association	https://www.lata.org.lv/?lang=en

Source: MoEPRD mission letter on DigiBEST Stakeholder's Support Group

5. SWOT analysis

Below introduced SWOT analysis has been prepared during the DigiBEST project 1st Discussion Forum on January 7th, 2020 in collaboration with Latvian stakeholders' group, thus generating and expressing the opinion on SMEs digital transformation in Latvia from various social group perspective: government, municipalities and NGOs.

The SWOT analysis below includes two groups of factors:

a. Internal factors – The strengths and weaknesses internal to the region (organization etc.).
b. External factors – The opportunities and threats presented by the external environment to the region (organization etc.).

The SWOT analysis identifies the following:

- Strengths: characteristics (factors) of the SMEs digitalization development, main success factors, strengths with regard to SMEs digital transformation in Latvia.
- Weaknesses (or Limitations): factors that present disadvantages for SMEs digital transformation.
- Opportunities: chances (factors) to improve SMEs digitalization and its economic impact.
- Threats: elements (factors) for SMEs digitalization (and economy in general) that could cause trouble for the economic development.

Table 7. SWOT analysis on SMEs digital transformation in Latvia

Internal Factors	
Strengths	**Weaknesses**
1. Well-established ICT infrastructure to introduce or improve ICT business solutions (foster digital transformation).	1. Lack of enterprises awareness about digital processes/solutions (mostly micro & small businesses).

2. Wide range of application for financial support.	2. Lack of enterprise capacity to lead business to a digital transformation.
3. Availability of digital public services.	3. Small business owners usually are lacking advanced/sufficient skills.
4. Diverse knowledge availability.	4. Fears of enterprises to step outside of the comfort zone.
5. For micro & small business easier to adapt to the changes that requires digital transformation (flexibility).	5. Lack of enterprises motivation.
6. Motivated public administration to solve the digital transformation issues.	6. Difficulties to identify businesses with a low level of digital transformation, specifically micro and small one (lack of information, research studies).
7."Remote work" provides opportunity to involve foreign expert engagement.	7. Shortage of digital transformation experts.
8. A secure electronic signature (available in a personal ID and mobile application) is available for signing documents between legal persons and individuals, such as contracts, invoices, etc. as well as ensure e-identity in different portals and platforms	8. Customer knowledge of provided e-commerce services.
9. Interaction with some government institutions who are responsible of entrepreneurs are available fully online - State Revenue Service and Register of Enterprises.	9. SMEs haven't identified their business needs & don't know what to order from IT specialists.
	10. Striving to achieve the group of enterprises that do not use digital solutions.
	11. There isn't one webpage (common platform) where all the information related to entrepreneurs is available.
	12. There isn't one policy document or strategy how to increase the basic digital skills of entrepreneurs (as well as workforce) to promote digital transformation.
External Factors	
Opportunities	**Threats**
1. Financial and other type of support instruments and sufficient access to funds (not fully used).	1. Low quality of offered support instruments (e.g., trainings)
2. SMEs have possibilities to grow efficiently (transform digitally) using the already existing resources of the companies	2. Misalignment of education system / "old school" teaching practices / lack of digital literacy
3. Engaging/informative events (consultations, seminars, workshops, etc.) about information on business benefits: export stimulation, customer attraction, etc.	3. Enterprises have short-term thinking of business development
4. Shortage of human resources pushes entrepreneurs to seek for innovative digital solutions.	4. Enterprise business ethics / communication with customers
5. Digital Innovation Hub (DIH) as a single point of contact	5. Data quality/challenges in data collection (e.g., inappropriate results of DESI index, difficulties to identify small companies with low digital transformation)
6. Enabling environment to raise competition and productivity of SMEs	6. Depopulation/brain drain
7. Fiscal motivation	7. Constantly changing cybersecurity threats
8. Open Data portal established by the government to provide a variety of data for entrepreneurs to use for business analytics and data-driven solutions or services	
9. Entrepreneurs can create the ability to identify customers with eSignature (eParaksta) tools (eID	

card, eSignature (eParaksta) card and eSignature (eParaksts) mobile app) on their websites and customer service portals, as well as sign almost all documents electronically.	

Source: Discussion Forum with local Stakeholders on January 7, 2020.

6. Policy on and support instruments for digitalization of SMEs

In respect of **SMEs digital transformation**, the following **ES regulation** need to be considered -

- the Single Digital Gateway (SDG),
- Directive on the accessibility of the websites and mobile applications of public sector bodies (Directive (EU) 2016/2102),
- European Standard for eInvoicing (eInvoicing Directive 2014/55/EU),
- Electronic identification and trust services (eIDAS).

According to the Latvian Development Planning System, there are three development planning levels (from top to bottom): political guidance documents (Government declaration & action plan), spatial planning documents (Sustainable Development Strategy & National Development Plan) and policy planning documents (sector guidelines, plans & conceptual reports). Listed documents are prepared for a long-term (up to 25 years), medium-term (up to seven years) and short-term (up to three years) periods.

In regard to policy instruments on business digitalisation there is no single strategy in Latvia, yet. There are several ministries participating in the business digitalization policy planning process, each institution in responsibility of its own areas of Activity develops and coordinates a separate policy regulatory document. **The Ministry of Environmental Protection and Regional Development of the Republic of Latvia** is responsible for overall digital transformation strategy in the context of information and communication technologies, in the field of business policy the leading public administration is **the Ministry of Economics, the Ministry of Education and Science** is responsible for implementing policy in education and science, for labour and employment related policy – Ministry of Welfare, and policy plan for the electronic communications sector is coordinated by the **Ministry of Transport** but Cyber Security Strategy is under responsibility of the **Ministry of Defence.**

6.1. Main features of the national, regional and local policies towards the digitalization of SMEs

The digital transformation of the Latvian economy is addressed in broader national strategies and guidelines:

Sustainable Development Strategy of Latvia until 2030 or "Latvia2030" as the main national long-term development planning document is approved by the Saeima of the Republic of Latvia. The core of sustainable development of Latvia is improvement of the productivity of human, economic, social and nature (including location and space) capitals, thus responding to the challenges caused by global

tendencies. In this regard there are seven priorities determined: Investments in Human Capital, Change of Paradigm in Education, Innovative and Ecoefficient Economy, Nature as Future Capital, Perspective of Spatial Development, Innovative Government and Participation of the Society, Development of Culture Space. In correlation with SMEs digitalization the document includes such topics as use of Information Technologies and lifelong education, globalisation of economy, user-driven innovation and innovative entrepreneurship.

National Development Plan is a national-level comprehensive medium-term planning document to facilitate a balanced and sustainable development as it is stated in the Sustainable Development Strategy of Latvia until 2030 (Latvia2030). **The aspects related to digital entrepreneurship include the increase in R&D efforts in the defined priority scientific areas, reduction of obstacles for entrepreneurs, ensuring a high-speed connectivity throughout Latvia, as well as the development of digital content, product and e-services to expand the use of digital technologies in the economy and in the population.** The National Development Plan 2021-2027 has been approved on 2 July 2020 by decision of the Saeima of the Republic of Latvia. The new document includes three strategic goals for the future seven-years period: equal opportunities, productivity and income, social trust. Among six priority areas set for the key policy changes is competitiveness of business and material well-being, promoting the increased **use of digital technologies in business, smart specialisation, supporting innovation and investments.**

In the period from 2014 to 2020 the main policy document in relation to digitalisation was **The Information Society Development Guidelines for 2014 - 2020** (ISDG). These guidelines reflect directions of transformation course for national economy, growth priorities and also specialization areas, which are defined within the RIS3 framework and provides action lines for ICT education and e-skills, widely available access to the Internet, advanced and effective public administration, e-services and digital content for public, cross-border cooperation for Digital Single Market, ICT research and innovation, as well as trust and security. ISDG goal is to provide the opportunity for anyone to use ICT, to create a knowledge-based economy and to improve the overall quality of life by contributing to the national competitiveness and increasing an economic growth and job creation. Special attention in the Guidelines is devoted to implementation of open data principle in the public administration and reduction of administrative burden, simplifying delivery of public services by means of efficient and effective eServices and interoperable information systems, as well as the enhancement of e-skills and improvement of Internet access and speed, which is an essential prerequisite for e-commerce and business in general.

The Digital Transformation Guidelines for 2021-2027[49] (Guidelines) is a new policy planning document that determines Latvia's digital transformation (information society development) policy, expanding the settings, action directions and tasks in the digital transformation policy approved in the National Development Plan for 2021-2027. Currently, The Digital Transformation Guidelines for 2021-2027 have been developed and submitted for public consultation and other public authorities for review. The Guidelines describes a unified digital development policy for public administration,

[49] https://www.varam.gov.lv/lv/digitalas-transformacijas-pamatnostadnes-2021-2027gadam

economy and society, explaining the opportunity to acquire the necessary skills for every citizen at any stage of life according to their need, while providing entrepreneurs with a suitable digital environment that will enhance entrepreneurs' ability to develop more competitive services and solutions, but public administration ensures the transition from institutional and national digitization solutions to the creation of open ecosystems. The development of public-private partnerships also promoted, combining the knowledge and resources accumulated in public administration and the private sector to create innovative digital services and solutions, fostering a society ready to use available and constantly learn new digital tools for digital society, economy and governance. creating a connected ecosystem of public and commercial services. Digital skills and education, digital security and reliability, availability of telecommunications and computing, digital transformation of the national economy (incl. Public administration), as well as innovation, ICT industry and ICT science are five Action Lines identified for the implementation of the Guidelines.

Digital transformation issues are tackled also by the **Latvia's smart specialization strategy (RIS3)** considering the priorities of economic transformation and focusing on innovation ecosystems to foster and support technological progress. IT was developed in 2014 to concentrate public Research and Development investment in programs that create future domestic capability and interregional comparative advantage. Smart specialization policy rationale is linked to the three below mentioned guidelines - National industrial policy guidelines, Guidelines for Science, Technology Development, and Innovation and Education Development Guidelines, outlining investment priorities such as high added value products, productive innovation system, energy efficiency, modern ICT, modern education, the knowledge base and polycentric development. In addition, RIS3 strategy defines specialization areas of knowledge-intensive bio-economics; biomedicine, medical technologies; bio-pharmacy and biotechnologies; smart materials, technologies and engineering systems; smart energetics; information and communication technologies (ICT). ICT and digitalization are a horizontal priority influencing every priority area of RIS3.

