

MONITORING PROGRESS IN NATIONAL INITIATIVES ON DIGITISING INDUSTRY

Country report

Romania

July 2019



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Summary

Romania is part of the group of low-performers among EU Member States when it comes to digitalisation. On the Digital Economy and Society Index (DESI), Romania ranks 28th in 2018, the same rank as in 2017. This might be the result of some weaknesses in the national eco-system, such as mismatch between the education and market needs, bottom-up approach to digitalisation or high bureaucracy and lack of coordination at national level. Despite this, some positive outcomes can be noted: Romania achieves very good results in terms of homes subscribing to ultrafast broadband (2nd in the EU) and the ICT sector has seen a positive development over the last years (contributing to 6-7% of the country's GDP). Furthermore, there are some strong cluster organisations operating in digital-related activities which are very competitive and that have formed centres of excellence in some fields.

Romania has performed relatively well in economic terms over the last few years. In 2017, Romania reached its highest real Gross Domestic Product (GDP) growth rate, with 7.3%. The manufacturing added value in the economy (% of GDP) accounted for 19.6% in 2018. Moreover, medium high-tech and high-tech industries represented 37.9% of the manufacturing added value.

Overall, the digitalisation of the Romanian industry has occurred mostly at the initiative of the private sector, without coordinated initiatives that would help the industry in this context. Although a number of initiatives exist, these have either not been fully implemented or their impact is rather limited. Although the importance of speeding up digitalisation is acknowledged by the national government, this is not reflected in the measures or initiatives.

Romania does not have a national strategy that targets the digitalisation of the industry. While some programmes have been launched under Pillar 2 (cluster policy) and Pillar 5 (e.g. Coalitia Skills4IT, Start Industry 4.0), there are fewer concrete initiatives to improve the regulatory framework (Pillar 4). It is unclear, however, whether any regulatory or overall initiatives to digitalise the industry are planned or discussed. At least EUR 753 million have been invested in the Start industry 4.0 project while the budget for the other initiatives was not available. The framework of initiatives is completed by tax incentives for ICT companies and the Start-up Nation programme to support start-ups.

The Digital Agenda for Romania is set to show its effects by 2020. Nonetheless, the implementation status is still unclear and no indication of future direction (post 2020) has been formally provided by the Romanian government.

Table 1 presents an overview of the main initiatives identified, that will be further detailed in this report. Table 2 presents a short SWOT analysis of Romania on digitalisation.

Table 1 Overview of initiatives

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
Digital Agenda for Romania 2020	2015	General strategy	General strategy	All	eGovernment, Interoperability, Cyber Security, Cloud Computing, Open Data, Big Data and Social Media, ICT in education, health, culture and eInclusion, eCommerce, Broadband and Digital Services Infrastructure	All	The Digital Agenda for Romania 2020 envisages an overall funding of EUR 3,963.8 million stemming from different sources: <ul style="list-style-type: none"> • Structural funds • Community sources (such as Horizon2020, CEF) • International Financial Institutions (e.g. EBRD, USTDA) • National and local budgets
Cluster Policy in Romania	2009	Pillars 2&3	Cluster policy	All	All	All	N/A
Romania's strategy for cybersecurity	2013	Pillar 4	General strategy for cybersecurity	All	All	All	N/A
CERT-RO (Romanian National Computer Security Incident Response Team)	2011	Pillar 4	Centre for response to cyber incidents	All	All	All	N/A
Coalitia Skills4IT	2013	Pillar 5	Open platform	ICT	N/A	N/A	N/A

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
Start Industry 4.0	2018	Pillar 5	Training	Industry	All	All	Overall budget: 3,527,897.33 RON (EUR 753,725.7) of which 95% financed through ESF
Fiscal incentives for ICT companies	2004	Support mechanism	Fiscal incentives	ICT	All	All	N/A
Start-up nation	2017	Support mechanism	Grants	All	All	Start-ups	National government and European funds

Table 2 SWOT of Romania on digitalisation

<p>Strengths:</p> <ul style="list-style-type: none"> • Strong ICT sector (contributes to 6-7% of the country's GDP) and skilled workforce in the sector • Strong cluster organisations that are competitive nationally and internationally and that have formed centres of excellence in some areas (e.g. ICT) 	<p>Weaknesses:</p> <ul style="list-style-type: none"> • Mismatch between the education and the market needs • Digitalisation of the industry has been bottom-up rather than top-down • Weak results in relation to the digitalisation (ranks 28th in the DESI index) and performs below EU average for many of the dimensions • High bureaucracy and lack of coordination at governmental level
<p>Opportunities:</p> <ul style="list-style-type: none"> • European and international developments regarding digitalisation of Industry • Adherence of industry players to existing and future EU cooperation schemes • Emergence of new value chains 	<p>Threats:</p> <ul style="list-style-type: none"> • The regulatory framework in Romania still needs to be adapted to the digital age. • Absence of a national strategy for digitalisation of the industry as well as slow implementation of the actions planned in the Digital Agenda for Romania • Delay in adapting to the digital economy • Failing to prepare people for the upcoming transformation of the labour market

