

Industry 4.0 readiness report

An assessment of the Cyprus
manufacturing industry

2019

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Acronyms

GDP: Gross Domestic Product

ICT: Information and communications technology

PCT: Patent Cooperation Treaty

R&D: Research & Development

RPF: Research Promotion Foundation (Cyprus)

SMEs: Small & Medium Enterprises

Abstract

The current study outlines the key challenges and opportunities for the manufacturing sector of Cyprus, in relation to the digital transformation of the sector, and its readiness to move into the so called Fourth Industrial Revolution, otherwise referred to as Industry 4.0.

Around the world, traditional manufacturing industry is in the throes of a digital transformation that is accelerated by exponentially growing technologies (e.g. intelligent robots, autonomous drones, sensors, 3D printing). Enterprises at organizational and operational level, need to adapt to this rapid change, if they are not to be left behind by developments in their sector and by their competitors.

This study investigates the extent to which Cypriot manufacturing companies have already positioned themselves in relation to this digital transformation and the opportunities offered to them by utilising Industry 4.0 processes.

Findings of the survey suggest that:

1. Companies are focusing on **innovative solutions** that will transform their processes.
2. Although companies are already **investing in new technologies**, their focus for the future will be to advance the **digital skills of their employees**.
3. Companies want to further integrate digital capabilities into their production line.
4. In the near future, companies will be using their **data analytics capabilities** in order to predict their customers' behavior.
5. Companies aspire to introduce **digital features during the sale phase** in the near future.

The manufacturing industry in Cyprus

"Industry accounts for 80% of Europe's exports. Some 65% of private sector R&D investment comes from manufacturing."¹

A strong manufacturing sector can create jobs, boost a country's GDP and lead the way towards economic prosperity through trade. In advanced economies, manufacturing can lift agriculture exports, thereby boosting income and living standards, whereas, in developing economies it can promote innovation through R&D, exports and productivity growth.

Moving towards "Industry 4.0"

Currently, manufacturing processes are becoming increasingly digital, and along with the information technology, data and analytics, lead the way to another industrial revolution that urges businesses to move towards a new era, capitalising on smart machines, factories, products and services, utilizing new interaction models and going beyond the automation of production. This new era is known as the "Industry 4.0", commonly referred to as the Fourth Industrial Revolution.

The Fourth Industrial Revolution, otherwise referred to as Industry 4.0, incorporates technologies from digital, physical and biological spheres. In general, Industry 4.0 relates to the concept of smart factories, where machines are connected through

the web to a system, which is able to conceptualize the whole production line and engage into decision-making processes on its own. Based on the McKinsey Global Institute data, the current automation technology can automate more than 60% of all manufacturing activities.^{2,3} Deloitte's 2016 Global Manufacturing Competitiveness Index report⁴ points out that traditional powerhouse manufacturing countries, such as the United States, Germany, Japan, and the United Kingdom, are making a shift towards higher-value manufacturing⁵ in order to maintain their competitiveness.

Analysis of the Cypriot manufacturing industry

Making full use of its strategic position at the crossroads of Europe, Asia and Africa, Cyprus, has always relied on trade for the development of its economy, facilitating the access of the island's main industrial products (such as pharmaceuticals, food and beverages, clothes, minerals, machinery and equipment) to international markets. In Cyprus, there are 5.300 manufacturers, the majority of which are small and medium sized, mostly family owned. Most manufacturing companies have less than ten employees and only

"By embracing technological change, converting research investments into innovative business ideas, and continuing to pioneer the low-carbon and circular economy we will pave the way for a smart, innovative and sustainable industry in Europe."

Jyrki Katainen
Vice-President for Jobs, Growth, Investment and Competitiveness

¹ European Commission (2018) Innovation-Growth. Available at: https://ec.europa.eu/growth/industry/innovation_en

² McKinsey, McKinsey Global Institute (2017) "A future that works: Automation, employment and productivity". Available at: <https://www.mckinsey.com/featured-insights/digital-disruption/harnessing-automation-for-a-future-that-works>

³ McKinsey (2016) "Where machines could replace humans—and where they can't (yet)". Available at: <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/where-machines-could-replace-humans-and-where-they-cant-yet>

⁴ Deloitte (2016) Global Manufacturing Competitiveness Index. Available at: <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Manufacturing/gx-global-mfg-competitiveness-index-2016.pdf> (Note: This is the most recent study prepared by Deloitte, previous studies were published in 2010 and 2013)

⁵ The University of Cambridge's Institute of Manufacturing defines high value manufacturing as "the full cycle of activities from research and development, through design, production, logistics and services, to end of life management".

seven are large, i.e. employ more than 249 people⁶.

Following the global technological trends, there have been efforts at national level, to modernize the country's traditional industry base, with a goal to support the shift towards higher value-added industry segments and products⁷.

This is not surprising if one takes into account the fact that manufacturing, along with tourism, has been one of the main drivers of development of the Cypriot economy in the last four decades. Nonetheless, during the last few years, and especially after the major financial downturn of 2013, the manufacturing industry has been facing competitiveness problems, mainly due to its low volume of manufacturing exports and its rather traditional production processes.

