



Digital Transformation of Greek enterprises

2020: The impact of the COVID-19 pandemic



NATIONAL DOCUMENTATION CENTRE

Digital Transformation of Greek
enterprises
2020: The Impact of the COVID-19 Pandemic

National Documentation Centre

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Foreword



The digital transformation of Greek enterprises has been at the centre of the research and statistical activity of the National Documentation Centre (EKT) since 2019, when the organisation became an independent body under the supervision of the Ministry of Digital Governance.

This publication is the second in a new series of statistical publications launched by EKT. It focuses on examining the course of the digital transformation of Greek enterprises in 2020, a year of forced reduction of 'natural' economic and social activities due to the conditions of the COVID-19 pandemic. Globally, 2020 saw an acceleration of the digital transition and related restructuring with the economy having to adapt to the new conditions. At the same time, co-operation and competition between research centres, enterprises and international organisations has been strengthened. Institutional actors, policymakers, units and clusters from the research and innovation system faced new challenges, developed new strategic plans, and for the first time scientific leaders came together with the forces of economics, politics and society.

Greek enterprises, whose resilience and adaptability had already been tested, were called upon to tackle a new emergency. In earlier surveys, we had seen that, even before the pandemic, a significant number of enterprises, especially large enterprises, were oriented towards technologies and organisational methods related to digital transformation. It was extremely important, therefore, to look at the course of digital transition during the turbulence of the previous year.

In the above context, EKT designed and implemented a survey aimed at capturing the real data and the situation faced by dynamic Greek enterprises, enterprises investing in Research and Development (R&D), to record the strategies they adopt and digital technologies and practices they use to address the situation, and finally, to highlight the adopted digital processes and practices that were initially necessitated by the pandemic but that will now remain, an indication of a continued orientation towards a more digital business approach.

The survey was carried out as part of the multi-year, periodic statistical survey on Research and Development in Greek Enterprises conducted by EKT as the competent National Authority of the Hellenic Statistical System.

The pandemic affected, to a greater or lesser extent, the business activity of almost 9 out of 10 enterprises with differentiated impact on R&D investment, sales, turnover and the normal overall pre-pandemic operation. The main problems faced by enterprises are: the forced absences of their staff, delays in payments from customers and increased administrative obligations. In terms of evaluation of the support measures introduced to

deal with the crisis, almost all the enterprises that participated in the survey (91%) stated that they were able to access information successfully, while as the most useful measures they recommend tax and insurance relief and credit facilities.

It is significant that the majority of enterprises have mainly adopted growth and footprint strategies to address the crisis caused by the pandemic. Adoption of digital practices has accelerated and digital transformation has intensified, becoming a core business strategy for their future growth in eight out of ten enterprises. Enhancing the digital skills of staff is a priority for most enterprises, while digital technologies will be further enhanced to continuously improve and develop new products, strengthen the supply chain and implement ERP and CRM systems. At the same time, leading digital technologies, such as cybersecurity and cloud computing technologies, are becoming increasingly important for enterprises.

So it seems that the digital transformation of Greek enterprises is maturing and intensifying. In fact, the emergence of digital transition as one of the pillars of the European Union Recovery and Sustainability Mechanism is expected to provide a coherent implementation and funding framework for the development of the digital economy in Europe and Greece.

In this process, EKT, which is a National Authority of the Greek Statistical System, will continue to capture the critical parameters of the digital transformation and to support with data the strategic planning and the evaluation of public policies.



Dr. Evi Sachini

EKT Director

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1. Summary of main conclusions

This is the second in a new series of statistical publications introduced in 2020 by the National Documentation Centre (EKT) on 'The Digital Transformation of Greek Enterprises' and presents the results of the recent EKT survey on the course of digital transformation in 2020, a year marked by the outbreak of the COVID19 pandemic and the forced increase in the use of digital technologies. The survey was designed in the context of the multi-annual, periodic official statistical survey on Research & Development¹, and was conducted at the end of 2020 based on enterprises carrying out Research & Development (R&D) in the country. The main conclusions of the survey are presented below.

