MONITORING PROGRESS IN NATIONAL INITIATIVES ON DIGITISING INDUSTRY

Country report

Cyprus

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Summary

Cyprus appears to be progressing slowly in terms of digitisation, ranking 21st during 2018 (same position as 2017), on the Digital Economy and Society Index (DESI). The major weaknesses in the country's digital profile are in terms of skills, framework conditions, coordination of policies and implementation.

The past few years Cyprus is exhibiting a strong GDP and employment growth. However, this growth is not translated yet in increased use of digital technologies throughout the economy. The Cypriot economy exhibits a dynamic economic growth and significant increase in investments over the past few years, however the digitisation of the economy has not been at the core of the country's growth strategy, despite the fact that the country has formulated a dedicated digital strategy since 2012.

Despite the above trends, Cyprus has a dynamic ICT sector, with one of the highest shares of ICT SMEs in proportion to the total number of SMEs and has the potential of becoming an ICT hub. The dynamic emerging start-up ecosystem and the public support provided to start-ups, are expected to contribute highly to the above objective.

Government support, over the past few years has focused mainly in facilitating the adoption of new technologies by the industry, particularly SMEs (pillar 2 of the Digitising European Industry - DEI), while less attention was given to measures related to the development of technology building blocks (pillar 3 of the DEI) and to the increase of the supply of novel digital platforms and technologies. More importantly, few initiatives focus on the improvement of digital skills of the workforce and in increasing the share of STEM graduates in Cyprus (Pillar 5 of the DEI). Overall, at least EUR 46.4 million have been made available in the period 2017-2018 under the different pillars of the Digitising European Industry (DEI) initiative and EUR 200.26 million since 2014 from support mechanisms.

The progress of the country's digital strategy has been moderate so far. Thus, the government is taking steps to rationalize the Digital Strategy and improve funds absorption, while in parallel it is formulating the New Industrial Strategy Policy, expected to be launched during 2019, focusing exclusively on the digitisation of the manufacturing sector.

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

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
Cyprus Digital Strategy – Action Plan 2015 - 2017	2015	General Strategy	General Strategy	All sectors	ICT / Digital technologies	SMEs	EUR 106,754,706 (15% national contribution, 85% ESIF contribution)
RESTART 2016-2020 Programme	2016	General Strategy	RTDI initiatives	All sectors	RIS 3 sectors	SMEs	EUR 99.14 million, with EUR 45,000,000 co-funded by ERDF
The Cyprus New Industrial Strategy Policy 2019-2030.	2019	General strategy	General strategy	All sectors	Industry 4.0. and KETs	All	Not yet specified
Research in Enterprises	2017	Pillar 2	RTDI subsidies	Energy, Tourism, Transport-Shipping, Agriculture-Food Industry, Health, ICT, environment	Photonics, Robotics, Materials, ICT, etc	SMEs	EUR 9.3 million (National funding and Structural Funds)
Integrated Projects	2017	Pillar 2	RTDI subsidies	Energy, Tourism, Transport-Shipping, Agriculture-Food Industry, Health, ICT, environment	Photonics, Robotics, Materials, ICT, etc	SMEs	EUR 20 million (National funding and Structural Funds)
Excellence Hubs	2018	Pillar 2	RTDI subsidies	Life Sciences, Physical Sciences and Engineering, and	N/A	SMEs	EUR 17.1 million (National funding and

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
				Social Sciences and Humanities.			Structural Funds)
Creation of the Digital Security Authority, including the National CSIRT	2018	Pillar 4	ICT Security Regulation	Energy, Transport, Health, Water, Banking, Financial, Digital Infrastructures, Electronic Communications, Digital Services	All	All	N/A
Development of New and Enhancement of Existing Skills	2019	Pillar 5	Training Centres	All sectors	Digital skills	All	N/A
	2015	Pillar 5	Training, certification	All sectors	All	All	N/A
Cyprus Entrepreneurship Fund (CYPEF)	2014	Support mechanisms	Financing	All sectors	N/A	All	EUR 200 million (25% EIB contribution, 25% national government, 50% Cypriot financial institutions)
Tax Incentives for Innovative Businesses	2016	Support mechanisms	Tax exemptions	All sectors	N/A	SMEs	The amount of the tax exemption can reach 50% of the taxable income with a maximum of

Initiatives	Starting year	Overall strategy/DEI Pillar/support mechanism	Type of initiative	Sectors targeted	Digital technologies targeted	Size of companies targeted	Budget
							EUR 150,000 per year.
Start-up visa scheme	2017	Support mechanisms	Visa scheme	All sectors	N/A	Start-ups	N/A
Innovation Vouchers	2017 - 2020	Support mechanisms	Innovation Voucher	All sectors	N/A	SME's	EUR 260,000