This chapter provides an overview of the performance, growth and contribution of the sector to the economy of Cyprus, highlighting its importance on GDP, trade and job creation.

Key products

The main growth areas in manufacturing in Cyprus, have been in the ICT sector, manufacturing parts, instruments and electronics, as well as consumer products such as cosmetics. Some of the most established export industries are those of

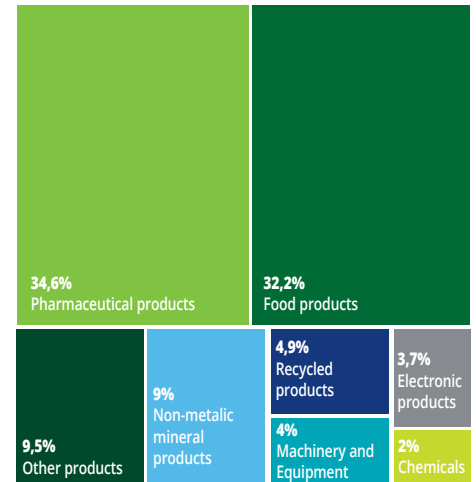
the production of pharmaceuticals, cement and fabricated metal items.

Findings from the latest published Industrial Statistics of Cyprus reveal that, while the manufacturing of food products is the activity with the highest contribution of added value of the industrial sector, the biggest export segment within manufacturing is pharmaceutical products (34,6%). This is followed by food products (32,2%) and non-metallic mineral products (9%)⁸.

Performance

In 2008, GDP from manufacturing reached an all-time high of 260,53 EUR million, however, the industry was hit hard by the 2013 economic recession, reaching its lowest point that year, with 155,32 EUR million. Since then, GDP from manufacturing has been following an upward trajectory. According to the latest figures of the Statistical Service of the Republic of Cyprus, the sector accounts for 209,09 EUR million⁹ and contributes approximately 5% to the country's GDP¹⁰, with a production value of 2.734,4 EUR million (6,4% increase compared to 2015 figures)¹¹. Despite this, Cyprus scores 69th out of the 137 countries on the Global Competitiveness Index 2017-2018¹² when it comes to its growth prospects, highlighting the need to focus on potential new opportunities.

Figure 1: Cyprus exports of industrial products (% of total), 2016



Source: Statistical Service of Cyprus

⁶ Statistical Service (2017) Business Registry, 2016. Available at: [http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/8A220DD4941EDCA9C225803500304320/\\$file/ENTERPRISES_NACE2_SIZE-2016-16117.pdf?OpenElement](http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/8A220DD4941EDCA9C225803500304320/$file/ENTERPRISES_NACE2_SIZE-2016-16117.pdf?OpenElement)

⁷ Cyprus Profiler (2017) A Culture of Innovation – Manufacturing & Industry. Available at: <http://www.cyprusprofile.com/en/sectors/manufacturing-and-industry>

⁸ Statistical Service (2018) Industrial Statistics, 2016. Available at: [http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/762D9FE76879C461C22577D2003627BC/\\$file/INDUSTRIAL_STATISTICS-2016-260618.pdf?OpenElement](http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/762D9FE76879C461C22577D2003627BC/$file/INDUSTRIAL_STATISTICS-2016-260618.pdf?OpenElement) (The Statistical Service of Cyprus publishes Industrial Statistics annually. The latest publication was Industrial Statistics, 2016, released on the 26th of June, 2018)

⁹ Trading Economics (2018) Cyprus GDP From Manufacturing. Available at: <https://tradingeconomics.com/cyprus/gdp-from-manufacturing>

¹⁰ Statistical Service (2017) Cyprus in Figures 2017 Edition. Available at: [http://www.cystat.gov.cy/mof/cystat/statistics.nsf/All/C91603BD82050327C22582030022C7F2/\\$file/CYPRUS_IN_FIGURES-2017-EN-271217.pdf?OpenElement](http://www.cystat.gov.cy/mof/cystat/statistics.nsf/All/C91603BD82050327C22582030022C7F2/$file/CYPRUS_IN_FIGURES-2017-EN-271217.pdf?OpenElement)

¹¹ Statistical Service (2018) Industrial Statistics, 2016. Available at: [http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/762D9FE76879C461C22577D2003627BC/\\$file/INDUSTRIAL_STATISTICS-2016-260618.pdf?OpenElement](http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/762D9FE76879C461C22577D2003627BC/$file/INDUSTRIAL_STATISTICS-2016-260618.pdf?OpenElement)

¹² World Economic Forum (2018) The Global Competitiveness Report. Available at: <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>

Employment in the sector

Even though manufacturing is the largest part of the industrial sector, in 2016 it employed just over 30.000 individuals (9% of the total labour force of the country)¹³. The growth of industrial activity in recent years has not led to a similar increase in this number, whereas expenditure in fixed assets increased, suggesting that enhanced automation processes most probably lead the productivity increase.

Production processes

Manufacturing is the most important sector of industrial activity in Cyprus and it accounts for 72% of total industrial production¹⁴. According to the Statistical Service of the Republic of Cyprus, industrial production seems to be recovering from its 2013 all-time low performance. In March 2018, the Industrial Production Index (IPI) reached 93,6 units (base 2010 = 100), a significant increase from the 2013 figure of 67,5. The corresponding index for Manufacturing specifically reached 98,6 units, a 6,7% increase compared to March 2017¹⁵.