1 General context

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

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

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

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

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

1.1 Economic context and status on digitisation

General economic context

Romania has performed relatively well in economic terms over the last few years. In 2017, Romania reached its highest real Gross Domestic Product (GDP) growth rate, with 7.3%. The GDP growth is significantly higher compared to previous years, 4.8% in 2016 and 3.9% in 2015. This economic growth started to decelerate in 2018 reaching 3.6% and it is forecasted to remain at the 2018 level until 2020.¹ As of 2018, the country's unemployment rate was 3.9% and the resident population has decreased in recent years, from 21.62 million in 2003 to 19.64 million in 2017.²

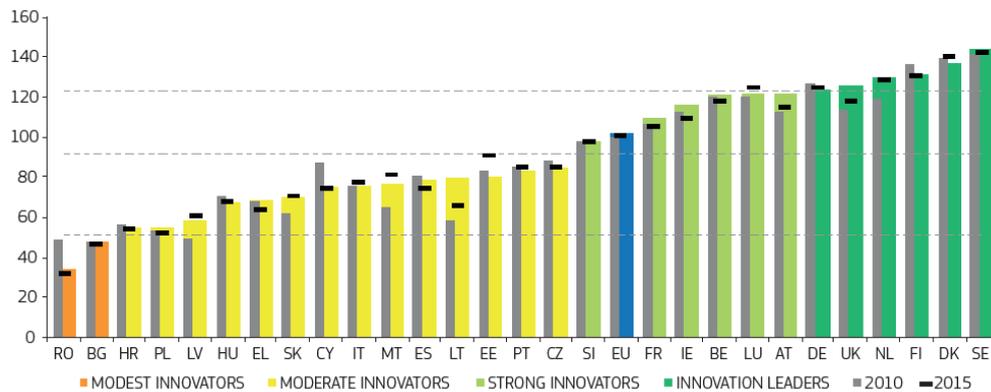
The GDP growth of the Romanian economy has been driven mainly by private consumption which has weakened recently due to high inflation, the recent public policies aimed at increasing disposable income and a negative contribution of net export to growth. Moreover, volatile food prices and uncertainty concerning government policies may have a negative impact on the business environment, slowing down investment in Romania.³

As of 2017, the share of economic sectors in the gross domestic product (GDP) in Romania was distributed as follows: services 56%, industry 30% and agriculture 4.4%. The manufacturing added value in the economy (% of GDP) accounted for 19.6% in 2018. Moreover, medium high-tech and high-tech industries represented 37.9% of the manufacturing added value.⁴

Status on digitisation

Romania is ranked as a modest innovator in the European Innovation Scoreboard, with a performance well below the EU average. Although the Romanian government has developed a digital agenda in 2015⁵, this does not relate specifically to the digitalisation of industry.