National industrial policy guidelines[50] (Guidelines) is a medium-term policy planning document covering all sectors of the economy and setting out the objectives and directions for promoting economic growth for the next seven years, both domestically and internationally. Guidelines aim at promoting economic structural changes, increasing the production of goods and services with high added value, including strengthening the role of industry, allowing modernization of industry and services, as well as expanding exports. Availability of financing increase of innovation capacity and promotion of exports can be mentioned as the key directions provided in this policy document. The framework for the next planning period, i.e., 2021-2027, includes the following integrated policy objectives: strengthening human capital, arrangement of business environment, promotion of export activities growth, increasing innovation capacity, strengthening the infrastructure and technological base of enterprises, as well as the availability of investments or financial resources. Zero paper economy concept, ‘Consult first’ principle, ‘zero bureaucracy’ approach, proactive and public interest driven digital processes, facilitated conditions for new products creation and testing, support for small and medium-sized enterprises, strengthening the capacity of the internal market, as well as smart

[50] https://www.em.gov.lv/lv/industriala-politika

contract platform with links to public registers – are the key initiatives introduced in frame of business environment-related improvements to foster business digital transformation, i.e. promoting integration of digital technologies into business operations and the use of digital solutions to increase competitiveness.
In scope of business environment action, the Ministry of Economics determines the development and implementation of a plan of measures for the improvement of the business environment as a tool for creation of a customer-oriented public administration and effective regulatory structure. As a tool for reducing administrative burdens there are upgrades set for the existing plan to make it more user-oriented, fast and purposeful results driven, enforcing cooperation with involved parties (institutions) and ensuring the availability of planned measures and their progress in digital format.

On 26th of February, 2019 upon meeting agenda of the Cabinet of Ministers the informative report "Examples of the use of blockchain technology, prospects and further actions to promote the development of the field" presented by the Ministry of Economics has been reviewed and taken into consideration aiming at in-depth assessment of the prospects for the use of blockchain technology in the public sector and identifying further actions to promote its development in Latvia, as well as legal and technological aspects evaluation related to blockchain technology integration into market.

Guidelines for Science, Technology Development, and Innovation 2014-2020 (GSTDI)- the guidelines implement a new horizontal approach to science and innovation policy, linking research and industry sectors in a single system. The main components for a successful development of Latvian innovation system are the following: 1) the development of the potential of scientific activity; 2) the development of the platform for long-term cooperation between researchers and enterprises; 3) the support of the development of innovative enterprises. The aim of these GSTDI is to raise the global competitiveness of Latvian science, technology and innovation, satisfying the development needs of Latvian society and economy. The new strategy in Science, Technology Development, and Innovation for 2021-2027 is under elaboration by responsible ministry.

In the **Education Development Guidelines 2014-2020** (EDG) (LV only) there are action lines that are important in the process of future SMEs digitalization, particularly investment in lifelong learning and human resources as an essential precondition for economic development and strengthening competitiveness in conjunction with the situation in the labour market and its development trends. In this regard the EDG provide the regulatory framework enhancement for the provision of adult education support, support for the professional competence improvement of the employed persons in accordance with the changing labour market conditions, including support for employers for the provision of formal and non-formal education for employees. In order to ensure compliance with the sectoral qualification structure and changing labour market requirements, support is provided for the introduction of modular education programs, provision of vocational competence programs, each modular vocational education program includes modules: "initiative and entrepreneurship", "public and human security" and "information and communication technologies".
The project of Education Development Guidelines 2021-2027 sets Latvian National Skills Strategy goals such as improving study outcomes for learners, promoting a culture of lifelong learning, reducing skills mismatches in the labour market and strengthening skills system management. One

of the special topics included in the new framework is Technology and future skills which in the context of professional & high education points out digitisation of learning content and mixed forms of learning, including online studies, digital transformation and innovation development and governance as well as support for digital innovation for research and entrepreneurship.

The below table provides the list of policy documents available for further review of Latvian regulation on digitalization.

Table 8. Normative acts on national, regional and local levels regulating digitalization

National level
1. Sustainable Development Strategy of Latvia until 2030 (ENG)
2. National Development Plan for 2014-2020 (ENG) / National Development Plan of Latvia for 2021-2027(NDP2027) first version summary
3. Operational Programme „Growth and Employment 2014 - 2020" (ENG)
4. The Information Society Development Guidelines for 2014 - 2020 (ENG)
5. National industrial policy guidelines for 2014 to 2020 (only LV)
6. Guidelines for Science, Technology Development, and Innovation 2014-2020 (ENG)
7. Education and Skills Development Guidelines 2021-2027 (LV)
8. Spatial Development Planning Law (LV)
9. Service Environment Development Plan (LV)
10. Latvia's Open Data Strategy (LV)
11. Artificial intelligence strategy (LV)
12. ICT governance concept (LV)
13. Conceptual architecture of public administration information systems/ICT strategy for public administration (LV)
14. Policy plan for the electronic communications sector (ENG)
15. Cyber Security Strategy (LV)
16. Informative report "Examples of the use of blockchain technology, prospects and further actions to promote the development of the field" (only LV)
Local / regional level - local government has the following coherently co-ordinated spatial planning documents: sustainable development strategy of the local government; development programme of the local government; spatial plan of the local government; local plans; detailed plans; thematic plans. Planning regions have Sustainable Development Strategies until 2030 and a 7-year Development Program (currently are working on planning documents for 2021-2027), which also includes activities promoting digitalisation and entrepreneurship.

6.2. Support instruments to promote SMEs digitalization

In order to provide a significant support to the economic growth and employment, with a particular focus on the competitiveness of Latvia's economy, by combining the support of various EU funds, Latvian government elaborated a single multi-fund Operational Programme "Growth and Employment" (OP). It aims at achieving key national development priorities such as Network Infrastructures in Transport and Energy, Environment Protection & Resource Efficiency, Low-Carbon Economy, Educational & Vocational Training, Research & Innovation, Social

Inclusion, Competitiveness of SMEs, Information & Communication Technologies, Sustainable & Quality Employment, Technical Assistance, Climate Change Adaptation & Risk Prevention and Efficient Public Administration.

Operational Programme „Growth and Employment 2014 - 2020"[51] aims at promoting a business enhancing environment that is based on available information (data), integrated ICT solutions for both the public and private sector and full inclusion of Latvia in the single European digital market. In regard to DigiBEST project goal and objectives as well as national priority axis of SMEs competitiveness, the policy includes such specific aid targets as promoting entrepreneurship, particularly by facilitating the use of new ideas in the economy and by supporting the creation of new businesses, including through business incubators; supporting the capacity of SMEs to achieve growth in regional, national and international markets and to engage in innovation processes; supporting the creation and expansion of improved capacity for product and service development; investment in institutional capacity and efficient public administration and public services at national, regional and local level to achieve reforms, better regulation and good governance. The policy is therefore aligned to Latvia's goal to improve the quality of life by contributing to national competitiveness, increasing economic growth and accelerating job creation. The implementation of the policy instrument therefore **needs to be optimised to make sure that rural areas' SME take full use of the available opportunities and that financed interventions lead to durable impacts to the benefit of Latvia's overall economic competitiveness.**
One of the Latvian single multi-fund Operational Programme's "Growth and Employment" (OP) priority (TO3)[52] is supporting the competitiveness and innovation of SMEs by creating the necessary preconditions for private investments, and by creating new enterprises and jobs in the national and regional development centres, as well as strengthening the institutional capacity of public administration and judiciary to create a better environment for business and less corruption. 7.11% financial resources of the total Programme Budget are allocated to supporting SMEs competitiveness and 3.91% of the total OP allocation is aimed at promoting information society by ensuring the accessibility of high-speed broadband connection to at least 80% of Latvian households, developing e-services, e-solutions, e-commerce (priority axis 2). In particular it will support the broadband network development in rural areas with at least 30 Mbps to address the existing digital divide.

Given the policy instrument addressed by DigiBEST project - OP TO3 that supports engagement capacity of SMEs in different markets and innovation processes, it is considered to bring a positive impact on productivity of SMEs by facilitating knowledge transfer, best practices and ability of SMEs to engage in digital transformation processes.

The government supports the digital transformation of enterprises through a number of complementary programmes and initiatives (also making use of EU funding). Support instruments to promote SMEs digitalization are not coordinated only by the Ministry of Economics and its subordinated agencies, but there are also private initiatives held in Latvia (for instance, Latvian IT Cluster, LIKTA, LATA, Riga Techgirls, etc.). Latvian NGO's are one of the main players in bringing

[51] https://www.esfondi.lv/2014-2020
[52] https://www.esfondi.lv/2014-2020

European activities in local level. These initiatives, however, are quite fragmented and very often implemented on project basis.

Significant initiatives related to SMEs digital transformation:

To increase private sector investment in R&D by promoting research and industrial cooperation, implementing projects on developing and introducing new products and technologies, under support of EU funds **the Ministry of Economics** enacts competence centre management initiative (planned duration Apr 2016-Dec 2021). Since 2016, the **'Competence Centre Programme'** has enabled eight competence centres to be set up, corresponding to areas of Latvia's Smart Specialisation Strategy. The centres target enterprises of any size and promote research and industrial cooperation in new product and technology development projects. They have to earmark at least 25% of their funding for experimental development.

In addition, Latvia has three **Digital Innovation Hubs** which are expected to act as centres of digital excellence and one-stop-shops for digital transformation.

Regarding legislation that favours entrepreneurship and advocates solid tax policy, availability of qualified workforce, infrastructure and support instruments the main role plays Investment and Development Agency of Latvia (LIAA). Subordinated to the Minister for Economics, **LIAA** aims at increasing export and competitiveness of Latvian companies, facilitating foreign investment and implementing tourism development and innovation policies.

In relation to SMEs competitiveness the key areas of activities led by LIAA are **business incubators**, **technology transfer**, **innovation motivation programmes** (innovation and technology portal "Labs of Latvia", Enterprise Europe Network (EEN)) and various **events** focused **on entrepreneurship** (e.g., Innovation and technology festival "iNOVUSS" https://www.inovuss.lv/ and Technology conference "Deep Tech Atelier" https://deeptechatelier.liaa.gov.lv/).

Enterprise Europe Network which is part of LIAA provides support for SMEs by helping to innovate and grow on an international scale (e.g., innovation and technology audits to help carry out technology transfer) and extensive advisory services on what EU offers.