Nonetheless, Cyprus ranks extremely low in terms of overall production process

Table 1: Employment in the industrial sector

| Economic Activity | Employees | | | | | |
|-------------------|-----------|--------|--------|--------|--------|--------|
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Industry total | 38.656 | 36.485 | 32.975 | 31.637 | 32.052 | 33.408 |
| Manufacturing | 33.981 | 31.933 | 28.573 | 27.365 | 27.889 | 29.240 |
| Mines & Quarries | 562 | 496 | 435 | 424 | 420 | 402 |

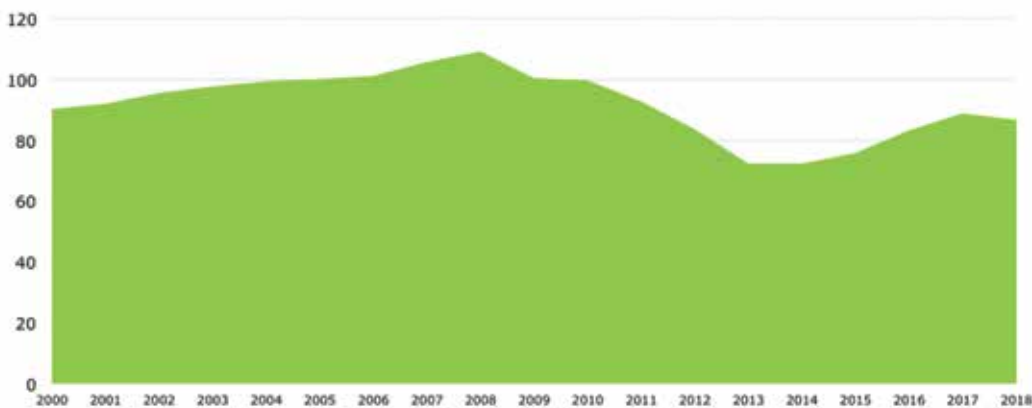
Source: Statistical Service of Cyprus

sophistication, based on the findings of the 2017-2018 Global Competitiveness Report¹⁷. The Report scores and ranks the innovation and sophistication of production processes around the world, where a low country score of 1 means “no sophistication and labour intensive” and a high score of 7 means production processes are the “world’s best and apply the most efficient technologies”. In this respect Cyprus ranks 55th out of 137 countries with a score of 3,8 for overall production process sophistication. To add to this, the European Innovation Score card of 2018 considers Cyprus to be a moderate innovator¹⁸, ranking the country below the EU average.

When compared to the 2010 findings, the 2018 scorecard reveals that performance has actually declined the most in Cyprus compared to other Member States. In fact, Cyprus' performance against the EU is below the average performance in most performance indicators such as licenses and patent proceeds from abroad, R&D expenditure in enterprises, patent applications PCT, in combatting social challenges and in PhDs by non-European students.

On the other hand, Cyprus has improved its performance in excellent research systems and human resources, with the number of new PhD graduates showing the greatest increase.

Chart 1: Industrial Production Index (base 2010 = 100)



Source: Statistical service of Cyprus¹⁶
 *For 2018, figure is average until 30/05/2018