Figure 1: European Innovation Scoreboard - innovators

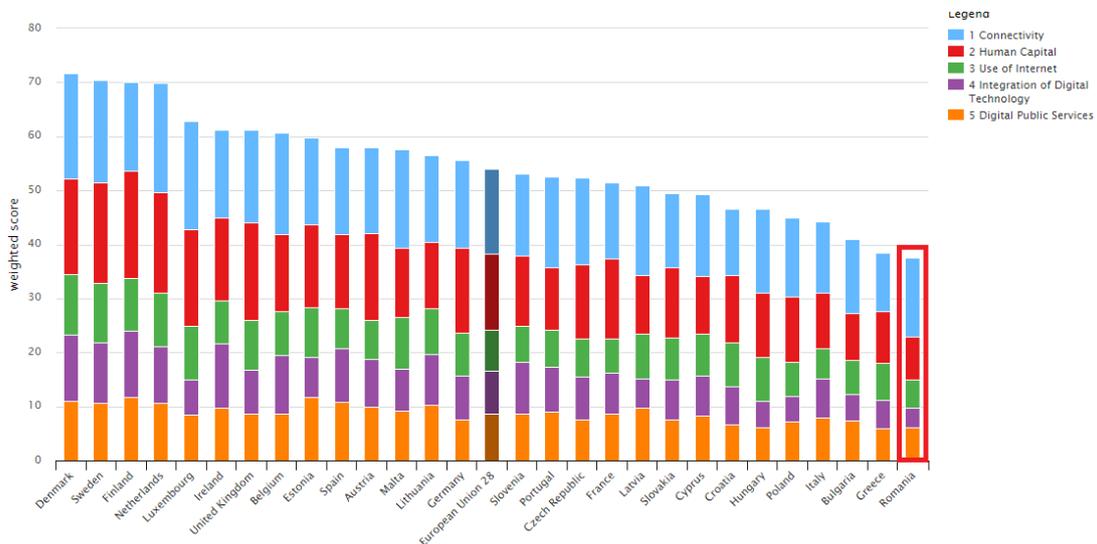


Source: European Commission (2017). European Innovation Scoreboard.

Romania has some competitive strengths which could help develop the Industry 4.0 in the country. The IT sector in Romania is very developed and the country has a highly skilled workforce in this sector.⁶ UiPath, a Romanian IT company, is one of the success stories in the sector and was listed in a top 100 digital champions in Europe developed by the Financial Times.⁷

According to the Digital Economy and Society Index (DESI), Romania ranks last among the EU28 countries (overall index). There are dimensions where Romania ranks slightly better, such as connectivity (22nd) and digital public services (26th).

Figure 2: Digital Economy and Society Index



Source: DESI 2018 Country report - Romania

The most recent Digital Transformation Scoreboard (2018) ranks Romania last among the Member States in terms of enabling conditions for digital transformation (e.g. e-leadership, digital

infrastructure and entrepreneurial culture). Similar results emerge from the analysis of the digital technology integration, where Romania ranks last. The technology integration index looks at various sub-dimensions to determine the level in each country, such as: SMEs selling online, enterprises that buy at least one cloud computing services, enterprises that use two or more social media, etc.

As regards Romania's readiness for future production, the assessment carried out by the World Economic Forum in 2018 scores Romania with 4.9 out of 10 for drivers of production and 6.6 out of 10 for the structure of production. A breakdown of drivers is provided in the figure below:

Figure 3: Romania's readiness for future production

Readiness Overall Assessment			
Drivers of Production			4.9
Driver	Weighting	Rank	Score /10
 Technology & Innovation	20%	67th	3.9
 Human Capital	20%	57th	4.9
 Global Trade & Investment	20%	58th	5.1
 Institutional Framework	20%	46th	5.5
 Sustainable Resources	5%	23rd	7.3
 Demand Environment	15%	57th	4.6
Structure of Production			6.6
Structure	Weighting	Rank	Score /10
 Complexity	60%	24th	7.3
 Scale	40%	19th	5.7

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

The table below presents general economic and digital indicators for Romania, which have been discussed above:

Table 3: General economic and digital indicators for Romania

Country	% GVA from industry	GDP Growth (%)	DESI position – and change	DESI sub-indicators Human Capital, Use of Internet, Integration of Digital Technology in 2018
Romania	26.7 (2017)	7.3 (2017)	28 th (2018), same place as in 2017	<ul style="list-style-type: none"> • Human Capital: 28th (no change compared to 2017) • Use of Internet Services: 28th (no change compared to 2017) • Integration of Digital Technology: 28th (no change compared to 2017)

1.2 National strategy on digitising industry

There is no overarching strategy in Romania designed specifically for the digitalisation of the industry. However, in the context of the Digital Agenda presented by the European Commission, the Romanian government launched a Digital Agenda for Romania 2020 in 2015.⁸

Table 4: Description of the national strategy/initiative

Name	Digital Agenda for Romania 2020
Type	Horizontal strategy
Starting date	2015
Objective	<p>The objectives set by the Romanian Digital Agenda are:</p> <ul style="list-style-type: none"> • Employment: 75% of people aged between 20 and 64 should be employed • R&D: 3% of EU GDP to be invested in R&D • Climate change and energy sustainability • Education: at least 40% of people aged between 30 and 34 to complete the third level of education • Combating Poverty and Social Exclusion: with at least 20 million less people in or at risk of poverty and social exclusion
Ministry/ministries in charge (website, contact person)	<p>Ministry of Communications and Information Society</p> <p>Website: https://www.comunicatii.gov.ro/agenda-digitala-pentru-romania-2020/</p>