Table 2: SWOT of Cyprus on digitalisation

Strengths:	**Weaknesses**:
• High number of ICT SMEs in the economy. • Existence of a dedicated digital strategy since 2012, one of the first EU countries to adopt a digital strategy. • Dynamic economic growth and significant increase in investments over the past few years. • Introduction of a favourable taxation regime for innovative companies (tax exemptions over innovation and research activities) • Dynamic services sector, with a strong ICT component.	• Weak results in terms of digital skills, STEM graduates and ICT specialists • Moderate use of advanced digital technologies (cloud, robotics, AI), by Cypriot firms. • Very small number of infrastructures and mechanism to support SMEs, such as Digital innovation Hubs. • Small contribution of manufacturing to the country's GDP.
Opportunities:	**Threats**:
• The formulation of a new industrial strategy, with 'smart manufacturing', and digitisation being its cornerstone. • Increasing RTDI intensity. • The increased realization by all stakeholders of the need for an industry 4.0 type of strategy and for increasing collaboration between stakeholders. • The design (and expected launch) of new initiatives to support digitisation of the economy. • Upcoming initiatives focusing on digital skills and increasing STEM graduates. • An emerging start-up ecosystem.	• Moderate progress of the Digital Strategy. • Small number of measures focusing on pillars 3 and 5 of the DEI. • The regulatory framework needs further adjustments in order to become fit for the digital age • Lack of sufficient support mechanisms for the digitisation of the economy.

1 General context

The objective of this report is to analyse the current status of national initiatives on digitising industry in Cyprus. 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

During 2012, Cyprus became affected by the Eurozone financial and banking crisis. However, after implementing an austerity and reform programme, Cyprus exited the EU/IMF bail-out programme in March 2016 and returned to dynamic growth since 2015, while some challenges still remain.

During 2017, GDP increased by 4.2%, and the labour market was rapidly improving, with the unemployment rate decreasing significantly[1]. For 2019, the economic outlook remains positive.

Cyprus is a service economy, based on SMEs, whose value added in the economy exceeds at large the EU average. In contrast during 2017, the gross added value (GVA) of manufacturing was 7.9%, a share considerably less than the EU28 average of 19.6% for the same year. At the same time the ICT industry accounted for 4.7% of GDP, compared to 5% for the EU28 average for the same year.

Cyprus is a moderate innovator characterised by a medium-low level of both Digitisation and Penetration[2]. This can be partly attributed to structural differences from most EU economies, particularly regarding the low contribution in terms of value added, of high and medium tech manufacturing, foreign controlled enterprises and large firms[3].

Status of digitisation

Cyprus appears to be progressing slowly in terms of digitisation, ranking 21st out of 28 EU Member States in the Digital Economy and Society Index (DESI) for 2018[4], the same position as 2017. In the DESI index, Cyprus receives its lowest scores in the sub index Human Capital, where it ranks 24th out of 28 EU countries and in the share of science, technology, engineering and math (STEM)

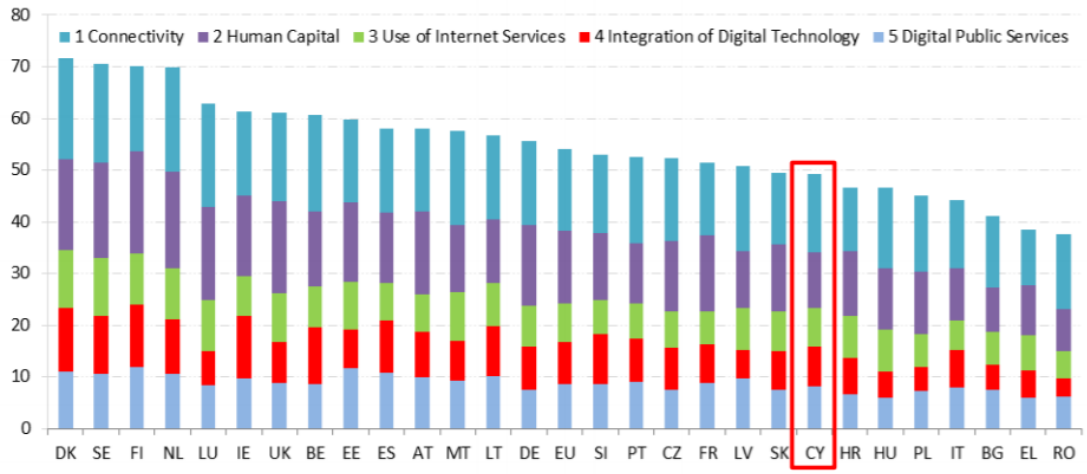
graduates (9.8%), while the country also has one of the lowest shares of ICT specialists in the workforce (2.2 %) compared to the EU average of 3.7%.