Chart 2: European Innovation Scorecard 2018

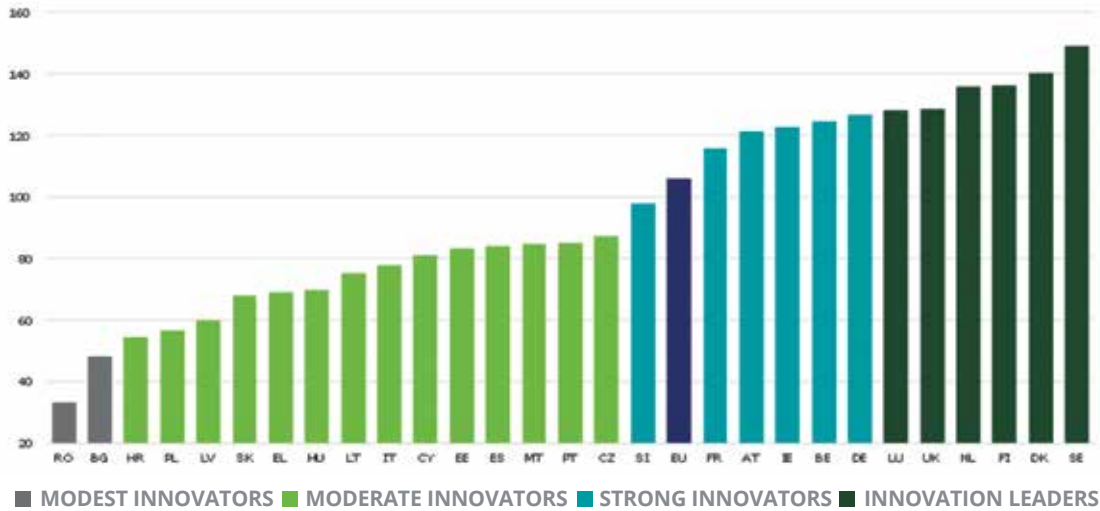
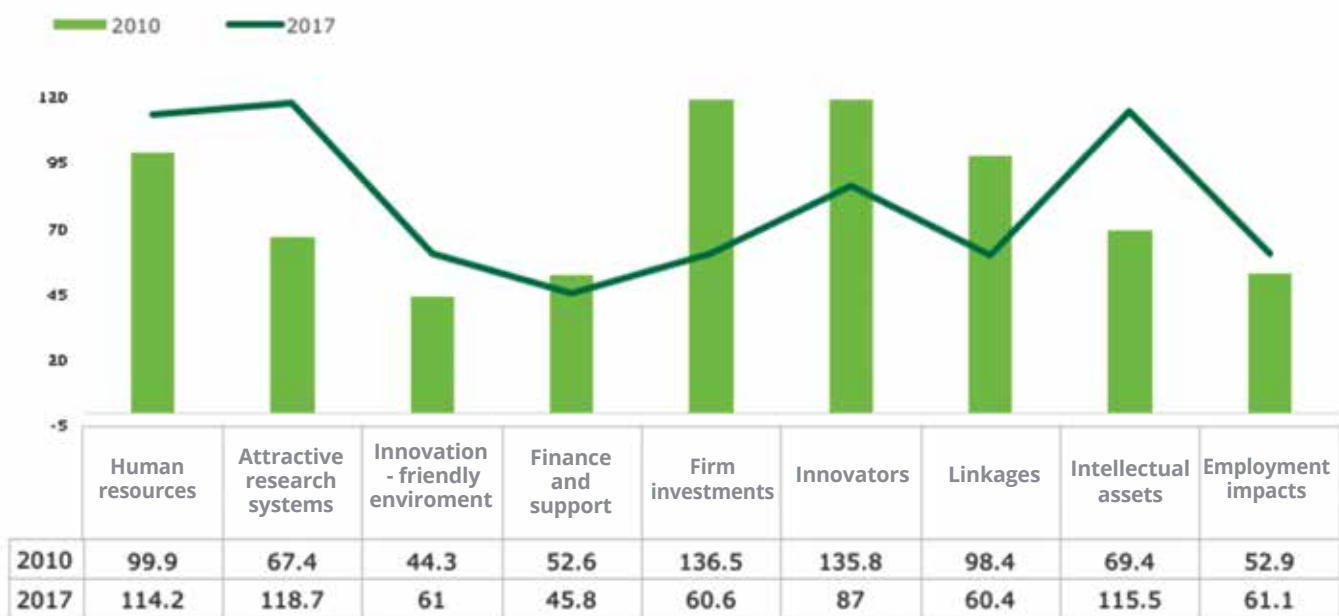


Chart 3: Cyprus European Innovation Scoreboard 2018



¹³ Statistical Service (2017) Business Register, 2016. Available at: http://www.mof.gov.cy/mof/cystat/statistics.nsf/labour_33main_en/labour_33main_en?OpenForm&sub=3&sel=4 (The Statistical Service of Cyprus publish the Business Register annually. The latest publication was Business Register, 2016, released on the 26th of November, 2017)

¹⁴ Industrial production measures the output of businesses integrated in the industrial sector of the economy..

¹⁵ Statistical Service (2018) Latest Figures: Index of Industrial Production, Mar 2018. Available at: <http://www.mof.gov.cy/mof/cystat/statistics.nsf/All/CB64FDC6BE3C600AC22581AA0022646C?OpenDocument>

¹⁶ Statistical Service (2018) Industry Archived Key Figures, Reference year: 2000-2018. Available at: http://www.cystat.gov.cy/mof/cystat/statistics.nsf/industry_construction_61main_keyfarchive_en/industry_construction_61main_keyfarchive_en?OpenForm&yr=2000-2018BA845A4C845245387A4497863280C595&n=2000-2018

¹⁷ World Economic Forum (2018) The Global Competitiveness Report. Available at: <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>

¹⁸ European Commission (2018) European Innovation Scoreboard 2018. Available at: https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en

Long-term problems faced by the industry

Despite its gradual signs of recovery, limiting growth decline to just 1,6% for 2014 compared to 6,5% in 2013 and 8,2% in 2012, the sector has some distance to cover in order to reverse negative growth. This is mainly due to the long term structural problems that the sector is facing, such as the small size of the market, the distance of Cyprus from big foreign markets, the small size of production, the skills gap between the available human resources in relation to the needs of the industry and the reduced degree of cluster cooperation.

According to the latest competitiveness report of the European Commission¹⁹, Cyprus overall lags behind the EU average, whereas the industry suffers from deindustrialization, poor performance and limited improvement. Findings highlight that Cyprus is not closing the gap with stronger Member states, scoring particularly low at the below mentioned points:

- Productivity per working hour.
- Productivity per worker in Industry.
- Knowledge-intensive exports.
- Research, Development & Innovation in Business.
- Gross value of the Industry as a percentage of total Gross Value.
- Number of tertiary graduates in mathematics, science and technology in proportion of the population aged 20-29.
- Electricity costs.
- Internet speeds.
- Business environment.
- Legal and institutional framework.