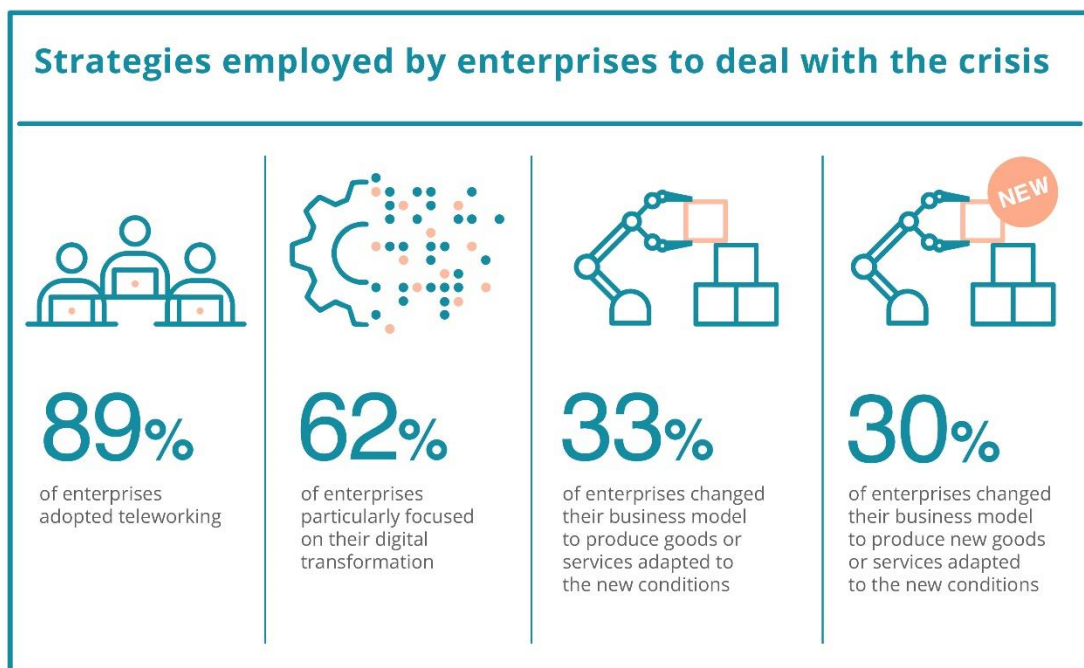
Strategies followed by enterprises to deal with the crisis

The unprecedented conditions of restrictive measures that were suddenly imposed worldwide in 2020 due to the outbreak of the COVID-19 pandemic, could not but affect the business activity in Greece. According to the results, nine out of ten companies surveyed said they were affected to a greater or lesser extent, with 22% of enterprises being significantly affected. This picture is virtually the same for all sizes of enterprises (small, medium or large) and the main sectors of economic activity (Industry and Services). The enterprises located in the Aegean Islands and Crete were most affected.

To address the crisis caused by the pandemic, the majority of enterprises have mainly adopted growth and footprint strategies. As main strategies, almost 9 out of 10 enterprises adopted teleworking methods for employees, 6 out of 10 enterprises focused on their digital transformation and almost 3 out of 10 enterprises changed their business model to produce goods or services adapted to the new conditions.

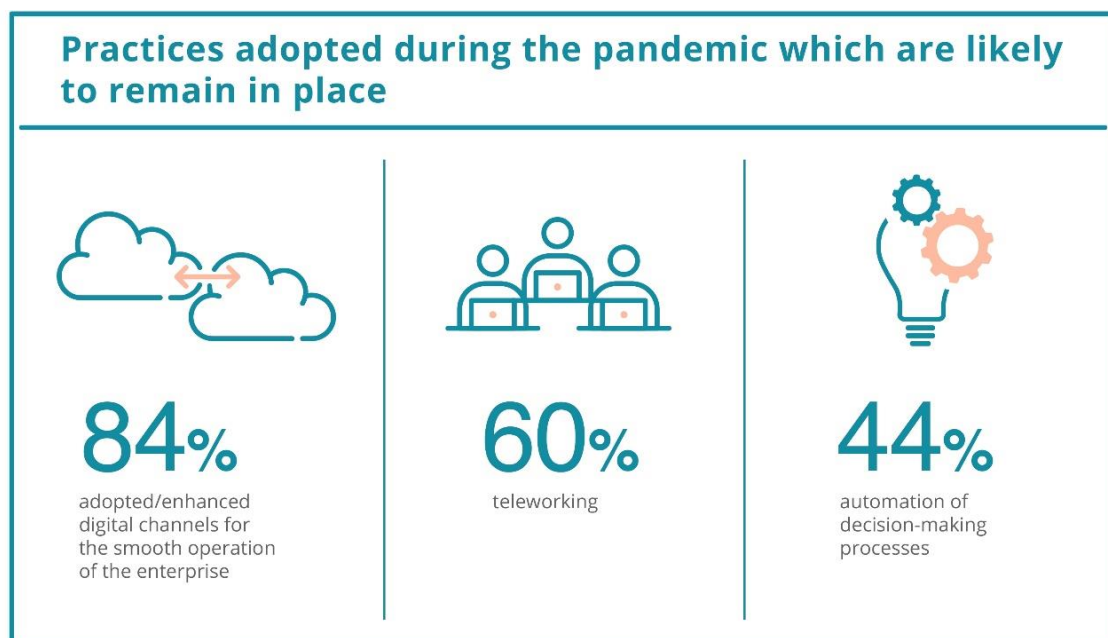
Digital technologies have been used in a wide range of business processes such as information or communication processing (68% of enterprises), work organisation, decision-making or human resource management (67%), accounting or other administrative functions (60%), organisational processes or external relations (57%) and the production of goods and services (40%).