The leading sectors in terms of ICT spending in Cyprus are the financial sector, followed by the ICT and the public sectors. In terms of digital technology integration, even though Cypriot firms engage in the use of social media and e-commerce activities, they are less inclined to take up new technologies such as Cloud and Radio-frequency identification (RFID), partly due to concerns about security and the ownership and availability of data. However, recently, digital transformation (DX) projects appear to be gaining momentum among Cypriot enterprises, even though they are still at an early development stage, while technologies and applications like the Internet of Things (IoT) remain almost non-existent[5].

According to the public authorities' interviews, the above trends appears to be the result of a lack of awareness of the positive effects of digital technologies in firms and lack of positive culture to change by senior executives.

In the Digital Transformation Enablers' Index and the Digital Technology Integration Index, Cyprus performs below the EU average. The table below presents the ranking of Cyprus in the DESI.

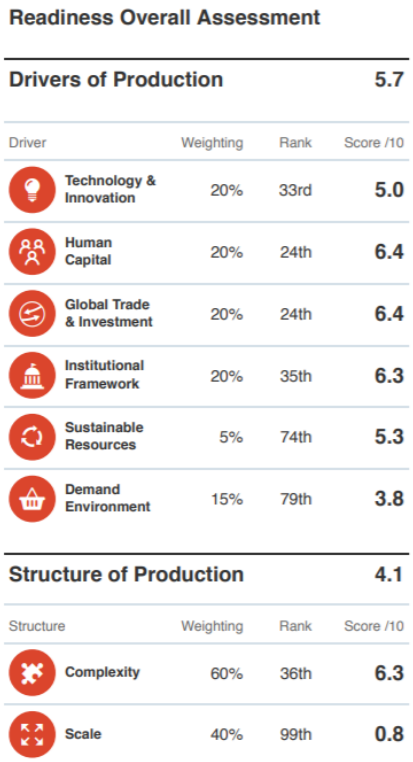
Figure 1: Digital Economy and Society Index (2018)



Source: Digital Economy and Society Index (DESI) 2018 – Country Report Cyprus

Further on, regarding Cyprus readiness for future production, the assessment carried out by the World Economic Forum in 2018 scores Cyprus with 5.7 out of 10 for drivers of production and 4.1 out of 10 for the structure of production. A breakdown of drivers is provided in the figure below.

Figure 2: Cyprus readiness for future production



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

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

Table 3: General economic and digital indicators for Cyprus

	% GDP from manufacturing	% GDP growth	DESI position – and change	DESI sub-indicators Human Capital, Use of Internet, Integration of Digital Technology in 2018
Cyprus	7.9% (2017)	4.2% (2017)	21st (2018), same place as in 2017	• Human Capital: 24th (one place up from 2017) • Use of Internet Services: 17th (four places down compared to 2017) • Integration of digital technology: 17th (one place up compared to 2017).

1.2 National strategy on digitising industry

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

Table 4: National strategies on digitising industry

Name	Cyprus Digital Strategy – Action Plan 2015 – 2017	RESTART 2016-2020 Programme	The Cyprus New Industrial Strategy Policy 2019-2030.
Type	Horizontal initiative	Horizontal initiative	Horizontal initiative
Starting date	2015	2016	2019 (Not finalised yet)
Objective	Support the digital economy of Cyprus	Promote the field of RTDI as a principal factor for Cyprus' economic development, in accordance with the "Europe 2020" strategy for smart, sustainable and inclusive growth.	The aim is for the industrial sector to account for 15% of GDP by 2030, doubling its current contribution (7,9% in 2017)
Ministry/ministries in charge (website, contact person)	Ministry of Transport Communications and Works -	Research Promotion Foundation http://www.research.org.cy/el/restart-2016-2020	Ministry of Energy, Commerce and Industry (MECI)
Scope of the strategy/action plan	A holistic strategy, including ICT infrastructure, digitisation of the public sector, and enhancement of digital skills (e-skills), development of the digital entrepreneurship	The programme is implemented through three strategic pillars, namely 1) Smart development, with focus on selected priority sectors, 2) Ensuring the sustainability and dynamics of the RTDI system and 3) develop supportive instruments and pilot measures, to encourage exploitation of research results.	The new national industrial strategy policy will incentivise digital transformation, through the adoption of digital systems and production applications, modern equipment and cutting-edge technologies, but also through the creation of smart factories and digital service infrastructures (i.e. digital innovation hubs) through financial and other means.
Measures included in the strategy/action plan	Support digital skills, provide e-education, increase uptake of ICT by SME's, increase cloud-based services provided by Cypriot firms, increase e-commerce uptake, etc.	Indicative measures included in the RESTART programme are the Research in Enterprises,	The most important measures under pillar 3 – of the aforementioned strategy will be the following: a) Grant schemes for SMEs digital transformation (through enhancing the uptake of digital technologies in the workplace), and for SMEs incorporation of state-of-the-art technological equipment. b) Promote and support Digital Innovation Hubs and/or other relevant R & D & I infrastructures