Boosting the entrepreneurial ecosystem

In order to meet the rigors of the global market, the Cypriot government focuses on improving the entrepreneurial and industrial infrastructure of the island. The objective is the creation of a supportive

ecosystem, in which innovative businesses can collaborate and interact with each other through a cluster of stakeholders, such as with other businesses, the state, the academic community, the RPF and the investors.

During the last few years, the country has been witnessing a surge in governmental initiatives, aiming to support the efforts of enterprises and boost the overall industry output. In 2016, the government introduced 10-year tax breaks for new companies, offering an up to 50% tax exemption on investment in innovative and start-up companies, in addition to the already low 12,5% corporate tax rates and zero tax on certain types of income.

Furthermore, several schemes aiming to support SMEs' access to finance are available through the Research Promotion Foundation (RPF). The RPF manages a specific scheme that finances the costs of innovative businesses to secure patents for specific products and activities, while the Ministry of Energy, Commerce, Industry and Tourism (MECIT) has introduced a subsidy scheme for business innovation. The Scheme provides support to existing and newly established companies looking to invest in research and innovation to develop competitive innovative products and services and implement innovative production processes.

In order to support the manufacturing industry, MECIT offers grants aiming to incentivize businesses to upgrade and/or modernize their production units, giving priority to enterprises that:

- Use local raw materials.
- Create new jobs.
- Are focused on exporting.
- Are looking to modernize their processes and/or procedures in order to become more competitive on the foreign and domestic markets.
- Produce innovative or high value-added products.

¹⁹European Commission (2014) Member States' competitiveness report. Available at: http://ec.europa.eu/growth/content/member-states-competitiveness-report_en

²⁰Ministry of Energy, Commerce, Industry and Tourism (2017) Industry and Technology Service, Funding Schemes. Available at:

<http://www.mcit.gov.cy/mcit/sit/sit.nsf/All/F4C9E0E8AA03B35DC22581930028FDF4?OpenDocument&highlight=funding%20schemes>

The way ahead

Cyprus aspires to promote industrial production in order for it to reach 15% of GDP by 2030, from 7,9% in 2017. However, it is currently lagging far behind the EU average on key aspects such as:

- gross value,
- productivity, exports,
- R&D innovation as a percentage of total gross value added,
- number of higher education graduates in the fields of science and technology,
- cost of electricity,
- the environment, and
- the legal and institutional framework.

MECIT anticipates that the main challenge will not only be to solve the problems that concern the industry, but to also move towards further industrialization (digitization and development) through the introduction of Industry 4.0 elements.

In 2018, in an effort to support the manufacturing industry and facilitate the access to niche markets, reversing thus, the negative growth of the manufacturing industry, MECIT announced the launch of a long term industrial strategy policy for Cyprus. The goal of the Strategy is to enable the creation of a competitive and sustainable manufacturing industry, which will be focused on the production of high added value products and on improving the human resources' skills and technical know-how in order to double the industry's share of GDP by 2030. The strategic objectives of the new industrial policy are to:

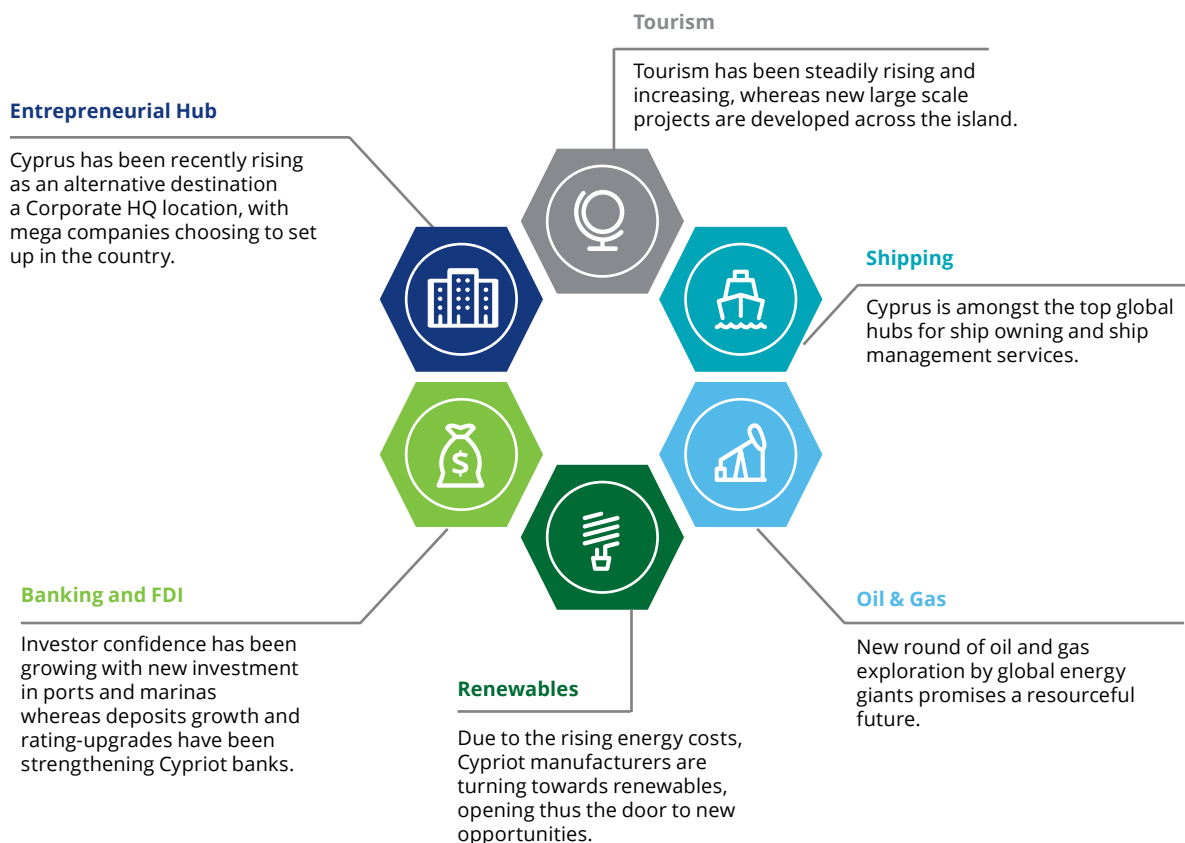
- Increase competitiveness in new and existing sectors through innovation and investment in modern technologies.
- Enhance the extroversion of Cypriot industries.
- Increase the efficiency of the workforce and improve know-how/skills.