The **Technology Transfer programme** is another initiative to promote innovation activities in SMEs. The programme provides: (i) innovation vouchers (e.g., for feasibility studies, industrial research, experimental development and attracting highly qualified personnel); (ii) research and innovation support (e.g., developing commercialisation offers or participating in exhibitions and conferences); and (iii) start-up support (e.g., meetings with potential investors).

Support for the digitisation of enterprises also includes initiatives to develop advanced digital skills. For example, **LIKTA** supports **training programmes** that boost the uptake of digital tools, particularly by SMEs. In particular, the EU-co-funded 'SMEs trainings for digital technologies and innovation development[53]' project (launched in 2016) was aimed at entrepreneurs, managers and

[53] https://www.interregeurope.eu/policylearning/good-practices/item/1680/trainings-for-sme-for-development-of-innovations-and-digital-technologies/

SME employees. By the end of December 2019 over 1,200 companies had been involved in the project, and more than 3,900 training activities had been organised.

Cross-industry collaboration, networking and knowledge sharing services offered by **Latvian IT Cluster** builds a cooperation community of those Latvian companies who are most willing to contribute and benefit from joint efforts in digitalization. Latvian IT Cluster is a contact point for interested parties who intend to expand their own technical and economic potential in international markets. As a Digital Innovation Hub, it has launched a **Digital Training Programme** to let companies challenge themselves, innovate and look at their business processes from a new perspective (Chapter 7).

In order to achieve adoption of internationally approved and **open information exchange and storage standards** and their wide usage in Latvia, **Latvian Open Technology Association (LATA)** takes the lead in promoting cooperation between technology suppliers and consumers, including public, municipal authorities, educational and scientific institutions on the basis of openness of technologies, interoperability, reusability and open standards in industry; quality, efficiency and safety of technologies; free and fair competition in technology development and supply. In line with established goals in fostering **open data standardization**, essential activities of LATA are **hackathons, yearly conference and call for award**.

On 28 May 2020, the European Commission (EC) proposed an ambitious European recovery plan[54] to address the economic and social damage caused by the coronavirus pandemic, to stimulate European recovery, as well as protect and create jobs.

Currently Latvia is preparing recovery and resilience facility (RRF) plan for submission to EC that sets out a coherent package of reforms and public investment projects within the guaranteed available funding in amount of 1.65 billion euros. To benefit from the support of the RRF, these reforms and investments should be implemented by 2026.

It is foreseen to share 20% of investments into digitalization: promoting the coordination and efficiency of ICT governance, centralization of public infrastructure solutions, establishment of a digital transformation support centre to support businesses, integrating digital skills into the education system and digital (5G) 3B country interconnection.

Strategic goals in regard to digital transformation are digital transformation of public administration, business digitization and innovation, digital skills and infrastructure (5G). In the context of entrepreneurship, it is aimed at full cycle support initiatives for businesses to be able to easily access knowledge, digital transformation support tools and mentoring anywhere in Latvia regardless of company's area of activity and size[55].

[54] https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility_en
[55] https://www.esfondi.lv/atveselosanas-un-noturibas-mehanisms

7. Analysis and identification of Good Practices

In scope of DigiBEST project 1st semester activities, Latvian partnership collected 3 Good Practices. Following the Interreg Europe Programme definition, as well as assessing the context of Latvian development trends and public policies, the scoring approach has been applied to select three initiatives to be presented to the DigiBEST partnership that mostly correspond to such criteria as (1) the proposed Good Practice helps to address the digital challenges of SMEs, (2) the main beneficiaries of Good Practice are SMEs and (3) the proposed Practice is successful in delivering concrete results in improving the digital transformation creators of SMEs. In the result of scoring and cooperation with Latvian stakeholders, three Good Practices were selected for promotion within the DigiBEST, including experience exchange with other partner regions. During preparation process of the Latvian Regional Study on the State of Digital Transformation and its Impact on the Regional Businesses the 4th Good Practice has been identified and submitted to Interreg Europe Programme (Policy Learning Platform) for evaluation and approval.

Table 10. Description of the Good Practice 1

Good practice general information	
Title of the good practice	**Consultancy on business support**
Category of the good practice	Please choose one of the categories: ▪ Awareness rising and collaboration; ▪ **Empowering tools**; ▪ Sustainability instruments; ▪ Enabling environment; ▪ Other
Organisation in charge of the good practice	Zemgale Region Human Resource and Competences Development Centre (ZRKAC)
Description	
Short summary of the practice	Free individual mentor consultancy for SMEs (including home producers) to establish their visual identity in the Internet & increase market competitiveness
Resources needed	Consultations are held free of charge and are provided by two employees with basic local remuneration amount covered by municipality budget. ZRKAC events are always organised in cooperation with some partners (e.g., British Council, Social Business Association, social entrepreneurs, etc.)
Timescale (start/end date)	2009 - ongoing
Evidence of success (results achieved)	Since 2009, ZRKC has provided 5668 business consultations in total: e.g., in 2009 – 143 consultations, but in 2019 already – 1120. Benefits obtained by SMEs: 1. 28 SMEs improved e-commerce & increased product turnover (20 – 50%); 2. 7 practical workshops (68 SMEs) about the online tools; 3. 48 SMEs created promotional campaigns and visual identity for their products using online tools; 4. 5 seminars on digital marketing in 2019 (43 participants); 5. Zemgale Region Enterprise Catalogue (137 enterprises/businessmen, 1982 categories, also~ 50 deals concluded and 20 partnerships established during one year)

Potential for learning or transfer	The consultancy service is an easy establishing tool to support business development in areas with the less dense population. Entrepreneurs greatly appreciate the advices which they can receive free of charge: individual consultations, workshops, seminars, match-making activities, projects, regular communication, support for the creation of new products, etc. (Minox, Minisociton, etc.). Always find actual and most interested topic for advice – continuous learning. Cooperate with the most knowledgeable experts from different fields in organising events.

Table 11. Description of the Good Practice 2

Good practice general information	
Title of the good practice	**Digital Innovation Hub (DIH)**
Category of the good practice	▪ Awareness rising and collaboration; ▪ Empowering tools; ▪ Sustainability instruments; ▪ **Enabling environment;** ▪ Other
Organisation in charge of the good practice	Latvian IT cluster
Description	
Short summary of the practice	DIH offers a set of support measures for SMEs to acquire knowledge on the actual digital solutions & improve problem-solving capabilities.
Resources needed	Corporate hackathon costs ~€10,000 depending on the duration and intensity, whether it's 48h non-stop or 1-2 month / 1week long, local or international. DIH hackathons covered 100% by the project's funding and/or sponsored by the support of the Nordic Council and the Ministry of Economy. Digital workshops: costs ~ EUR 1500 Sofa experts' visits: ~ 300 EUR
Timescale (start/end date)	2012 - ongoing
Evidence of success (results achieved)	Hackathons: 2 - 130 participants (2018) & 2 - 91 p. (2019). 40 sectors and IT SMEs applied, incl. both on-site and remote work, where 20% of the cooperation projects initiated are successfully implemented. DigiMeetups: 3 - 87 p. (2018) & 2 - 77 p. (2019) Expert visits: 5 companies (2018-2019) Workshops: 2 - 50 p. (2019) different sectors of 18 regions Conference: Raising awareness of the importance of digitalization and data among citizens and enterprises - 600 p. (2019)
Potential for learning or transfer	These types of measures will contribute positively to entrepreneurs and citizens of national regions, mainly by changing the way of thinking and encouraging business innovation and technological transformation processes to be launched. As a result of the implemented support measures, it is concluded that there is a low degree of digitalization in Latvia's regional small and medium-sized enterprises, limited use of available information, insufficient understanding of the nature of innovation and technological solutions, lack of confidence in IT service providers and lack of motivation to implement changes related to technology and innovation.

Table 12. Description of the Good Practice 3

Good practice general information	
Title of the good practice	**Smart Latvia & Digital Maturity Test**
Category of the good practice	▪ **Awareness rising and collaboration**; ▪ Empowering tools; ▪ Sustainability instruments; ▪ Enabling environment; ▪ Other
Organisation in charge of the good practice	Latvian Information and Communications Technology Association (LICTA)
Description	
Short summary of the practice	Smart Latvia - project helping Latvian companies in digital transformation by providing easy-to-understand & convenient assistance.
Resources needed	"Smart Latvia" is supported by the project of Interreg Baltic Sea Region – "#R050 DIGINNO". Costs planned in the project for self-assessment tool Digital Maturity Tool (design, developing, hosting) in amount of EUR 6000.
Timescale (start/end date)	2018 - ongoing
Evidence of success (results achieved)	The "Smart Latvia" initiative (online digital maturity test and recommendations) is organised with the aim to educate leaders/managers of SMEs in Latvia about the latest IT solutions, encouraging them to be introduced into their businesses and providing them with the necessary informative support. As of February 2020, the Digital Maturity Test was completed by 642 SMEs. After proving successful, test was elaborated in English to reach an international level, it is also available in Danish, Estonian, Lithuanian, Polish and Swedish languages.
Potential for learning or transfer	This tool can easily be transferred and implemented in other European countries. In order to help Latvian SMEs in development of IT solutions in their businesses, LICTA together with number of IT companies (Edisoft, Fitek, Lursoft, Microsoft Latvia and VISMA, ELVA, Bregards and the Commercial Education Centre (CEC)) has launched an educational campaign called "Smart Latvia" and developed free tool for entrepreneurs to acknowledge and plan business digital transformation activities. This tool is also available in English (https://www.diginnotool.eu/, https://diginno.cbis.lv/), thus ensuring its international use. Successful cooperation with 50 business associations has helped to reach a high number of respondents.