Name	Cyprus Digital Strategy – Action Plan 2015 – 2017	RESTART 2016-2020 Programme	The Cyprus New Industrial Strategy Policy 2019-2030.
			with an aim to assist SMEs, industries and digital innovation hubs in their digital transformation (facilities and services), or through other financing schemes or financial instruments.
Overall funding and distribution by volume and source of funding (public/private, EU/national)	EUR 106,754,706 (15% national contribution, 85% ESIF contribution)	EUR 99,140,000, with EUR 45,000,000 co-funded by ERDF	n/a

Impacts, challenges and perceptions

The Department of Electronic Communications (DEC) has been designated as the executive department of the Ministry of Transport, Communications and Works to formulate and implement the Digital Strategy for Cyprus. DEC also regulates the spectrum management, the preparation of the Broadband Plan and acts as the national Broadband Competence Office (BCO)[6].

However, even though Cyprus was one of the first EU member states to adopt a digital strategy (Digital Strategy 2012 – 2020), the progress of that strategy has been moderate so far. As a result, the government during 2016, rationalised the 2015-2017 action plan presented in table 4 above for the digital strategy implementation, to better suit contemporary needs and guarantee optimal funds absorption[7].

In parallel, the government is preparing a new strategy, namely the New Industrial Strategy Policy, that will focus exclusively on supporting the manufacturing sector and promoting the digitisation of industrial firms. The new policy is expected to be launched during 2019. The New Industrial Strategy Policy will have a prolonged time frame and is expected to contribute to the establishment of a robust, intelligent and technologically developed industry and increase the competitiveness and extroversion of the Cypriot economy.

At the same time, another horizontal policy that influences directly the pace of digitisation of Cyprus and the availability of highly qualified personnel is the RTDI strategy of the country, i.e. the RESTART 2016 – 2020 programme. The RESTART 2016-2020 Programme, that targets exclusively SMEs, is a multi-annual development framework for the support of Research, Technological Development and Innovation in Cyprus, which is co-funded by national and European resources and is implemented in conjunction with other national initiatives and Programmes. Furthermore, both the Digital Strategy and the New Industrial Strategy Policy are in line with the country's smart specialisation strategy, as is also the RESTART programme, with key enabling technologies (i.e. ICT, robotics, nanotechnology, biotechnology and advanced materials) being one of the most important priority areas of Cyprus RIS3 strategy.

According to the opinion of the private sector, as expressed in the context of the interviews conducted for this report, so far, the support provided by the government for digital transformation had a limited impact. This can be attributed to problems in the coordination of the policies implemented, but also to the speed that the decisions are taken both in the private sector and especially in governmental sector.

These finding are also supported by the 2018 European Innovation Scoreboard, where Cyprus performance in terms of the dimensions of financing, supporting innovative firms and in terms of creating an innovation friendly environment, receives the lowest scores.

Finally, in the opinion of some private sector stakeholders, the development of a new government body that will have horizontal and vertical powers to design, implement, regulate, and control the digital transformation of Cyprus, could be the key to a successful digitisation of the Cypriot economy and to overcome the bureaucratic and coordination barriers exhibited in the past.

1.3 EU cooperation in the field of digitising industry initiatives

Cyprus participates or has announced its participation (not yet signed) in a number of European initiatives, as follows:

- Cyprus singed the Declaration creating the **European Blockchain Partnership** (EBP) on June 2018. This is a European Commission initiative, with the aim to ensure the active participation of all Member States in the fields of ICT, Blockchain, Distributed Ledger Technologies.
- During December 2018, Cyprus is expected to sign with France, Greece, Italy, Malta, Portugal and Spain the **Southern European Countries Ministerial Declaration on Distributed Ledger Technologies**, that is expected to lead to enhancement of e-government services but also increased transparency and reduced administrative burdens, and lead to better customs collection and better access to public information.
- Cyprus singed the **Declaration of cooperation on Artificial Intelligence** in May 2018. This is a European Commission initiative, with the aim to ensure the active participation of all Member States, in a key technology that is expected to become a key driver for economic growth through the digitisation of industry and for society as a whole.