- Develop a supportive infrastructure (in terms of energy, transport, etc.) and spatial planning policy that will support competitiveness.

Cyprus' rapid economic turnaround since the 2013 crisis proves, not only that the island has a resilient economy, but also that it is able to adjust to continuously changing market needs and expectations. It is expected that the manufacturing sector will follow this trend and further expand in the near future, spurred by robust governmental incentives and a focus on high-tech products.

The island's conducive business regulations, its strategic location connecting the EU with Middle East, North Africa and Asia, in combination with the country's highly educated English speaking population, can greatly assist Cyprus to expand its manufacturing industry.

Figure 2: Cyprus Competitive Landscape



Cyprus Manufacturing Industry Survey

Deloitte's Innovation and Entrepreneurship Centre conducted a nation-wide survey in September 2017 among medium and large size manufacturers in Cyprus, in order to assess the existing situation and readiness to adopt Industry 4.0 processes and methods and move towards more contemporary practices in the near future (3-5 years). The data was collected through a structured questionnaire sent by email to the twelve leading medium and large manufacturing companies in Cyprus.

The survey shows that Cypriot manufacturing companies are advancing their digital capabilities and are looking for ways to digitize their processes. Survey participants seem to understand that digitization can bring enormous benefits for their businesses, and anticipate that they will continue to promote the search of new and innovative solutions in the near future.

Industry 4.0 capabilities

Only 3 out of 11 respondents appeared to have robust organizational structures that support Industry 4.0 processes. Despite that, they recognize the need to improve their capabilities and advance Industry 4.0 capabilities in the following years, showing thus the desire to enhance both human and physical capabilities in the near future.

Figure 3: To what extent does your company promote the search of new and innovative solutions?

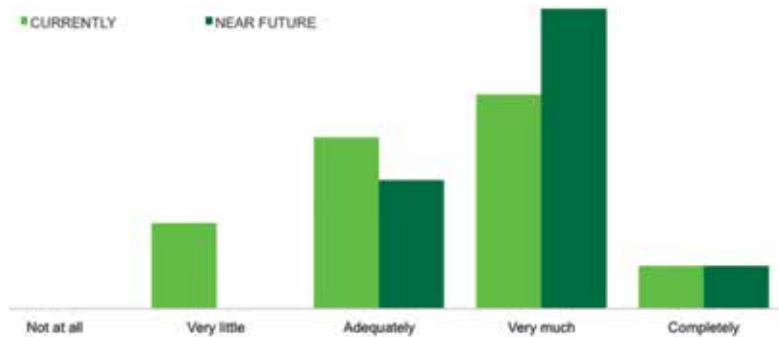


Figure 4: How would you evaluate your capabilities and resources on Industry 4.0 (e.g. data analysis, Internet of Things, real-time monitoring of all your processes, automation, cyber-physical communication, production)?

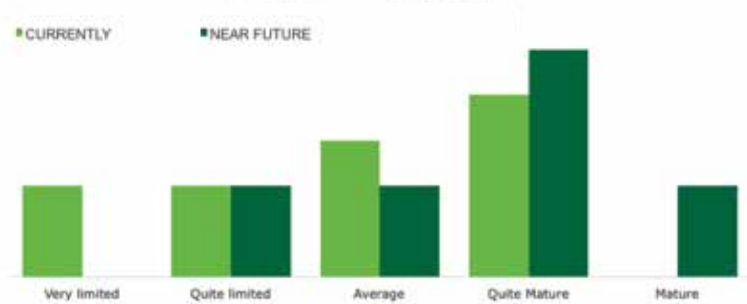


Figure 5: To what extent do your employees have the capabilities and know-how to meet the needs of Industry 4.0?