Table 13. Description of the Good Practice 4

Good practice general information	
Title of the good practice	**Programme "My Latvija.lv! Do Digitally!"**
Category of the good practice	▪ **Awareness rising and collaboration**; ▪ Empowering tools; ▪ Sustainability instruments; ▪ Enabling environment; ▪ Other
Organisation in charge of the good practice	The Ministry of Environmental Protection and Regional Development of the Republic of Latvia
Description	

Short summary of the practice	The comprehensive communication and training programme to inform and encourage society to use online services offered by the government.
Resources needed	The programme was co-funded by ERDF projects. Total funding 1 840 000,00 EURO + VAT (50% for training activities, 40% for communication activities and evaluation of project indicators, 10% reserve (unplanned expanses, crisis communication).
Timescale (start/end date)	April 2018 – October 2020
Evidence of success (results achieved)	1) Trained 6000 national & local government officials, NGO & media representatives; 2) 50 life event descriptions, which includes 55 video tutorials (over 0,5 mln unique visitors, Oct 2020); 3) 6 Integrated communications campaigns (3 for business); 4) 66 events, (2 national forums, 12 events in regions, 20 events with partners etc. – 8 directly designed for SMEs) – more than 1500 visitors, SMEs actively participated in all events; 5) over 200 materials & more than 1700 publications in media.
Potential for learning or transfer	The more often people (including businesses), use e-services, the more increases habit to deal with life situations electronically. There are things you do once or twice in a lifetime, such as coordinating a building permit for a private home, but other services are needed every year or every two years, maybe even several times a year. Especially for businesses who deal with services almost every day. And if you've ever solved life situations digitally, you won't want to go back to the "old order". Change of habits is the most significant achievement for all of us. As well as it is very important to prepare well educated trainers (civil servants etc.) who can support those clients who are accustomed to receiving services only on-site (no digital skills, no access to technologies etc.). The limitations of the Covid-19 infection have shown how important digital tools, connectivity, data, artificial intelligence and cloud services have become to our economy, as well as the digital skills that sustain our economy and society, allowing us to keep working, interacting with institutions etc. During this pandemic, Latvia has shown the enormous importance of digital opportunities - when institutions switch to remote work and communication with customers, the opportunity to receive various services remotely is fully ensured. Until now, it has been a convenient way to save time and resources, which has become an important opportunity to ensure one's own and public health in a pandemic.

Source: adjusted by the author using the Interreg Europe Good Practice template from the Interreg Europe website: https://www.interregeurope.eu/policylearning/good-practices/

8. Findings and conclusions of the Digital Assessment Survey

The main objective of the DigiBEST project survey is to evaluate the digital transformation performance of SMEs, as well as to draw conclusions for facilitating their digitalisation, which has become especially critical during the Covid19 pandemic crisis.

This survey was designed to answer four main questions:

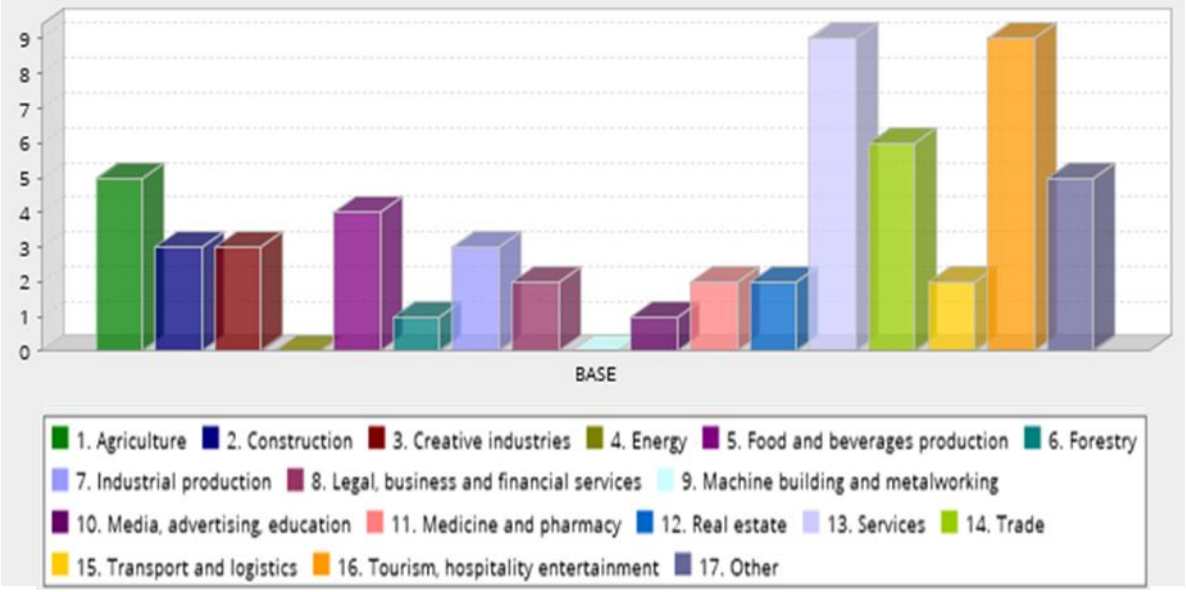
1. How small and medium businesses (SMEs) proceed towards the digital transformation?
2. Why and which digitalization solutions are being mostly used by SMEs?
3. Why businesses don't use particularly IT solutions or technologies?
4. How authorities can help businesses to promote the digital transformation process?

The survey[56] was conducted from May 18th to June 29th, 2020. Therefore, it has been particularly influenced by the Covid19 pandemic crisis which promoted the use of digital tools and solutions as many businesses, state institutions, schools and universities were forced to work in the virtual environment. It has been planned that the results of survey will be used for research purposes leading to conclusions and recommendations to be used for policy documents to promote the digital transformation, as well as for dissemination objectives of the DigiBEST project.

In total, **51 persons completed the DigiBEST online survey** in Latvia, who provided answers to all questions that meets the target of survey to have at least 50 responses. The survey was conducted fully online. There were 86 persons who started filling in the survey, but 35 answered just the first part of questions and then dropped out for unknown reasons or who didn't correspond to survey criteria with respect to size or specialization of the company. In total, 439 persons viewed the survey. The completion rate is 59.3% and the average time to complete the survey was 11 minutes.
Most of respondents of survey or 82% were micro and small enterprises with up to 10 employees and turnover of 76% enterprises doesn't exceed EUR 100 000. Enterprises participating in the survey are from a wide spectrum of economic sectors, except the ICT sector, which hasn't been included in the target group of this survey (see figure 3). The two largest groups represent the services sector and the tourism, entertainment and hospitality sector. Participating enterprises are from all regions of Latvia with nearly half of enterprises coming from the Riga region, which is the most economically advanced region of Latvia. However, other 4 regions are represented as well by Zemgale region (22%), Kurzeme region (14%), Latgale region (11%), and Vidzeme region (1%).

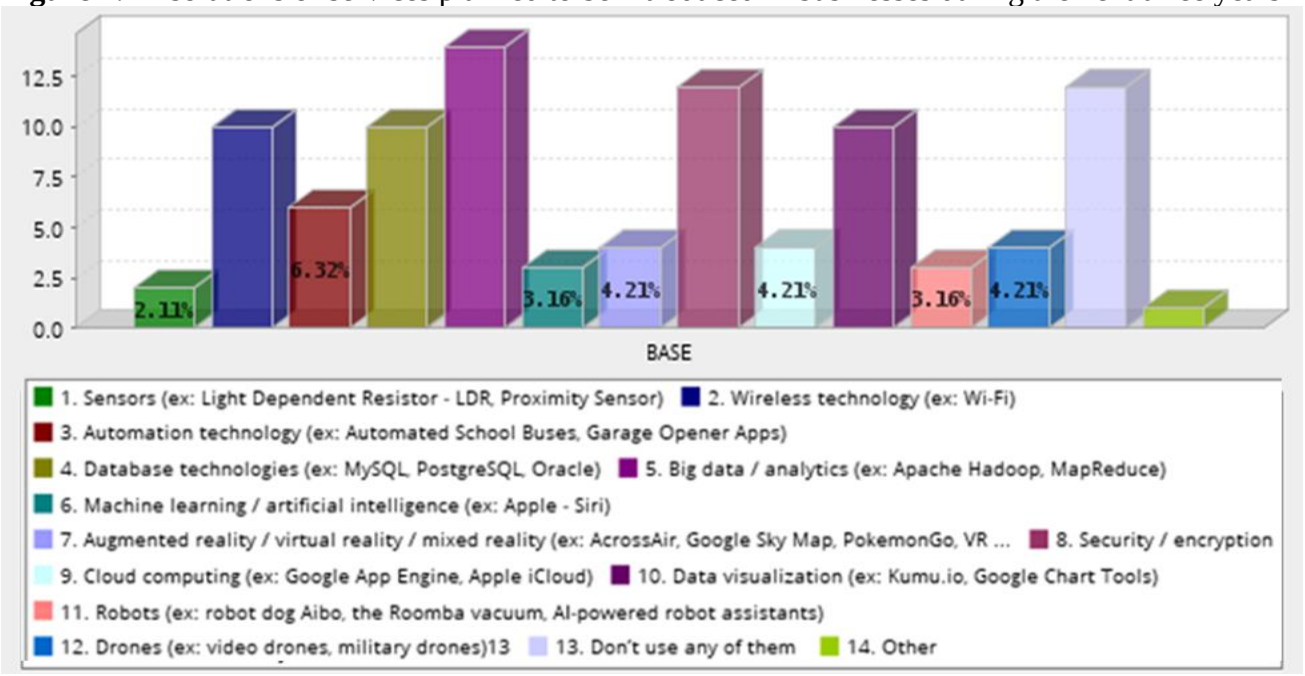
Figure 3. Sectors of economy represented by respondents.

[56] https://www.varam.gov.lv/lv/jaunums/mazo-un-videjo-uznemumu-problemas-un-vajadzibas-digitalas-transformacijas-procesa



In overall, the Latvian SMEs and microenterprises acknowledge the importance of digitalization and use digital tools & solutions quite actively. Most of enterprises are planning to introduce new digital technologies, solutions or services over the next three years (see figure 4). However, those enterprises, which are evaluated as having average or above the average digitalization levels would need an additional support to improve their digitalization development.