Name	Digital Agenda for Romania 2020
Scope of the strategy/action plan	<p>Of the seven pillars that underlie the Digital Agenda for Europe 2020, Romania defined four areas for further action:</p> <ol style="list-style-type: none"> 1. Scope for action 1: eGovernment, Interoperability, Cyber Security, Cloud Computing, Open Data, Big Data and Social Media - increasing efficiency and reducing public sector costs in Romania by modernising the administration. 2. Scope for action 2: ICT in Education, Health, Culture and eInclusion - to tackle the social challenges through intervention at sectoral level and ensure that ICT investments will positively impact the context social. 3. Scope for action 3: eCommerce, Research, Development and Innovation in ICT - is based on the comparative advantages of regional Romania and supports the growth of the private sector. 4. Scope for action 4: Broadband and Digital Services Infrastructure - at the base of implementation the above areas of action and their related services, beyond the need to invest in state-of-the-art ICT equipment, is the development of broadband and service infrastructure digital.
Measures included in the strategy/action plan	<p>The concrete measures outlined in the Strategy should lead to:</p> <ul style="list-style-type: none"> • providing citizens and organisations with access to e-Government services; • improving access to the internet by increasing the coverage of high-speed broadband electronic communications networks; • increasing the use of the internet; • promoting e-commerce; • increasing the number of cross-border electronic public services; • enhancing digital content and developing ICT infrastructures in the fields of education, health and culture; • supporting the increase in added value generated by the ICT sector by supporting research, development and innovation in the field. <p>The Strategy also sets the following indicators for Romania in 2020:</p> <ul style="list-style-type: none"> • at least 35% of citizens use eGovernment systems; • at least 60% of citizens regularly use the internet; • at least 30% of citizens to make on-line purchases; • coverage of broadband communications networks (over 30 Mbps) of at least 80%.
Overall funding and distribution by volume and source of funding (public/private, EU/national)	<p>The Digital Agenda for Romania 2020 envisages an overall funding of EUR 3,963.8 million stemming from different sources:</p> <ul style="list-style-type: none"> • Structural funds • Community sources (such as Horizon2020, CEF) • International Financial Institutions (e.g. EBRD, USTDA) • National and local budgets

Impacts, challenges and perceptions

There is no information provided by the Government regarding the stage of implementation of the measures set out in the Digital Agenda for Romania 2020. A study carried out by PWC in 2018 looked at the implementation stage of the eGovernment measures set out in the Digital Agenda. The results show that of all the measures proposed, merely 25% have been addressed and are at an incipient phase. None of the measures set out in the Digital Agenda for this particular scope for action have been fully implemented.⁹

As of 2018, the Ministry of Economy launched an extensive document on the industrial policy in Romania. Among other areas, the document highlights the need for financial instruments directed specifically at the implementation of innovative concepts and technologies, such as Industry 4.0, 3D printing or Open Innovation. This comes also in a context in which the R&D investments are at a continued low level (0.48% of GDP in 2016, one of the lowest in the EU). In this view, the launch of a financial programme to increase the competitiveness is envisaged for 2018-2028.¹⁰

In the same year, the Ministry of Communications and Information Society launched the 5G Strategy for Romania.¹¹ The document acknowledges that 5G has so far been focused on consumer usage and highlights its potential impact on the industry. For Industry 4.0, 5G could provide a reliable communication platform for companies, personalised IoT solutions or advanced techniques for data-processing. Following this strategy, a set of actions are foreseen for 2019-2025.¹²

According to stakeholder feedback, innovation in Romania is driven by the private sector through bottom-up initiatives such as clusters. There is currently no concrete programme at government level for Industry 4.0 and it is promoted mainly by multinational companies operating in the country. The Coalition for Industry 4.0¹³ was launched in 2019 and will held its first working meeting with potential Coalition stakeholders on 8 May 2019. The Coalition is an informal and participative national advocacy structure promoting concrete measures facilitating and accelerating the digitalisation of Romanian industry and which involves industry leaders, academia, and innovation producers, modelled on similar initiatives in EU Member States.

Finally, Romania's smart specialisation strategy¹⁴ has as main priorities the following:

- New generation vehicles and ecological and energy-efficient technologies
- Development of innovative space and security applications
- Safe, accessible, nutritionally optimized food
- Service and process innovations for public sector improving the well-being
- Analysis, Management and Security of Big Data Future internet, software development
- Increasing end-use energy efficiency
- Services
- Education, Cultural and Creative industries

1.3 EU cooperation in the field of digitising industry initiatives

Romania cooperates in different initiatives on digitising industries or related:

- Smart Factory Hub within the Danube Transnational Programme
- Coordinated plan on artificial intelligence, as part of the Digitising European Industry Initiative
- European Blockchain Partnership (EBP)
- ECSEL Joint Undertaking - the Public-Private Partnership for Electronic Components and Systems.