Information Management Capabilities

The analysis of the data collected suggests that companies have invested in digital technologies (i.e. sensors, connectivity devices) that enable them to interrupt production at any given time, and reveal the desire to integrate such capabilities to deepen production line interaction with suppliers, customers and partners.

New Technology Implementation

Regarding data utilization, findings reveal that the majority of companies perceive that they have the ability to use data in order to generate value. At the same time, they anticipate that in the near future, they will further advance their data analytics capabilities by using data to analyze customer behavior, guiding thus decision-making.

Digital maturity

Currently, the majority of companies do not use digital products/services during the sales phase, but aspire to make significant changes in this field over the next years. The results indicate that companies already acknowledge the importance of social media platforms in their interaction with customers, however, the need to further enhance this type of communication in the near future is even stronger.

Figure 6: To what extent do you have real-time capabilities within the production line, enabling you therefore to react dynamically to any changes at any given time?

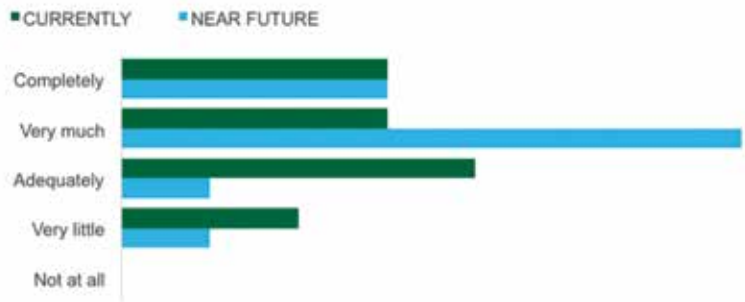


Figure 7: How would you assess your company's horizontal value chain degree of digitization with regards to the integration of digital capabilities into the production line and working with key suppliers, customers and partners (eg tracking solutions, direct contact)?

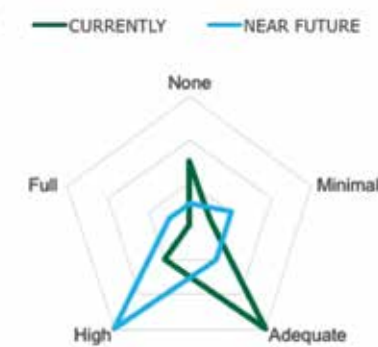


Figure 8: How would you rate your company's ability to generate value from data utilization?

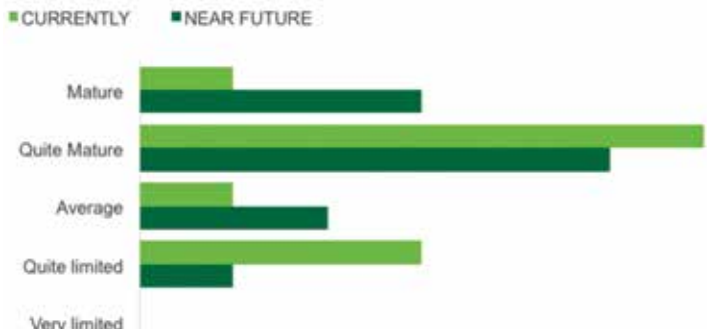


Figure 9: To what extent do you analyze customer data for profiling purposes (e.g., personalized offers to customers based on their personal status, preferences, demographics, etc.)?

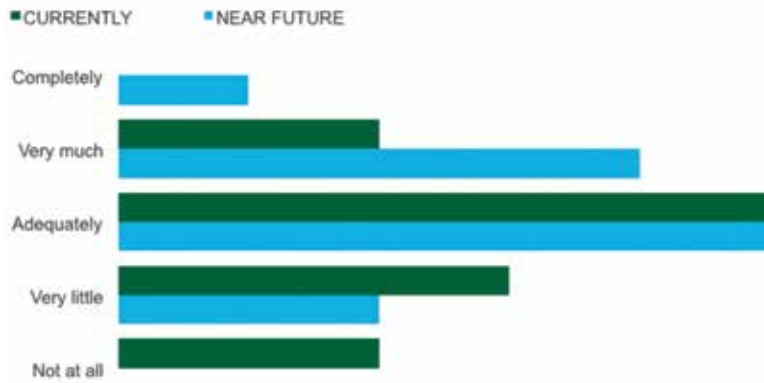


Figure 10: To what extent do you incorporate social media platforms to communicate with your customers and inform them about recent news, receive feedback and manage requests?

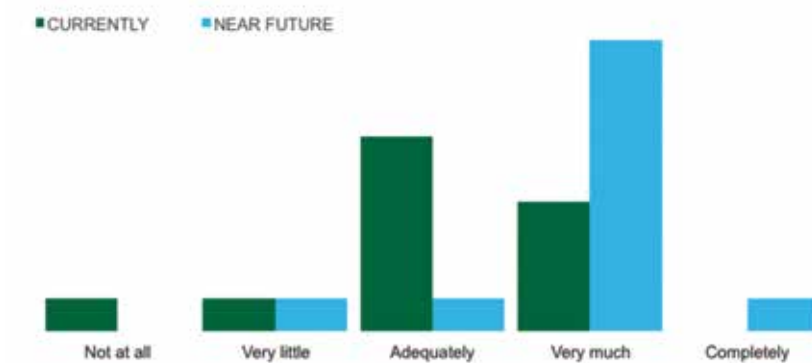


Figure 11: To what extent do you incorporate the use of digital products/services during the sales phase (mobile devices, access to systems anywhere, anytime)?