Figure 4. IT solutions or services planned to be introduced in businesses during the next three years



The survey has a particular influence of the Covid19 pandemic crisis which promoted the use of digital tools and solutions as many businesses, state institutions, schools and universities worked remotely. Almost all enterprises, except one, consider digitalization beneficial for businesses by the means of new clients, increased turnover and profits, increased recognition for their businesses, as well as improved experience of their customers. The four most desired digital technologies enterprises

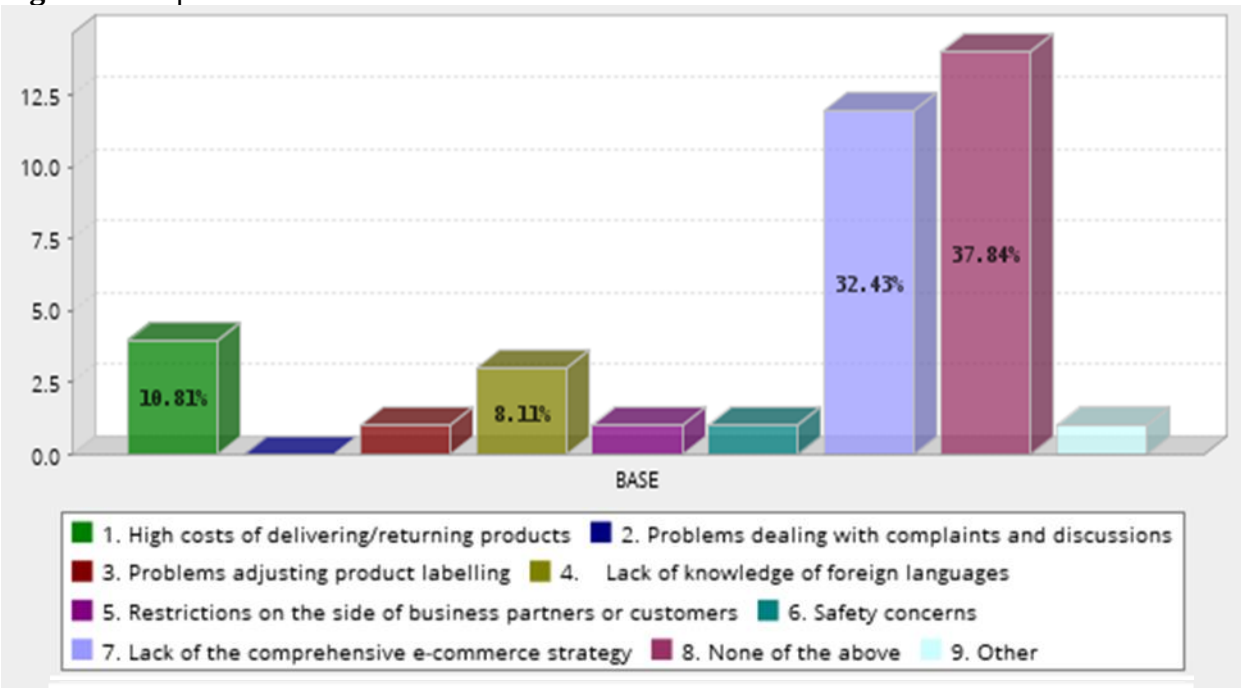
are interested to introduce are databases technologies, big data or analytics, security scripting and wireless technologies.

This study reveals that enterprises face a major problem on the strategic level taking into account that almost two thirds (71%) of enterprises don't have any corporate digitalization strategy, nobody has any cyber-security strategy and only 61% use available digital security solutions. Which signals about problems on the management, strategy and planning levels of enterprises. This could become a real threat for businesses in a near future. Therefore, multiple strategy domains need to be considered under use: digitalization, cyber-security and business innovation.

Latvian SMEs are quite familiar with digital technologies, as well as IT solutions and services, and benefits of social networks, which are being used by enterprises. Still, the use of e-commerce services is significantly lagging behind and reasons for that were only partly discovered by the survey (see figure 5). Also, almost one fifth of enterprises choose not to use public services' portals or free public electronic tools.

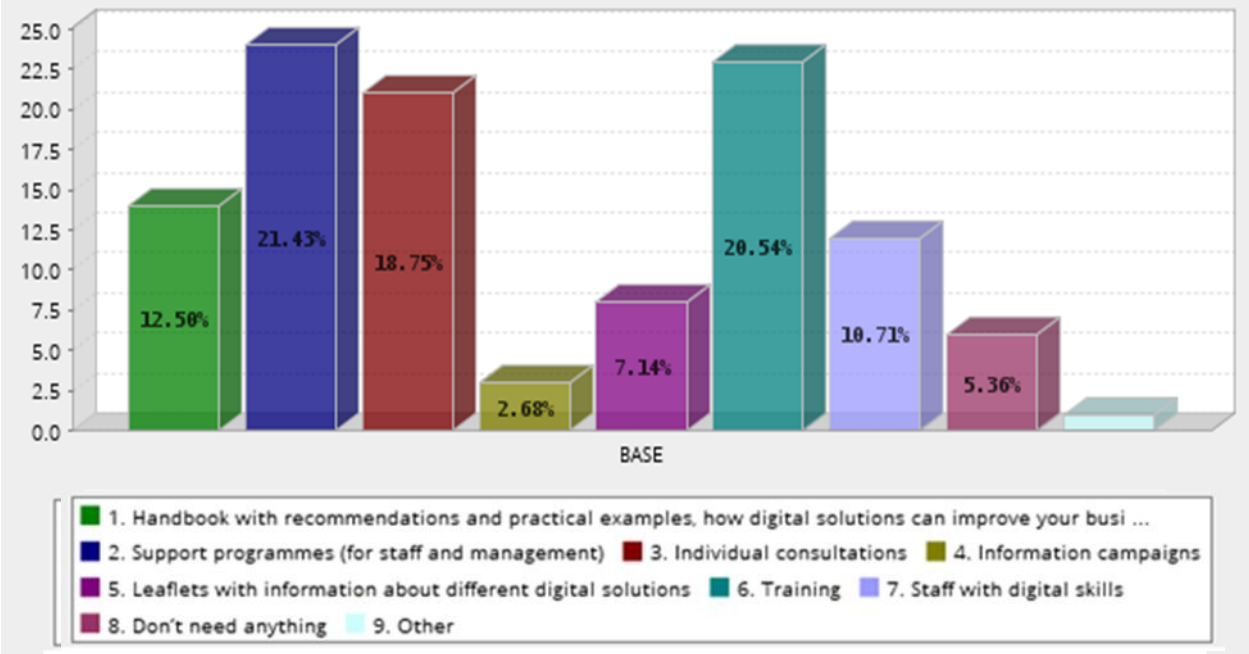
The main identified reasons of non-use are: unawareness about digital technologies, IT solutions and services, digital security solutions, as well as their usefulness and benefits; lack of information, knowledge and skills; lack of funding; shortage of time; low priority with respect to digitalization or digital security issues; policy of enterprise; lack of digitalization strategy and overall e-commerce strategy.

Figure 5. Purposes of the non-use of e-commerce



Additional support, information, as well as individual couching is important for most of enterprises (see figure 6) and particularly for those enterprises, which are evaluated as having average or below average digitalization level, as well as for those which still think that the digitalization isn't needed for their businesses, because it is too complicated or they don't have enough information about digitalization, or their employees don't need digital skills at all.

Figure 6. Measures considered important for the digitalization of enterprises



Given the above-mentioned, in order to promote digitalisation and sustainability of Latvia SMEs and microenterprises, it is important to work with their managers to inform and convince them about advantages and benefits of digitalization. Focusing on strategic approaches for introducing digitalization and cyber-security strategies in enterprises could provide them with necessary background for future growth and sustainability as there has never been a more important time for SMEs to have these strategies in place.

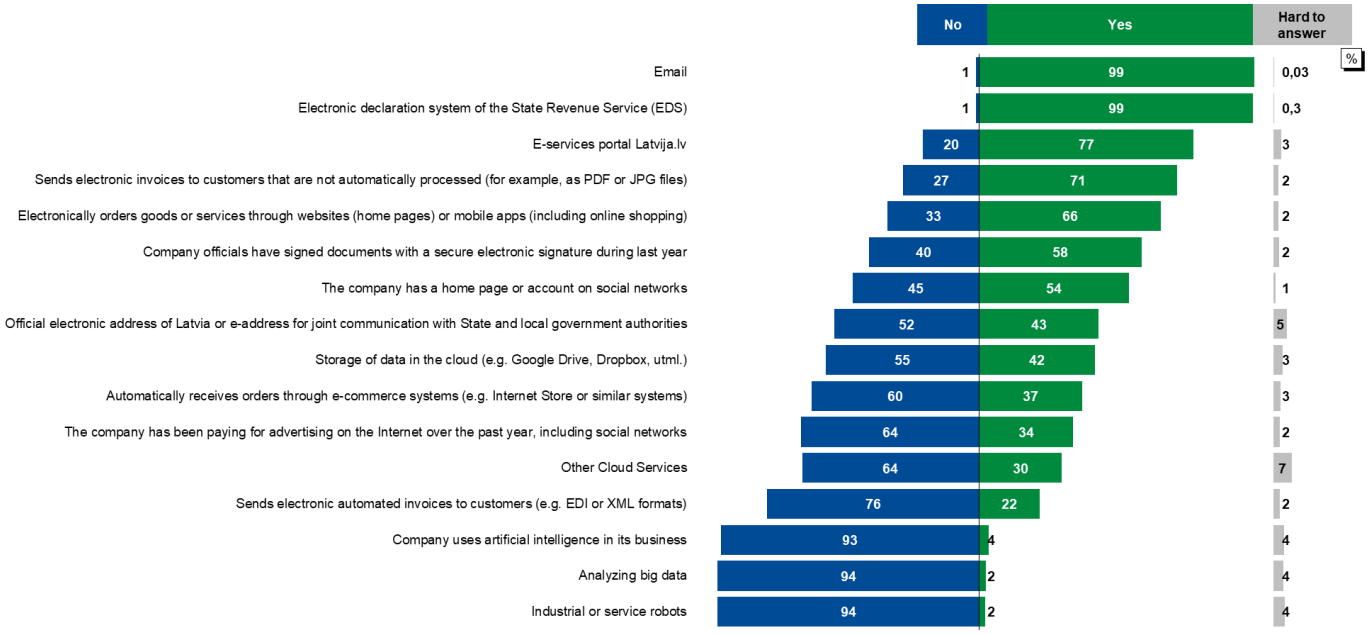
According to the results of survey, the Government of Latvia should help to promote the digital transformation of enterprises by creating and providing support programs for management and employees (focusing on strategic issues with relation to management of enterprises); training programs to develop digital skills, as well as individual consultations. Other possible ways of assistance could be creating a handbook with recommendations with practical examples, how the digitalization can improve businesses and/or brochures with information about different digital solutions.

At the end of 2020 (November-December) second round of the Survey of Latvian entrepreneurs on the use of digital technologies in businesses[57] had been launched with 715 respondents (entrepreneurs) participation level.

The survey data show (see figure 7) that almost all entrepreneurs use e-mail (99%) and the State Revenue Service Electronic Declaration System (99%). Most entrepreneurs also use: e-services on the portal Latvija.lv (77%); sends electronic invoices to customers, which cannot be processed automatically (71%); place orders for goods or services electronically via websites or mobile applications (66%). Also, the majority of entrepreneurs indicate that company officials have signed documents with a secure electronic signature during the last year (58%), as well as the fact that the company has a website or an account on social networks (54%).