2 Other policy support to digitising industry

2.1 Boosting innovation capacity

The table below presents the main initiative to boost innovation capacity (pillars 2 and 3 of the DEI).

Table 5 National initiative to boost innovation capacity

Name	Cluster Policy in Romania
Type	Cluster organisations
Starting date	2009
Objective	Cluster policy includes a mix of policies and strategies, such as innovation policy, regional policy, policies for entrepreneurship and SMEs, smart specialisation strategies, internationalisation, etc. Clusters are important drivers for innovation, industrial development, competitiveness and economic growth. The core objective of the clusters is to contribute to economic growth.
Relevant for Pillar 2 ¹⁵ or Pillar 3 ¹⁶ or both	Pillar 2
Short description	Romania has, as of 2018, 72 cluster organisations. Over half of the clusters (52) have been receiving ESCA certification since 2013. Cluster organisations in Romania have been represented since 2013 by the Romanian Cluster Association (CLUSTERO) ¹⁷ , which has created five regional cluster consortia, two sectoral networks. 25 universities are involved in the cluster organisations as well as of half of Romania's research and development institutes. Particularly successful are the clusters from the following industrial sectors: ICT, automotive, wood industries, textile, agro-food, key enabling technologies (KET), construction, etc.
Granting organisation	<ul style="list-style-type: none"> • Ministry of Economy through the Directorate of Industrial Policies • Romanian Cluster Association (CLUSTERO) • Regional Development Agencies
Participating organisations	Cluster organisations consisting of: <ul style="list-style-type: none"> • Companies • Universities • Research and development agencies • Investors
Sectors targeted	All industrial sectors
Technologies targeted	All technologies targeted
Funding (split by private/public and national/EU), state period/annual funding	There are various financing instruments for cluster organisations: <ul style="list-style-type: none"> • Membership fees • Public financing • Private financing • Structural funds
Current status of initiatives	This is an ongoing initiative. The last document published by the Ministry of Economy in 2018 emphasises the need to support the adoption of digital technologies and the development of clusters in services for the modernisation and development of the Romanian industry.

Impacts, challenges and perceptions

The Romanian Cluster Policy was launched in 2009 and had 72 cluster organisations as of 2019, of which 42 are members of CLUSTERO.¹⁸ These cluster organisations operate in various sectors (e.g. textile, automotive, ICT, tourism, agro-food, biopharmaceuticals, construction and others)¹⁹ and are well developed, some of them being very competitive nationally and internationally.²⁰ However, as emphasised by one interviewee, these also face certain operational challenges related to the lack of an imbedded financing framework. The main source of financing for cluster

organisations is the membership fee and this limits their budget for activities. Activities carried out by these organisations tend to be sporadic due to the limited budget available.

Innovative clusters are important instruments for intelligent industrial policy and are developed around the smart specialisation principles (see Section 1.2). Cluster policy offers support for SMEs to apply smart specialisation strategies and to promote cooperation between regions and countries.²¹

Regarding the digitalisation of industry, interviewees emphasised that only few cluster organisations integrate the concept of Industry 4.0 in their activities and that, where this exists, the digitalisation of industry has been a bottom-up process (carried out mainly by the companies at their own initiative). At governmental level, there is no coordinated structure that tackles the digitalisation of industry.

The quantitative indicators available show that companies in Romania are slowly catching up with regard to digitalisation. Between 2015 and 2017, the number of companies that use two or more types of social media, selling online, and generating at least 1% of their turnover via these sales has increased. There are currently only three Digital Innovation Hubs (DIH) available in Romania which are still in preparation. Two of these DIHs are in Cluj-Napoca²², which is a major ICT hub in Romania alongside Bucharest.

There is no direct link between the initiatives available and the slow-paced digitalisation take-up of enterprises. However, cluster organisations have the potential to foster development within enterprises (including digitalisation) through exchanges and collaborations within the value chain.

The figures also show that Romania has made steps towards digital transformation: ICT contributes to 6-7% of Romania's GDP and the digital sector is growing. At the same time, the industry perception of the level of innovation in digital industries remains low in case of non-ICT sectors (2 on a scale from 1 to 5, 1 being low and 5 being high) and somewhat elevated in case of ICT sectors (3.5 out of 5). Innovation in the ICT sector is mainly driven by the companies operating in the sector and industry representatives believe that the nature of the sector pushes companies to adopt innovative solutions. Non-ICT sectors have a low level of take-up of digitalisation, except for automotive and the banking industries, which tend to be highly digitalised.