Although it is too early to assess the benefits of the country's participation in the above initiatives, it is expected that it will enhance the capabilities of the public and the private sectors of the economy and will lead to the dissemination of advanced digital technologies across many sectors of the economy, creating new business opportunities.

2 Other policy support to digitising industry

2.1 Boosting innovation capacity

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

Table 5: National initiatives to boost innovation capacity

Name	Research in Enterprises	Integrated Projects	Excellence Hubs
Type	RTDI subsidies	RTDI subsidies	RTDI subsidies
Starting date	2017	2017	2018
Objective	The programme aims at the development of new products / services / production methods of high added value and increasing private RTDI investments	Boost SME technological development and innovation by finding value chain synergies.	Promote scientific excellence, by funding frontier research projects in cutting-edge fields.
Relevant for Pillar 2[8] or Pillar 3[9] or both	Pillar 2	Pillar 2	Pillar 2
Short description	The Programme covers a wide range of industrial research and experimental development activities.	The "Integrated Projects" Programme, funds interdisciplinary, large scale, collaborative projects, within one or more focus areas of one of the Priority Sectors of Smart Specialisation Strategy (S3Cy)	Promote scientific excellence through funding of research projects in cutting edge fields.
Granting organisation	Research Promotion Foundation	Research Promotion Foundation	Research Promotion Foundation
Participating organisations			
Sectors targeted	Energy, Tourism, Transport-Shipping, Agriculture-Food Industry, Health, ICT, environment	Energy, Tourism, Transport-Shipping, Agriculture-Food Industry, Health, ICT, environment	Life Sciences, Physical Sciences and Engineering, and Social Sciences and Humanities.
Technologies targeted	Photonics, Robotics, Materials, ICT, etc	Photonics, Robotics, Materials, ICT, etc	n/a
Funding (split by private/public and national/EU), state period/annual funding	EUR 9.3 million (EU and National funds)	EUR 20 million (EU and National funds)	EUR 17.1 million (EU and National funds)
Current status of initiatives	n/a	n/a	n/a

Impacts, challenges and perceptions

As mentioned above, one of the main objectives of the Cyprus Digital Strategy – Action Plan 2015 – 2017, was the increase in the use of ICT by SMEs, particularly for micro enterprises, as well as increasing e-commerce activities of businesses. However, the progress achieved was moderate, as far as integrating digital technologies into the private sector. As a result, although it appears that firms in Cyprus employ gradually more mature technologies and business trends, they are at the same time reluctant to integrate more advanced technologies (i.e. AI, cloud, etc.).

Over the past few years Cyprus has also launched several measures, mainly under pillar 2, i.e. measures that focus on facilitating the adoption of new technologies by industry, while less attention was given to measures related to the development of technology building blocks (pillar 3) and to the increase of the supply of novel digital platforms and technologies. All of the measures presented in the table above were launched in the context of the RESTART 2016-2020 Programme.

Thus, although Cyprus has one of the highest shares of ICT SMEs in proportion to the total number of SMEs across the EU, the sector's value added as a percentage of GDP[10] is lower than the EU average.

In the meantime, Cyprus has made considerable progress regarding improvements of the ICT start-up environment. The Cypriot government, along with the Cyprus Chamber Of Commerce and Industry (CCCI) and the Cyprus Investment Promotion Agency (CIPA) and numerous other organisations, supports start-ups by bringing in investors and coaching them through the growth process.

Despite the above measures, Cyprus continues to exhibit one of the lowest R&D intensities in the EU[11]. Moreover, Cyprus has only one digital innovation hub (DIH) operating in the country, namely the Cyprus Digital Innovation Hub (CyDi-Hub), that is active in cutting-edge digital technology innovations and services, focusing on the manufacturing industry. At the same time there is no European Institute of Innovation and Technology (EIT) Digital Co-Location Centre in Cyprus. The limited number of support infrastructures could potentially hinder the pace of digitisation of SMEs in Cyprus.

To face the above challenges during 2017, a new research center was set up, focusing on interactive media, smart systems and interactive technologies (RISE). The new research center is a joint venture between three Universities in Cyprus (University of Cyprus, Cyprus University of Technology and Open University of Cyprus) and the Max Planck Institute for Informatics and the University College London.