[57] https://www.varam.gov.lv/lv/petijumi-e-parvaldes-joma

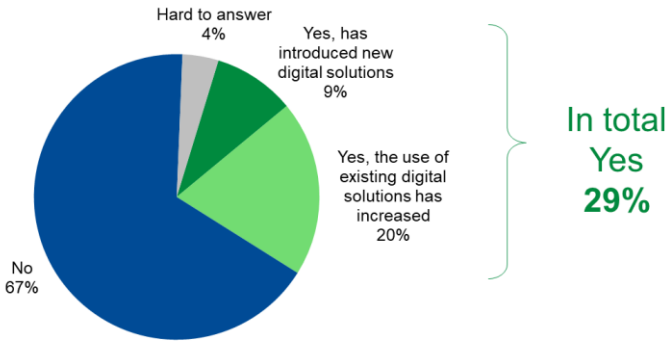
Figure 7. Digital technologies and capabilities used by the company



The main reasons (1) why **entrepreneurs do not send electronic invoices** to their customers is that there is no need to do so - all income comes only through the cash register (46%); **(2)** why entrepreneurs **have not implemented a system to receive orders automatically** (for example, an online store or similar system) - it is not useful in relation to the specifics of the company's operation (78%); **(3)** why entrepreneurs **do not store data in the cloud** is that there is no such need, it does not seem useful (74%); **(4)** why entrepreneurs **do not have a website or an account on social networks** - there is no need, perform well without it (82%); **(5)** why company officials have **not signed documents with an e-signature** in the last year is there is no such necessity, operate well without it (77%).

Approximately ⅔ of the survey participants, entrepreneurs (67%) state that as a result of the Covid-19 pandemic, their company has not introduced new digital solutions or increased the use of existing digital solutions in its business (see figure 8). However, a total of 29% of the surveyed entrepreneurs have done so (20% have increased the use of existing digital solutions, 9% have introduced new digital solutions). The majority of surveyed entrepreneurs (71%) indicate that their company does not plan to introduce any new digital solutions in their business due to the Covid-19 pandemic, however, 17% of entrepreneurs plan to do so.

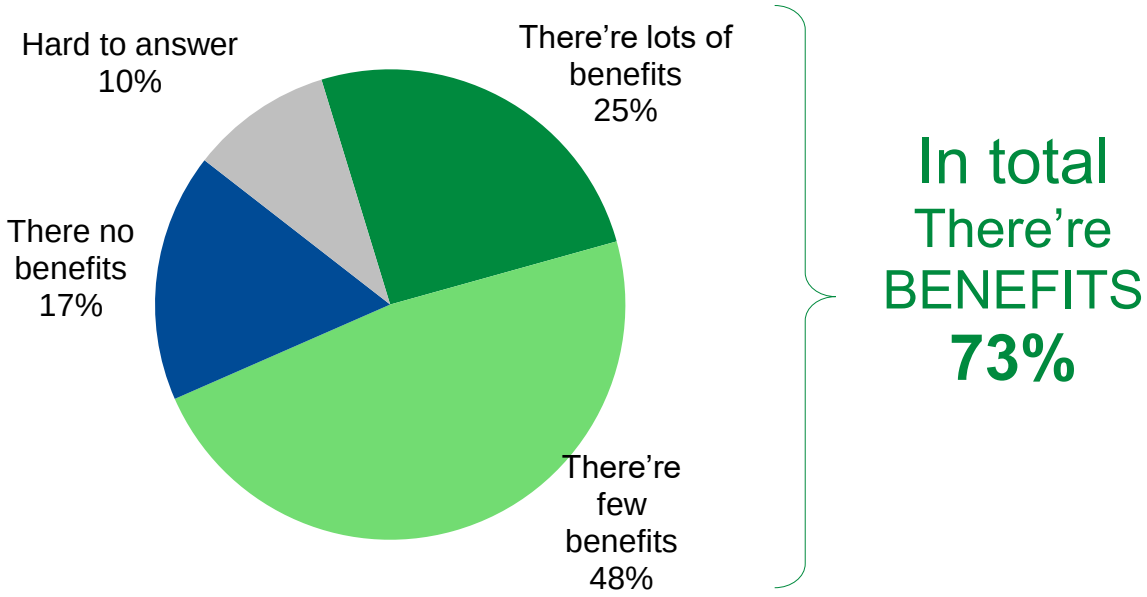
Figure 8. The influence of the Covid-19 pandemic on the company’s uptake of new digital solutions



About half of all entrepreneurs (54%) rate the knowledge and skills of their employees in the use of various digital technologies as generally good (46% good, 8% excellent). 9% of entrepreneurs rate the knowledge of their employees on these issues as generally weak (8% weak, 1% very weak). ⅓ Entrepreneur indicates that the knowledge of employees is at average level (33%).

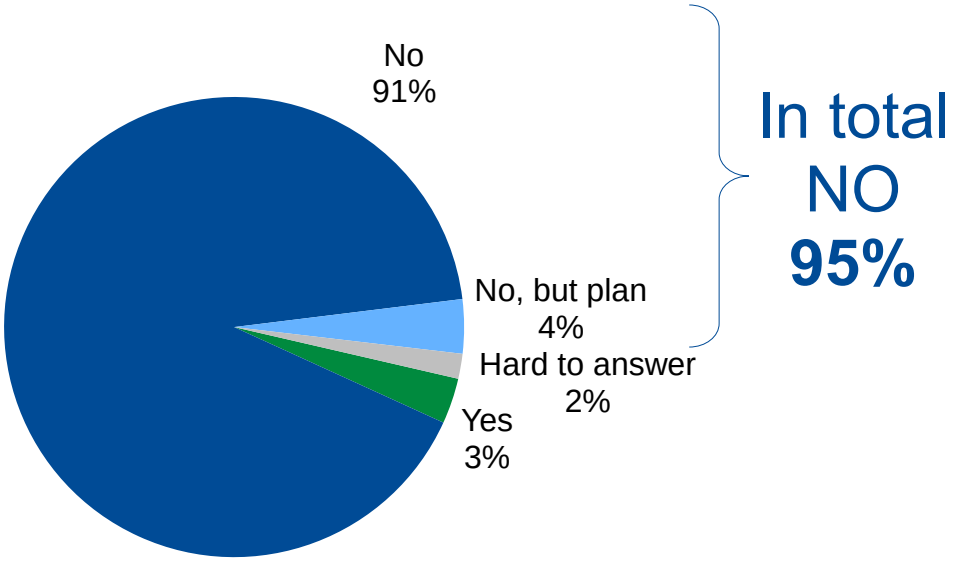
The majority of surveyed entrepreneurs (73%) generally see benefits for their company from the use of various IT and digital technologies (48% see small benefits, 25% - very large benefits). 17% of respondents do not see the benefits (see figure 9).

Figure 9. Benefits for a company from the use of various digital technologies



As per figure 10 (see below), the vast majority of surveyed entrepreneurs (95%) have not used any of the support programs offered by the state for the implementation of digital solutions in the company or for training employees in the use of IT technologies (4% - do not, but plan to use, 91% - have not used).

Figure 10. Has the company used any of the support programmes proposed by the State to implement digital solutions within the company



The main reasons why entrepreneurs have not used such support are that there is no need for it, it does not seem useful (54%) and there is no information about these programs (43%).

9. Conclusions and recommendations

Planning digital transformation processes, it is crucial to take into account the impacts and needs that accelerate business digitalization. Covid-19 creates a new level of core business, where remote and digital are becoming the primary form of core business operations in many industries.

Currently, many institutions (UR, VID, LIAA, supervisory authorities of various sectors, etc.) provide services addressed to entrepreneurs, but they are fragmented, allocation process is organized from the institution's point of view, the distribution of services is not coordinated / correlated between institutions, as a result unnecessary burdens and barriers for businesses are still in place, the efficiency of the service delivery process is suboptimal. Thus, in order to ensure further improvement of the business environment, make state support for entrepreneurship more effective and targeted, as well

as ensure the competitiveness of the Latvian economy in general, it is necessary to improve the provision of business-related services.

The successful way to achieve a faster and sustainable digitisation of businesses is to strengthen companies' capacity in change management and digital transformation by educating them on the benefits of digitization and public support available for SMEs. Addressing the low digital skills of the workforce is one of the key aspects to enable the uptake of digital technologies. Full digitization of government processes would also have a positive motivating effect on the digitalisation of companies and processes as well as impact on state economic growth.

The integration of digital technologies and services into business requires a digital transformation strategy for business leaders and employees to motivate the acquisition of skills and the benefits of digital transformation. At the same time, it is essential to provide support for the use and integration of technology in business processes and public services as well as to strengthen the capacity to create smart services for sustainable economic growth, social welfare and personal development.

Key elements for promoting the digital transformation of business/entrepreneurship include raising awareness of the integration of ICT and the need for the use of services in business, establishing and implementing digital skills training programmes, defining business experience and needs, promoting the dynamics of business change processes, cultural and managerial shift in the workforce, ensuring and integrating digital technologies. It is also necessary to create measures to support research and development and the introduction of new innovative products and services as well as encourage private investment in research and development.

Summarizing the above mentioned in the processes of improving the digital transformation of business there are identified the following main problems:

1. the Latvian business environment in general is characterized by low productivity. Lack of motivation to invest in productivity and management capacity;
2. low use of digital technologies in SMEs both in support processes and sales (including e-commerce);
3. lack of skills (digital skills, business and management). Entrepreneurs, especially SME’s, do not have sufficient expertise in the processes and technological opportunities offered by digitalisation. Lack of digital skills (both basic and above basic). There are stereotypes that digitization solutions are expensive, difficult to implement and insecure;
4. low share of private sector (business) investment in R&D;
5. business-related services (including business support) are fragmented, insufficiently customer-oriented and suboptimal from the point of view of the efficiency of their allocation.

To address the low level of digital integration, it is necessary to:

1. strengthen existing and create new support measures for the acquisition of basic digital skills (and above the level of basic skills, depending on the business specifics and requirements -

1.1. training programmes tailored to the needs of entrepreneurs/companies (the choice of training provider is made by the entrepreneur/company);
1.2. include decision-makers (managers and owners) in the target group of training programmes;
1.3. avoid creating abstract and general training programmes, but establish concrete for the needs of specific sectors and professions;
1.4. develop short educational tutorials about business actual topic and/or solution;
1.5. mentors' services and individual consultations are crucial for developing digital skills. For example, a technology expert who provides advisory support on the implementation of digital solutions and conducts an analysis of the processes of a given company to promote the digitization of the company's processes.