The usefulness of government support for the digitalisation of companies is considered as negative (1.5 out of 5) by consulted industry associations. Moreover, the coordination of different initiatives in Romania is ranked very low (1 out of 5) by the industry representatives. There is coordination among different industry players (e.g. companies, research centres, cluster organisations) but there is no top-down coordination.

According to industry associations, the key opportunities in Romania related to take up in digital technologies are:

- Implementing new digital technologies,
- Emergence of new value chains,
- Developments in the areas of e-government, digital health, e-citizenship,
- Development of new clusters for Industry 4.0.

Key challenges and barriers in Romania related to take up in digital technologies that are perceived by industry associations are mainly:

- Administrative burden,
- Lack of skilled workforce,
- Mismatch between education and market needs.

2.2 Regulatory framework for digital age

The table below presents the main initiatives related to a digital regulatory framework (Pillar 4).

Table 6: Main initiatives under Pillar 4

Name	Romania's strategy for cybersecurity ²³	CERT-RO (Romanian National Computer Security Incident Response Team) ²⁴
Type	IT Security strategy	Cybersecurity measure
Starting date	2013	2011
Objective	The strategy implements the national system of cybersecurity in Romania which aims at ensuring a safe virtual environment for citizens, business environment and the society, based on the national cyber infrastructure.	The main objective of the centre is to respond to cyber security incidents.
Short description	The national cybersecurity system (SNSC) represents only the general cooperation framework under which related national authorities and public institutions gather to coordinate actions at national level for ensuring a safe cyber environment.	CERT-RO is an institution coordinated by the Ministry of Communications and Information Society. The centre aims to prevent, analyse, identify and react to cyber incidents.
Sectors targeted	All	All

Impacts, challenges and perceptions

Overall, industry associations considered that the regulatory framework is not fit for the digital age (score of 2.5 on a 1-5 scale where 1 is low and 5 is high). Independently from the general strategy on cybersecurity presented in the table above, a new legislative proposal for a law regarding cybersecurity was rejected by the Romanian Constitutional Court in 2016²⁵ and it is unclear whether this law is still under discussion. In 2018, the regulatory focus was put on the implementation of the EU General Data Protection Regulation (GDPR).

2.3 Skills development

The table below presents an overview of the main measures for digital skills development (Pillar 5 of the DEI).

Table 7: National initiatives to develop digital skills

Name	Start Industry 4.0 ²⁶	Coalitia Skills4IT ²⁷
Type	Training sessions	Open platform
Starting date	2018	2013
Objective	<p>The main objectives of this initiative are to:</p> <ul style="list-style-type: none"> • Increase awareness among employers on the need to train employees • Increase competences of entrepreneurs and managers • Develop competences on human resources management • Support SME entrepreneurs with the implementation of strategic planning • Support enterprises through consulting services on strategic planning and improving processes 	<p>The main objective of this initiative is to increase the digital skills among citizens.</p>
Short description	<p>The project offers training sessions for 508 persons operating in the industry sector. The training sessions are designed for managers at all levels, executives, employees of the human resources department, as well as entrepreneurs and cover notions of introduction and adaptation to the fourth industrial revolution (Industry 4.0). Individuals who meet the eligibility conditions can attend one of the project courses free of charge. The project does not cover all Romanian regions, but merely South-East, South, South-West and West regions.</p>	<p>The Romanian National Coalition (Skills4IT) is an open platform which gathers different types of stakeholders (policy makers, ICT companies, associations, training providers and NGOs). This initiative operates within the Grand Coalition for Digital Jobs, initiated by the European Commission in 2013. The platform organises activities which focus on coding and IT classes in schools, cybersecurity courses and other educational events. The activities are aimed at different groups: education (40%), ICT professionals (30%), general population (15%) and labour force (15%).</p>
Granting organisation	<p>Project co-financed through the European Social Fund. The project beneficiary is Best Smart Consulting (a consultancy company).</p>	<p>Project coordinator:</p> <ul style="list-style-type: none"> • APDETIC - Association of Producers and Dealers of ICT equipment <p>Main partners:</p> <ul style="list-style-type: none"> • Ministry of Communications and Information Society • Ministry of National Education • Union of IT Teachers of Romania • Informal School for IT • Association of Librarians and Public Libraries (ANBPR) • HP Inc. Romania

Name	Start Industry 4.0 ²⁶	Coalitia Skills4IT ²⁷
		<ul style="list-style-type: none"> • IMB Junior Achievement
Participating organisations	Enterprises operating in the industry sector (from the Romanian regions mentioned above)	<ul style="list-style-type: none"> • General population • ICT professionals Schools
Sectors targeted	All industrial sectors	All sectors
Funding (split by private/public and national/EU), state period/annual funding	Overall budget: 3,527,897.33 RON (EUR 753,725.7) of which 95% financed through ESF	N/A
Current status of initiatives	Ongoing, the project runs between May 2018 and May 2019	The initiative is still ongoing, with a number of activities completed (e.g. Hour of Code in high schools, IT Open Days in several ICT companies, computers donations for schools in rural areas and a foster home, etc.)