The above findings are also supported by both the public and private stakeholders interviewed in the context of this report. Thus, the view of the public authorities' stakeholders is that the level of innovation in digital industries (ICT, digital platforms) and the level of take-up of digital technologies by non-ICT industries is rather low in Cyprus, compared to European peers, while the government contribution to ameliorate the above trends has been rather moderate (average score of 2 on a 1-5 scale).

In the same line, industry associates indicated that the progress in terms of industry digitisation has been limited this far (average score of 1 on a 1-5 scale). Moreover, they estimate that less than 5 % of firms in Cyprus have a long-term digital strategy, while only a small fraction of Cypriot

firms appears to have changed their business model due to digitalization or adopted a general strategy on how to improve digital skills of their employees.

2.2 Regulatory framework for digital age

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

Table 6: Main initiative under Pillar 4

Name	Creation of the Digital Security Authority, including the National CSIRT
Type	ICT Security Regulation [Number 17(I)]
Starting date	2018
Objective	To ensure a common minimum level of network and information security, in order to maintain and increase cybersecurity levels across the country.
Short description	The new law establishes a National Digital Security Authority (NDSA) to implement the law. The NDSA will be funded by service providers and is required to promote the achievement of a high level of security of networks and information systems, including all government information services and digital service providers based in Cyprus.
Sectors targeted	Energy, Transport, Health, Water, Banking, Financial, Digital Infrastructures, Electronic Communications, Digital Services

Impacts, challenges and perceptions

During 2018, Cyprus has enacted a new ICT security regulation, targeting mainly existing organisations that are classified as operators of essential services or operators of critical information infrastructures. Moreover, national legislation has also been amended to comply with the eCommerce Directive.

In addition, the Digital Security Authority (DSA), which incorporates the National CSIRT (CSIRT-CY), has been created to implement the Network and Information Security (NIS) Directive in Cyprus. The DSA regulates operators of essential services, operators of critical information infrastructures, operators of electronic communications networks and digital service providers. These regulatory activities are of two main types: the setting of security requirements and obligations with supervision of their implementation, and the handling of cybersecurity incidents that are notified to the authority. Additionally, the DSA coordinates the implementation of the cybersecurity strategy of the Republic of Cyprus.

Further on, the Cyprus Securities and Exchange Commission (CySEC)[12] announced during 2018 that it will establish an Innovation Hub in order to address fintech developments, highlighting the importance of the financial sector in Cyprus as one of the most dynamic sectors of the economy.

Despite the above policies and measures, according to the business associations, the country's progress regarding the provision of a digitally favourable business and regulatory environment is rather slow (average score of 2 on a 1-5 scale). Although they recognise that the authorities have taken steps to transform IT security regulation to support the digitisation of industry and to transform data regulation (e.g. free flow of data, clarity on ownership, use, liability) to support the digitisation of industry, they consider that there is significant space for further improvements.

2.3 Skills development

In terms of human capital, Cyprus is progressing gradually, with its performance however remaining below the EU average. According to the findings of the Digital Economy and Society Index report, only half of the Cypriot population possesses at least basic digital. At the same time Cyprus has the lowest share of Science, Technology, Engineering and Math (STEM) graduates among all EU countries. The country also has a low share of ICT specialists in the workforce compared to the EU average.

The above shortages in digital skills can prove an important barrier to a country's economic development.

Faced with the above trends and recognising the need to close the gap between the low number of ICT professionals and high number of vacancies in ICT related positions, the government has proceeded to a number of initiatives, such as the setting up of a National Coalition for Digital Jobs[13] action plan to promote digital skills in Cyprus.

The Cypriot Ministry of Education and Culture has also prepared an action plan to improve educational outcomes, prioritising STEM graduates set to begin in the 2018-2019 school year, as seen in the table below.

Table 7: Cyprus main initiative to develop digital skills (pillar 5 of the DEI)

Name	National Coalition for Digital Jobs	Development of New and Enhancement of Existing Skills
Type	Training - certification	Training Centres
Starting date	2015	2019
Objective	Promote digital skills in Cyprus	Increase of STEAM and STEP skills (soft and digital skills).
Short description	Provision of digital skills and certification to Cypriot students. Additionally, it organizes various competitions in schools for coding, robotics, etc.	Adjusting and customizing existing public sector training programs, academic, educational and lifelong learning curricula, to respond to the needs of the industry.
Granting organisation	n/a	Ministry of Education and Culture
Participating organisations	Public institutions, professional communities, private companies and non-profit organisations	Ministry of Labour, Welfare and Social Insurance, Ministry of Energy, Commerce and Industry, Academia, Cyprus Chamber of Commerce and Industry, Cyprus Industrialist and Employers Federation, etc.
Sectors targeted	All sectors	All sectors
Funding (split by private/public and	n/a	National government programme.