Roadmap to successful implementation of Industry 4.0 in Cyprus

The findings of the survey and the desk research insights presented in this report point towards the importance for the uptake of Industry 4.0 elements by manufacturers in Cyprus in the near future. Undoubtedly, the successful implementation of Industry 4.0 entails several challenges that they will need to overcome, but despite these challenges, these practices will bring enormous benefits for their businesses. To address

market challenges and meet the expectations brought forward by rapid industry innovation, companies require a practical roadmap.

Formulating an Industry 4.0 strategy

A number of market forces are driving the need to become digital. The digital transformation of the industry and the roll-out of additive manufacturing technologies in the manufacturing sector, along with

As the market moves towards extreme design and demand variability, the manufacturing industry is expected to leverage the principles of Industry 4.0 in order to improve efficiency.



the use of other exponential technologies, require companies to clearly set out strategies that will allow them to respond to many of these trends and challenges. Understanding thus the strengths and weaknesses of a company in the digital field will be of vital importance, as it will help in setting future targets, improving current systems, and transitioning to digital technology. After evaluating digital maturity levels, companies will need to create both short and longer-term goals and plans in all of the five core business dimensions (Customers, Strategy, Technology, Operations and Organisation Culture). To identify possible investment priorities and develop an Industry 4.0 strategy, companies will need to consider the below:

- Customer – Providing an experience where customers view the organization as their digital partner using their preferred channels of interaction to control their connected future on and offline.

- Strategy – Focuses on how the business transforms or operates to increase its competitive advantage through digital initiatives; it is embedded within the overall business strategy.
- Technology – Underpins the success of digital strategy by helping to create, process, store, secure and exchange data to meet the needs of customers at low cost and low overheads.
- Operations – Executing and evolving processes and tasks by utilizing digital technologies to drive strategic management and enhance business efficiency and effectiveness.
- Culture, People, and Organization – Defining and developing an organizational culture with governance and talent processes to support progress along the digital maturity curve and the flexibility to achieve its growth and innovation objectives.

²² Deloitte, 2018 Deloitte Human Capital Trends, March 28, 2018.

²³ Deloitte, The future of work in Manufacturing, October 1, 2018

²⁴ Deloitte, 2018 Deloitte Human Capital Trends, March 28, 2018.

People: Talent and the workforce

As digital transformation and the Fourth Industrial Revolution continue to redefine manufacturing jobs of the future, a mismatch between available workers and the skills necessary for open jobs is created²¹. The industry is expected to blend advanced technology and digital skills with unique human skills to yield the highest level of productivity. Consequently, a company's success in implementing Industry 4.0 processes heavily depends on having a workforce with the right digital skills, technical knowledge and soft skills (ie. strength in agility, continuous learning, interpersonal communication, and proactive problem-solving skills).

Companies will therefore need to invest in training and education opportunities to improve workforces' skills in and knowledge of Industry 4.0, whereas, a good support structure and strong internal messaging from the top down is paramount. The broader aim is not just to eliminate routine tasks and cut costs, but to create value for customers and meaningful work for people²². Introducing new roles, hiring skillful employees and updating existing job profiles will therefore enable companies to keep up to date with the new digital skillset required and enable them to remain competitive by preparing their future workforce for success.

Technology: Embracing the full potential of Industry 4.0

Along with the move towards automation, robotics and artificial intelligence, manufacturing workers are increasingly relying on digital tools to effectively complete their work²³. As the 2018 Global Human Capital Trends study shows, tools such as collaboration platforms, work-based social media, and instant

messaging can increasingly support the communication necessary for higher productivity²⁴. As a result, investing on process automation and introducing digital features during the sale phase will substantially simplify how the company functions.

Industry 4.0 can create interconnected digital enterprises, ecosystems, supply networks and consumer interactions that communicate, analyze, learn and apply information to drive actions in the physical world. Implementing systems dedicated to performing easy, traceable and automated management of a manufacturing company, will benefit companies by increasing accountability and traceability, reducing paper workload and improving overall performance.

One of the most important goals should be to develop an agile IT function that can respond flexibly to business demand and help to continuously improve services. Improving data analytics competencies will assist companies to better understand their consumers and their needs, while it will also assist with customized products. Only a fully automated manufacturing company can meet all these needs.

While Industry 4.0 has the power to change many things across a broad spectrum—work, operations, society—one thing is certain: It's here, and companies need to be ready. It is clear that the old way of doing things isn't enough anymore, and those who make the most impact will be the ones who embrace all facets of Industry 4.0 and all the opportunities it will bring.



Manufacturing companies should focus on formulating an Industry 4.0 strategy, nurturing and attracting human talent and embrace the new technology.

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