2. to enable the digitization of companies that otherwise lack capacity for it, develop support programmes for the uptake of digital technologies in various business processes, help to create digitization strategies for enterprises -
   2.1. introduce digital road map for businesses (specific to each field), a digital guide with recommendations and practical examples of how you can improve your business processes using information and communication technologies. Such a manual should be accompanied by support programmes (funding) and mentoring services, which as an independent expert from the sidelines, would help to evaluate processes and make proposals for the digitisation of business processes;
   2.2. reduce administrative burden for participation in EU funding projects;
   2.3. establish European Digital Innovation Hubs as a single centre, providing support to entrepreneurs (single point of contact) in relation to digital issues, to develop digital skills, training programmes and mentoring, including creation of a database on learning opportunities.
3. in order to increase the efficiency of the private and public sector, it is necessary to develop mutual cooperation between the state, local governments (Planning Regions), businesses and non-governmental organizations and to coordinate the establishment and functioning of the innovation ecosystem. In 2020, the national selection process for the European Digital Innovation Hubs Program has been implemented, within which Latvia will support the establishment of 1 - 3 European Digital Innovation Hubs within the Digital Europe Program with assigned tasks to promote digital transformation of the economy (Artificial Intelligence, High Performance Computing and Cyber Security). In order to promote the involvement of local governments in the implementation of the digital transformation policy action plan, to strengthen more active cooperation with regional business centres, to provide more support to the activities of planning regions that have access to the target audience (SME databases), the negotiations has been initiated by the Ministry of Economics and IT Cluster on the role of business centres in the Planning Regions as partners in communication with entrepreneurs, in awareness raising, information sharing and consultation.
4. in order to promote opportunities for the private sector to create and develop new, innovative ICT solutions, the publication of data held by public administration, creation of data economy and ecosystem, transition to open solutions, improvement of information exchange between

state and entrepreneurs should be promoted, enabling entrepreneurs to use state infrastructure as platform for further integration and development of solutions.

5. fully digitize key economic processes by targeting digital by default and digital-only access (e.g., tax administration, invoicing, bill of lading, receipts, etc., including cross-border).
6. create and maintain a single portal/platform for publishing and regularly updating information to entrepreneurs, such as training, support for public/EU funding, services, mentors/consultants, etc. To find a solution to integrate existing portals into a single platform instead of creating new ones.
7. raise awareness and increase motivation -
   7.1. proactive work with entrepreneurs, informing about the importance of digital transformation and corporate (individual) benefits from the deployment/use of digital solutions (case studies);
   7.2. communication campaigns to change the attitude of entrepreneurs, to stimulate the maximum use of different technology opportunities (security, e-commerce, customer service tools);
   7.3. ensure SMEs implement effective cybersecurity solutions in the very beginning on the way of their digital transition, help to learn how to comply with all the requirements of cybersecurity & digital protection.

Given that in Latvia there is the majority of micro, small and medium-sized enterprises (MMU/SMEs), it is necessary to stimulate particularly SME's to use new technologies and innovative business methods, thereby implementing digital transformation in companies and promoting their competitiveness. Moreover, measures are needed to help assess, understand and integrate the benefits of using existing digital tools and services to improve business quality and increase work efficiency. Business digitization policies need to be designed to suit businesses with different levels of digital skills / maturity. It is necessary to create various offer packages with specific activities that are suitable for the level of development of the entrepreneur's digitalization, promoting purposeful digital growth of the company.

Entrepreneurs need a corporate digitization strategy (roadmap) that includes the different levels and resources of the business organization, the planned activities and guidelines for their implementation. For this reason, starting from 2021, a virtual digital literacy test tool (digital maturity test - described in Chapter 7) will become available to Latvian entrepreneurs, which will further enable entrepreneurs to receive an assessment of the trends and opportunities of digital transformation in the industry they represent. The digital maturity test of companies will facilitate the implementation of digitization processes in companies, raising the level of awareness, existing business optimization, inter alia equipment renewal (i.e., automation and robotization), operational costs reduction or increase in productivity.

Evaluating the reasons that determine relatively low indicators in digital technology and service integration of Latvian entrepreneurs (Chapter 8), it has been found that they are affected by lack of understanding and motivation about the need and benefits of digital solutions, emotional barriers in use of ICT tools, as well as irregular or fragmented state support for digital business transformation.

Due to the above-mentioned stereotypes and insufficient skills acquisition, a situation has arisen in Latvia where, although the state regularly develops and offers several e-services to entrepreneurs, it has not significantly affected the digitization and growth of core business processes in e-commerce.

Probably one of the main reason of low level of technology use by SMEs and integration in businesses is that this group of entrepreneurs are facing several interrelated challenges in digital transformation, i.e. not only lack of financial resources, but also the loss of revenue for the time spent in investigating new solutions. SME managers may also lack the time to search and organise learning opportunities, as well as insufficient flexibility in schedule and location of the trainings increases the costs of having the opportunity to take participation. Additionally, the content of trainings does not match the needs of companies and their employees very often. This results in a smaller capacity of SMEs to benefit from developing skills and limits their readiness to successfully initiate digital transitions.

Addressing the challenges of digital transformation requires a comprehensive approach, including awareness campaigns on benefits of ICT integration and the use of digital services in business, developing and implementing digital skills curricula, defining necessary skills and optimisation/improvement requirements of Latvian companies (especially SMEs), supervising business change processes, providing an adequate workforce and digital technology integration support.

In regard to EC new initiative (RRF) mentioned in section 6.2., where support for SMEs is the key topic, and national plan for enforcing related measures, mainly addressing SMEs needs, in cooperation with DigiBEST Latvian stakeholders group the following quotes on digital transformation requirements and inconsistencies in prepared proposals of local public authorities has been captured for the further examination upon next project activities (for example, Peer Review, Business Digital Transformation Roadmap and Action Plan):

1. **Inappropriate availability of financial support for digital transformation** -
   1.1. funding is not properly balanced between investments to public and private sector;
   1.2. insufficient funding of higher-level digital skills development programmes for specific sectors and professions;
   1.3. lack of availability of public data in a free form in all sectors (big data availability and analytics);
   1.4. improving the digital skills of the employees at the request of the company.

2. **Insufficient funding and support for the digitalisation of the education system** -
   2.1. development of basic infrastructure (connectivity and connections enhancement).

3. **Suggested improvements:**
   3.1. **digital transition** -
      3.1.1. support for entrepreneurial activities - digital intermediate (DI) processes, research and development, innovation, export capacity
      3.1.2. support for entrepreneurs to purchase / replace technologies

3.1.3. support for the development of cloud and shared services
3.1.4. support for the development of green and smart skills needed by companies
3.1.5. support for high-level digital skills development programs for specific sectors / professions
3.1.6. ensure maturing of digital skills of company's employees upon the request of the company (the training provider is chosen by the company)
3.1.7. ensure equal conditions for digital transformation trainings organized by public and private institutions (training provider is chosen by the company)

3.2. **business environment** -
3.2.1. support for the digital transformation of enterprises, the acquisition / replacement of technology and the development of skills tailored to the specific demands of entrepreneurs
3.2.2. improve the cyber resilience of key industries and companies
3.2.3. improve the development and implementation of digital technologies and secure connectivity (5G, optical networks, last mile).

In response to above mentioned challenges SMEs face in digital transformation and in order to enable digital culture among SMEs and minimize their sociological obstacles there are several good practices selected as potential for transfer to Latvia within previous project activities of policy learning process and partners experience exchange that can help to design policy at different capacity of entrepreneurs - (1) *"Digital Advisors" programme (Granada, Spain) that promotes digital transformation of SMEs through individualized advice by specialized agents (digital advisors); (2) Guadalinfo - a social network of inhabitants in Andalusia that offers a free accessible public space in the internet which aims to generate projects and initiatives and stimulate the transformation of local areas; (3) Portugal Industry Program 4.0 intended to create good conditions for the development of SMEs in the new model of the Digital Economy* (annex 1).

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Annex 1

1. Author contact information	
[Technical: Contact information comes from your community profile. You can edit it by visiting your user dashboard] Ideally, the owner of the good practice should fill in the form. Indeed, if you submit a good practice, your personal and organisational profile in the Interreg Europe community will be linked to it.	
Name	***Ignacio Rosales Zábal***
Email	*nachorosales@dipgra.es*
Telephone	*+34 958 804 950*
Your organisation	
Country	*Spain*
Region	*Andalucía*
City	*Granada*

2. Organisation in charge of the good practice	
[If your organisation is not the one in charge of the good practice, you can indicate the relevant organisation in this section of the form. But your contact details will still be linked to the submitted good practice.]	
Is your organisation the main institution in charge of this good practice?*	*No*

3. Good practice general information	
Title of the practice	***"Digital Advisors" programme***
Does this practice come from an Interreg Europe Project	*No*

4. Detailed description	
Short summary of the practice	*Promotion of the digital transformation of SMEs through individualized advice by specialized agents (digital advisors).*
Detailed information on the practice	- *What is the problem addressed and the context which triggered the introduction of the practice?* *Spain has been successful in tackling the recession, particularly regarding the development of the digitisation of the industry. Looking into Spain's digitisation development of the last years (2016-2018), there has been a constant improvement and Spain has surpassed the EU average. In particular, Spain has advanced in terms of digital public services and e-government and the integration of digital technology. However, one of the biggest challenges remains in reaching SMEs and support their digitisation development.* - *How does the practice reach its objectives and how it is implemented?* *Digital Advisors programme is aimed at promoting the digital transformation of Spanish SMEs through individualized advice by specialized agents. This service is focusing on the realization of a Digitalization Plan for the incorporation of ICT in its processes (business management, relationship with third parties, electronic commerce, digitalization of services and solutions).* *The program includes a diagnosis of the state of digitalization of SMEs and an action plan for its digital transformation.* - *Who are the main stakeholders and beneficiaries of the practice?*