Name	National Coalition for Digital Jobs	Development of New and Enhancement of Existing Skills
national/EU), state period/annual funding		
Current status of initiatives	Active	Not launched yet.

Further on the University of Nicosia (UNIC) has established a novel master's degree (MSc in Digital Currency), focusing on blockchain technology, one of the first globally.

Impacts, challenges and perceptions

Despite the above-mentioned policies, it is a common perception between both the public and private stakeholders that the shortage in digital skills to enable digitisation is an important barrier for future growth of the economy.

According to the industry associations, the digital skills of the workforce improved marginally since 2015, (average score of 2 on a 1-5 scale) both due to the lack of incentives provided by the national authorities (e.g. tax incentives or funding available to support digital skills training), but also due to the lack of awareness and limited use of training programmes by firms.

2.4 Support mechanisms

Structural funds remain the major source of funding (in terms of subsidies) for the digital transformation of the Cypriot economy and the skills upgrading of the work force. The Cypriot government is also preparing a new Industrial Strategy Policy for the period 2018-2030, that will be based on seven pillars, among which, sustainable development policies, 'smart manufacturing' and digitisation, using EU and National funding. Through this strategy the government aims at gradually raising industry's contribution to GDP from 7.9% in 2017, to 15% by 2030.

Further on, during 2014 Cyprus launched the **Cyprus Entrepreneurship Fund (CYPEF)**. The scheme involves the financing, of up to EUR 1.5 million for SMEs, to support their expansion and development. It is horizontal in focus, targeting all dynamic sectors of the Cypriot economy, with a total budget of EUR 200 million (25% EIB contribution, 25% national government, 50% Cypriot financial institutions). According to the latest figures, the loans disbursed via CYPEF to SMEs reached the amount of EUR 80 million.

Furthermore, Cyprus has also launched the **Startup Visa scheme**, that support individuals or groups from non-EU and non-EEA Member States wishing to establish, operate and develop start-ups in Cyprus. The main goal of the Cyprus Startup Visa is to create new jobs and promote research and innovation in order to enhance competitiveness and achieve economic development in the country. Operating on a pilot basis since February 2017, it is expected to issue around 150 residence permits to entrepreneurs who wish to invest in Cyprus during the two-year duration of the programme.

In addition, during 2017, in the context of the RESTAT 2016 - 2020, the **Innovation Voucher programme** was launched, with total funding of EUR 260,000, financed by national sources and with closing on 30/09/2020. The objective of the scheme is to encourage Cypriot SME's in their innovation activities and promote their collaboration with knowledge intensive organisations.

SMEs can use the vouchers either for a) consulting services related to technology transfer (voucher value of EUR 2,500), or for b) prototype design and construction, secondment of qualified research personnel, and measurements, tests and analyses (voucher value of EUR 5,000).

Finally, since 2016, the government offers **Tax Incentives for Innovative Businesses**, in order to increase the level of private investment in innovation. This is a horizontal policy measure, implemented by the Ministry of Finance, covering all sectors of the economy. More specifically, tax exemptions are granted to individuals or investment funds investing in innovative firms. The amount of the tax exemption can reach 50% of the taxable income with a maximum of EUR 150,000 per year.

3 Conclusions

The table below presents an overview of how the different initiatives have been funded.

Table 8: Breakdown for the financing of 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)**
Research in Enterprises	EUR 9.3 million (2017)			
Integrated Projects	EUR 20 million (2017)			
Excellence Hubs	EUR 17.1 million (2018)			
Creation of the Digital Security Authority, including the National CSIRT			N/A	
National Coalition for Digital Jobs				N/A
Development of New and Enhancement of Existing Skills				N/A
Cyprus Entrepreneurship Fund (CYPEF).	EUR 200 million (since 2014)			
Tax incentives for investing in innovative SMEs	N/A			
Startup Visa scheme	N/A			
Innovation Vouchers	EUR 0.26 million (2017-2020)			
Total spending	Over EUR 246.66 million (46.4 million across pillar initiatives for the 2017 – 2018 period, over EUR 200.26 million since 2014 from support mechanisms)			

After exiting the EU EU/IMF bail-out programme in March 2016, Cyprus has exhibited strong growth in terms of GDP and employment. Cyprus is a service economy dependent mainly on SMEs, presenting also significant structural differences compared to larger EU economies.

Partly due to the above structural differences, but also due to the moderate impact of policies and measures related to the digitisation of the economy, Cyprus appears to be making slow progress

in terms of digitisation, ranking 21st out of 28 EU member states in the Digital Economy and Society Index (DESI) during 2018.