Impacts, challenges and perceptions

The initiatives presented above have been launched very recently. Coalitia Skills4IT carries out activities that target the general population with the aim of increasing the digital skills. Start Industry 4.0 is more targeted to increasing knowledge in the area of Industry 4.0 and targets entrepreneurs, managers and employees operating in the industrial sector.

Both initiatives are perceived as highly useful by the industry associations (score of 5 out of 5), with the mention that Start Industry 4.0 should have a wider dissemination and thus cover all the Romanian regions. The main strength of Coalitia Skills4IT is that it focuses on the need to develop digital skills for both career and everyday life. Start Industry 4.0 trains human resources for the digital economy, which is perceived as a strength, although preparing people for the upcoming transformation of the labour market is still a challenge.

Romania has a low level of digital skills compared to other EU Member States. Although the percentage of individuals with basic or above digital skills is below the EU average, it has slightly improved since 2015 and industry associations reported that their members are not faced with considerable skills gaps (and with no gaps in the ICT sector). Furthermore, industry associations consider that since 2015, the digital skills of the workforce have increased somewhat (3.83 on a 1-5 scale).

2.4 Support mechanisms

Structural funds

According to the ICT Monitoring Tool²⁸, Romania is planning the following ICT Investments under ESIF with relevance to smart manufacturing research and dissemination:

- 044 - Intelligent transport systems (including the introduction of demand management, tolling systems, IT monitoring, control and information systems): EUR 209 million
- 015 - Intelligent Energy Distribution Systems at medium and low voltage levels (including smart grids and ICT systems): EUR 46 million
- 082 - ICT Services and applications for SMEs (including e-Commerce, e-Business and networked business processes, living labs, web entrepreneurs and ICT start-ups): EUR 4 million

Fiscal incentives for ICT companies

Some categories of employees within the IT sector (e.g. programmer) have been benefiting from tax incentives since 2004. The government ordinance 2903/2016 introduces the tax incentive also for start-ups and increases the eligible jobs for tax incentive.²⁹ The industry associations that took part in the study consider that the tax incentives are beneficial for the ICT sector, but it has only a limited impact on the digitalisation of the industry. Moreover, industry representatives consider that more should be done to support the sector.

Start-up support

Start-up Nation³⁰ is a programme initiated by the Romanian government in 2017 and through which, finance is provided for new companies. The programme is funded by both the national

government and European funds. The maximum value of the financing is approximatively EUR 44,000 (200,000 RON), which can represent a contribution of maximum 100% of the project value. For the 2017 funding period, a total number of 8,444 projects received finance.³¹

3 Conclusions

The following table provides an overview how the different digitalisation initiatives implemented in Romania have been funded. Some of the initiatives presented are legislative measures and thus, a budget allocation is difficult to track.

Table 8: Breakdown for the financing of the initiatives

	Pillar 2	Pillar 3	Pillar 4	Pillar 5
	Digital Innovation for all	Partnerships and industrial platforms	Regulatory framework for digital age	Preparing for digital future (skills)
Cluster Policy in Romania	N/A			
Romania's strategy for cybersecurity			N/A	
CERT-RO (Romanian National Computer Security Incident Response Team)			N/A	
Coalitia Skills4IT				N/A
Start Industry 4.0				EUR 753,725.7 (2018)
Fiscal incentives for ICT companies	N/A			
Start-up nation programme	N/A			
Total spending (2018)	At least EUR 753,725.7			

As the results of the DESI index show, Romania performs below EU average regarding digitalisation, but it scores positive results in terms of homes subscribing to ultrafast broadband (2nd in the EU). As emphasised in this report, digitalisation is mainly driven by large companies operating in Romania, without coordinated governmental support. Only few initiatives exist at national level, but there is no overarching strategy regarding the digitalisation of the Romanian industry. Moreover, the industry perception is that there is a lack of coordination at governmental level.