	On the one hand, beneficiaries are SMEs which can receive a grant up to 5,000 EUR per SME. And, on the other hand, beneficiaries are digital advisors, who have to register at the database of programme to provide this individualized advice.
Resources needed	*The budget for this programme is EUR 5 million, and is financed by the ERDF and co-financed by the Operational Program for Smart Growth.* *Red.es allocates up to 80% of the costs of specialized advisory services in the field of digital transformation, with a maximum amount of 5,000 EUR per SME. The SMEs must co-finance at least the remaining 20%.*
Timescale (start/end date)	*November 2017 – ongoing*
Evidence of success (results achieved)	*267 Spanish SMEs are presently participating in the programme (133 are specifically from Andalusia). These SMEs are receiving financial support of up to 5.000 EUR for the contracting of advisory services in the digitalization of their business.* *Moreover, there are 79 enterprises registered as Digital Advisors.* *The Digital Economy and Society Index (elaborated by the European Commission) for 2018 report highlights the work carried out by the Red.es with programs such as Digital Advisors.*
Challenges encountered (optional)	
Potential for learning or transfer	*The Spanish government (through the public entity RED.ES) launched a grant programme to promote the Digital Transformation of SME. This good practice is easily transferable to any region or EU member state. The entity responsible of the programme, through a general invitation, prepares a list of providers of digital advice services: Registry of Advisors. For the incorporation to this Registry of Advisors, an application must be submitted.* *This programme is an efficient way to transfer funds to SMEs to initiate their digital transformation process. So, SMEs can obtain a specialized and personalized advice service that is specified in the realization of a Digitalization Plan for the incorporation of ICTs in SME processes.* *Any SME which wants to participate in the program must send all the required documentation in the call.*
Further information	*https://www.red.es/redes/es/que-hacemos/transformaci%C3%B3n-digital-en-pymes/asesores-digitales*
Keywords related to your practice	*Digital advisors, asesores digitales, red.es,* *Select existing keywords or add*
Upload image	Transformación digital en PYMES Asesores Digitales *[2000px wide recommended]*
Expert opinion	*[1500 characters]* ***[to be filled in by the Policy Learning Platforms experts]***

1. Author contact information *[Technical: Contact information comes from your community profile. You can edit it by visiting your user dashboard]* *Ideally, the owner of the good practice should fill in the form. Indeed, if you submit a good practice, your personal and organisational profile in the Interreg Europe community will be linked to it.*	
Name	***Ignacio Rosales Zábal***
Email	*nachorosales@dipgra.es*
Telephone	*+34 958 804 950*
Your organisation	

Country	*Spain*
Region	*Andalucía*
City	*Granada*

2. **Organisation in charge of the good practice** *[If your organisation is not the one in charge of the good practice, you can indicate the relevant organisation in this section of the form. But your contact details will still be linked to the submitted good practice.]*	
Is your organisation the main institution in charge of this good practice?*	*No*

3. Good practice general information	
Title of the practice	*Guadalinfo - a social network of inhabitants in Andalusia*
Does this practice come from an Interreg Europe Project	*No*

4. Detailed description	
Short summary of the practice	*Guadalinfo offers a free accessible public space in the internet which aims to generate projects and initiatives and stimulate the transformation of local areas*
Detailed information on the practice	- *What is the problem addressed and the context which triggered the introduction of the practice?* *Guadalinfo is aimed to close digital gap between urban and rural areas and to encourage full integration into the Knowledge Society.* - *How does the practice reach its objectives and how it is implemented?* *Guadalinfo shows the opportunities that the use of ICTs offers by carrying out activities for entrepreneurs, SMEs and the community in general.* *Some activities are dedicated to SMEs, which aim to develop entrepreneurial capacities and increase self-esteem as vital assets for adapting to change. The promotion of virtual entrepreneurial initiatives and support for start-ups aim to produce entrepreneurs capable to manage the continuity of their initiatives, while courses equip entrepreneurs with the skills they need to operate in the work place.* *Guadalinfo has also worked to increase the value of website creation by SMEs. The former can thus experience the benefits of trading online while the latter can raise their profile and value.* *Guadalinfo Centres have created a network for information, communication and learning to generate projects and initiatives among citizens and thereby stimulate the abilities to transform and improve the local areas.* - *Who are the main stakeholders and beneficiaries of the practice?* *Guadalinfo is aimed at different ages and groups to train digital skills, improve professional and entrepreneurial skills, promote the digital transformation of SMEs and employment options, access electronic administration, make optimal use and secure technology or generate social innovation projects. The offer of activities of the centres is adapted to different ages, circumstances and needs of its users.*
Resources needed	*The budget for Guadalinfo is about EUR 19,3 million. Guadalinfo has about 800 centres rooted in Andalusia with 800 Local Innovation Agents.*
Timescale (start/end date)	*2001 – ongoing*
Evidence of success (results achieved)	*Guadalinfo developed 70.000 activities in 2017, 90.000 in 2018 and 100.000 in 2019. About 10.000 entrepreneurs and 5.000 SMEs participated in one or more of activities related to digital transformation in 2019.* *Since its launching, more than 1 million users have registered to the platform.*

	The region has improved in IT literacy in the Guadalinfo towns, benefiting in particular people, entrepreneurs and SMEs in rural areas and those with traditionally more difficulties in accessing ICTs. 53% of the users, for example, are women.
Challenges encountered (optional)	*A particular obstacle during the implementation phase of Guadalinfo was the inherent geographical distance within the management structure. As such, it was necessary to establish a 'dispersed' organisational model and the tools to allow close collaboration among the actors.*
Potential for learning or transfer	*During the development years of the Guadalinfo project, the Government of Andalusia received numerous expressions of interest from the other Spanish regions and countries due to the high transferability of the project at national and international level. In particular, there has already been an exchange of experience with Bolivia, Brazil and Romania as well as various relationships which have been developed with the other Spanish Autonomous Communities.* *In terms of good practice for developing the Information Society, Andalusia's Ministry of Innovation particularly points out its choice to pursue a strategy based on free software as a way of combating the limitations caused by property software. The advances achieved in providing citizens with training resources, providing SMES tools for digital transformation and the development of a model encouraging cooperation between local bodies can be considered a point of reference for other initiatives with the same aims.*
Further information	*http://www.guadalinfo.es/home*
Keywords related to your practice	*Guadalinfo, tic andalucia, telecentres, information society,* *Select existing keywords or add*
Upload image	guadalinfo.es *[2000px wide recommended]*
Expert opinion	*[1500 characters]* ***[to be filled in by the Policy Learning Platforms experts]***

5. Author contact information

[Technical: Contact information comes from your community profile. You can edit it by visiting your user dashboard] Ideally, the owner of the good practice should fill in the form. Indeed, if you submit a good practice, your personal and organisational profile in the Interreg Europe community will be linked to it.

Name	***Comunidade Intermuncipal do Tâmega e Sousa***
Email	*geral@cimtamegaesousa.pt*
Telephone	*+351 255 718 340*
Your organisation	
Country	*Portugal*
Region	*Tâmega e Sousa*
City	*Penafiel*

6. Organisation in charge of the good practice

[If your organisation is not the one in charge of the good practice, you can indicate the relevant organisation in this section of the form. But your contact details will still be linked to the submitted good practice.]

Is your organisation the main institution in charge of this good practice?*	*No*

7. Good practice general information	
Title of the practice	*Programa Portugal Indústria 4.0 - Estratégia Nacional para a Digitalização da Economia (Portugal Industry Program 4.0)*
Does this practice come from an Interreg Europe Project	*No*

8. Detailed description	
Short summary of the practice	*It is a lever to reach the goal of convergence with the EU. Is intended to create good conditions for the development of SMEs in the new model of the Digital Economy.*
Detailed information on the practice	*Through the Industry 4.0 initiative, integrated in the National Strategy for the Digitization of the Economy, the Ministry of Economy and Digital Transition intends to generate favorable conditions for the development of national industry and services (SMEs) in the new paradigm of the Digital Economy, through a set of measures that are based on three axes of action:* *-Accelerate the adoption of i4.0 by the Portuguese business community* *Provide the business fabric with knowledge and information through the Capacitar i4.0 program, implemented in conjunction with the InCoDe.2030 initiative, of which IAPMEI is one of the driving agents, and promote a set of tools that facilitate business transformation.* *-Promote Portuguese technological suppliers as i4.0 players* *Capitalize on the scientific and technological ecosystem, creating a favorable context for the development of i4.0 startups that can present projects with an impact on the digitalization of the economy.* *-Making Portugal an attractive hub for investment in i4.0* *Communicate Portugal as a HUB for sharing experiences and know-how to attract resources, creating favorable conditions (legal and tax) for investment in Industry 4.0.* *The Industry 4.0 program is currently in Phase II, which includes a set of accelerating measures and recommendations based on three axes: Generalize, Empower and Assimilate. Having been developed based on the contribution of more than 50 entities, this Phase aims to be transformative in relation to Phase I, which was mainly demonstrative and mobilizing*
Resources needed	*Industry 4.0 program has a mobilization of up to 2.26 billion euros of incentives, through PT 2020, for the following instruments:* • *Vale i4.0 (has a global allocation of 12 M€ and will cover 1500 companies, each voucher having a unit value of 7,5k€)* • *Qualification of SME* • *Productive Innovation* • *"Research and Technological Development" Programs*
Timescale (start/end date)	*May 2017/ongoing*
Evidence of success (results achieved)	*95% of the 64 measures defined in the i4.0 program have already been implemented, covering more than 24 thousand companies and 550 thousand people. In the future, it is intended to train 200 thousand more workers and finance more than 350 transformational projects.* *With an inclusive approach, supported by the know-how of more than 50 public and private entities.*
Challenges encountered (optional)	*With an inclusive approach, supported by the know-how of more than 50 public and private entities.* *We can infer that Portugal has a good level of preparation than current competitiveness, revealing that the 4th Industrial Revolution is a clear opportunity to blur the typical barriers to the competitiveness of the country, such as the lack of scale of the internal market and peripheral location.*

Potential for learning or transfer	*The Industry 4.0 Program is a lever for achieving the objective of a decade of sustained convergence with the European Union, as part of the National Strategy for Horizon 2030.* *The progress of the industrial sector and SMEs in industry 4.0, is directly linked to economic growth. The convergence for the group of leading countries in the i4.0 context, may represent an additional GDP growth (in Portugal only) compared to the forecast of 1.8% / year, filling and exceeding the stipulated convergence objective.* *The context of i4.0 in Portugal is marked by the existence of three distinct groups of companies regarding the level and pace of assimilation of the i4.0 concepts, with companies leading the implementation of the i4.0 concepts, based on a vision of what it can represent for you, and in its own resources and skills, but also "midtier" and "laggard" companies that need support for progress in i4.0.*
Further information	*https://www.iapmei.pt/Paginas/Industria-4-0.aspx*
Keywords related to your practice	*Digitalization, industry 4.0, SME*
Upload image	
Expert opinion	*[1500 characters] [**to be filled in by the Policy Learning Platforms experts**]*