Although Cyprus was one of the first EU members to adopt a digital strategy (Digital Strategy 2012 – 2020), the progress of that strategy has been moderate so far. As a result, the government is taking steps to rationalize the Digital Strategy and improve funds absorption, while in parallel it is formulating the New Industrial Strategy Policy, expected to be launched during 2019, focusing exclusively on the digitisation of the manufacturing sector.

Cyprus is a moderate innovator, with Cypriot firms employing gradually more mature ICT technologies and business trends but being reluctant to integrate more advanced technologies (i.e. AI, cloud, etc.). Government support, over the past few years has focused mainly in facilitating the adoption of new technologies by the industry (pillar 2 of the DEI), while less attention was given to measures related to the development of technology building blocks (pillar 3 of the DEI) and to the increase of the supply of novel digital platforms and technologies.

Cyprus receives also its lowest scores in the DESI index in the sub index Human Capital, where it ranks 24th out of 28 EU countries, with the share of science, technology, engineering and math (STEM) graduates being only 9.8/1000, while the country also has one of the lower shares of ICT specialists in the workforce (2.2 %) compared to the EU average of 3.7%. The above shortages in digital skills can prove an important barrier to a country's economic development. The Cypriot government is trying to reverse the above negative trends by launching the National Coalition for Digital Jobs and by prioritising STEM education in schools with the objective to increase STEM graduates.

Finally, Cyprus appears also to make slow progress regarding the provision of a digitally favourable business and regulatory environment (pillar 4 of the DEI). Although the authorities have taken steps to transform IT security regulation to support the digitisation of industry and to transform data regulation (e.g. free flow of data, clarity on ownership, use, liability), there is significant space for further improvements in order to create a regulatory framework fit for the digital age.

Given the recent adoption of the measures and the limited impact so far, no measure could yet be put forward as a best practice.

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

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)	Excellence Hubs (2018), Integrated Projects (2017), Research in Enterprises (2017)	--	ICT Security Regulation (2018)	National Coalition for Digital Jobs (2015), Development of New and Enhancement of Existing Skills (2019)
	Funding (total amount and period)	EUR 46.4 million between 2017 and 2019	--		n/a
	Industries addressed	Energy, Tourism, Transport-Shipping, Agriculture-Food Industry, Health, ICT, environment	--	Energy, Transport, Health, Financial & Digital Infrastructures, Electronic Communications, Digital Services	All
	EU programme involved	Yes	-	Yes	Yes
Usage	Perception of initiative	Government support in considered as relatively weak (2/5) for digital transformation		The regulatory framework appears to be adjusting rather slowly (2/5)	The government initiatives on digital skills are not perceived sufficient (2/2)
	Take-up	N/A	N/A		N/A
Outcomes	Perception of outcomes	The level of take – up of digital technologies is perceived as low (2/5)	The level of innovation in digital industries is gradually increasing (3/5)	Continuous Improvements but still not fir for the digital age (2/5)	Shortages in skills and labour resources that can prove a barrier to fast digitisation (2/5)
	Outcome metrics	ICT spending below but close to EU average. R&D expenditure accounted for 0.56% of GDP during 2017, one of the lowest intensities in the EU. DESI ranking on integration of digital technologies during 2018:17th. Emerging start-up ecosystem.		Between 2015 and 2017, total capex spending in Cyprus increased by 81.9%. Considerable progress regarding improvements of the ICT start-up environment	The share of people with ICT specialist skills has increased by 4.5% between 2015 and 2017. In the same period the share of firms providing training to develop ICT skills increased from 23% (2015) to 26% (2017).
	Change in outcomes	From 2017 to 2018, Cyprus improved from 18th to 17th rank in the DESI ranking on integration of Digital Technology.			
End-goal	Productivity growth	Real labour productivity per person employed in Cyprus increased by 0.5% during 2015, 0.2% during 2016 and 0.4% during 2017.			
Summary		Cyprus has launched a number of initiatives focusing mainly on pillar 2, measures that focus on facilitating the adoption of new technologies by industry, while less attention was given to measures related to the development of technology building blocks (pillar 3) and to the increase of the supply of novel digital platforms and technologies. Initiatives regarding pillars 3, 4 and 5 are at the stage of preparation.			

ANNEX 1 List of stakeholders interviewed

Type of stakeholder	Name of organisation
Government Representative	Ministry of Energy, Commerce and Industry (MECI)
Government Representative	Digital Security Authority
Industry Association	Cyprus Chamber of Commerce and Industry

ENDNOTES

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