Compared to other EU Member States, Romania has only a limited number of initiatives to cover different pillars of the DEI initiative. As emphasised above, there is no national strategy addressing specifically the digitalisation of industry. Nevertheless, The Digital Agenda for Romania 2020 covers some aspects of digitalisation (e.g. digital skills). The only initiative identified under pillar 2 in Romania was the development of the National Cluster Policy, which covers aspects of digital innovation for all and brings added value in terms of creation of partnerships and industrial platforms. For pillar 4, solely two initiatives have been identified in Romania, namely the national strategy for cybersecurity and the creation of a centre for response

to cyber incidents (CERT-RO). Lastly, under pillar 5 two initiatives were identified, of which, one addresses skills development for Industry 4.0 (Start Industry 4.0).

Start Industry 4.0 is the only initiative identified in Romania that targets specifically the digitalisation of the industry. This was perceived positively by the industry representative who mention that this initiative should have a wider dissemination so that more companies can benefit from it. Currently, solely 102 companies have benefited from this measure.

Box 1: Good practice

“Start Industry 4.0”

Through the Start Industry 4.0 initiative, 508 persons operating in the industry sector can benefit from free of charge training sessions. These are designed for managers at all levels, executives, employees of the human resources department, as well as entrepreneurs and cover notions of introduction and adaptation to the fourth industrial revolution (Industry 4.0).

The initiative does not cover all Romanian regions, but merely South-East, South, South-West and West regions. Start Industry 4.0 is funded almost entirely through the European Social Fund (95%).

To conclude, the table below provides a general overview of the main digitalisation initiatives implemented in Romania, the level of take-up and perception of their impacts as well as the overall progress that Romania has made so far about digitalisation. Given the lack of financial data for some of the initiatives and recent implementation of some of the measures (e.g. Start Industry 4.0), we consider that there is no direct link between the initiatives and the outputs presented. Moreover, some of the measures are rather horizontal (e.g. Cluster Policy in Romania) or have sporadic activities organised by the members, which do not follow an action plan (e.g. Coalitia Skills4IT). The perceptions of outcomes reflect some of the industry representatives' opinion on the available measures.

Table 9: Total input-output overview

		Pillar 2	Pillar 3	Pillar 4	Pillar 5
		Digital Innovation for all	Partnerships and industrial platforms	Regulatory framework for digital age	Preparing for digital future (skills)
Application	Name of key initiatives (start dates in brackets)	Cluster Policy in Romania (2009)		Romania's strategy for cybersecurity (2013), CERT-RO (2011)	Coalitia Skills4IT (2013), Start Industry 4.0 (2018)
	Funding (total amount and period)	N/A	N/A		EUR 753,725.7
	Industries addressed	N/A	All	All	ICT, Industry
	EU programme involved	N/A	Yes (Horizon2020, COSME, Interreg, ERDF)	No	Yes (European Social Funds)
Usage	Perception of initiative	While the initiative is perceived positively by the industry (5/5), the government support is considered not very useful (1.5/5) for digital transformation		N/A	Both initiatives on digital skills are perceived as rather useful (5/5)
	Take-up	3 DIH (in preparatory stage)	N/A		N/A
Outcomes	Perception of outcomes	The level of take-up of digital technologies thanks to this initiative is perceived as moderate (2.5/5)		The regulatory framework is perceived to be unfit for the digital era (2.5/5)	The required skills and labour resources are considered to be somewhat available to enable digitisation (3.5/5)
	Outcome metrics	DESI overall ranking: 28 th in 2017 and 2018, score: 33.76 in 2017 and 37.51 in 2018		Between 2015 and 2017, total capex spending in Romania increased by 1%. Between 2015 and 2016, the number of start-ups decreased from 103,280 to 97,887.	The number of people employed with ICT specialist skills increased by 13% between 2015 and 2017. The share of enterprises providing training to develop ICT skills remained at the same value as in 2015, 4%
	Change in outcomes	From 2017 to 2018, Romania has maintained the same rank (28 th) in the DESI ranking on integration of Digital Technology.			
End-goal	Productivity growth	Between 2016 and 2017, the real labour productivity per person employed in Romania increased by 4%.			
Summary		Some actions under the Digital Agenda for Romania 2020 are still in inception phase or not fully implemented and the overall impact is not yet known. It is not clear whether the government has in pipeline any new initiatives for the digitalisation of the industry.			

ANNEX 1 List of stakeholders interviewed

Type of stakeholder	Name of organisation
Industry association	APDETIC Romania
Industry representative	Automotivest Regional Cluster
Industry representative	The innovative strategic cluster for the smart specialisation field of mechatronics

Endnotes

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- ¹⁵ Measures facilitating the adoption of new technologies by industry
- ¹⁶ Measures to develop technology building blocks
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