¹ EKT is the competent National Authority of the Hellenic Statistical System (ELSS) for the production of national statistics on Research, Technology, Development and Innovation (RDI) and their submission to Eurostat, the OECD and other international organisations. More: <https://metrics.ekt.gr/research-development/>.



Source: Digital Transformation of Greek Enterprises. 2020: The impact of the COVID-19 pandemic.

The main problems faced by enterprises were those related to the forced absences of their staff, either due to the absence of employees with special childcare leave (55% of enterprises) or due to the absence of employees belonging to vulnerable groups (46% of enterprises). For their smooth operation, enterprises have used new digital processes, some of which they estimate will remain after the pandemic, the adoption (or enhancement) of digital media (84%), the adoption of teleworking (60%) and the automation of decision-making processes (44%).



Source: Digital Transformation of Greek Enterprises. 2020: The Impact of the COVID-19 Pandemic.

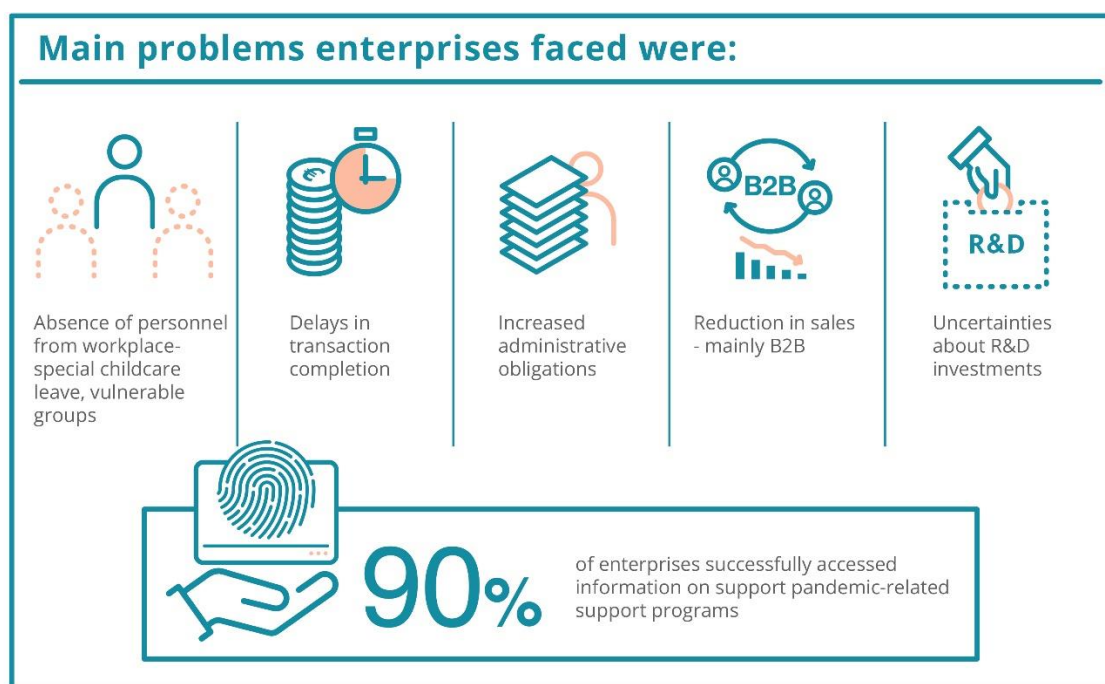
Due to the conditions of the pandemic, a significant percentage of enterprises were negatively affected by sales and exports of goods or services, mainly those related to sales to other enterprises (B2B). Specifically, enterprises nationwide reported reduced sales to

other enterprises with 50% (5 out of 10) reporting reduced domestic sales and 42% reduced exports. Similarly, enterprises reported reduced sales to consumers with 38% reporting reduced domestic sales and 27% reduced exports.

In contrast, the majority of enterprises, regardless of size or region, did not experience difficulties in purchasing raw materials, any difficulties that did arise were mainly with imports.

Regarding the impact of the pandemic on business investments for R&D purposes, 10% of all enterprises believe that their investments in this sector will be positively affected, 8% of enterprises do not expect any investments, while percentages for enterprises estimating that R&D investment will decrease (47% of enterprises) or are not expecting change (34% of enterprises) are higher.

Other problems recorded in the EKT survey concerned delays in transaction completion (52% of enterprises), increased administrative overload (41%) and to a lesser extent reduced supply chain-services (29%) as well as problems in existing digital business infrastructure (25%).



Source: Digital Transformation of Greek Enterprises. 2020: The impact of the COVID-19 pandemic.

Business support to address the pandemic

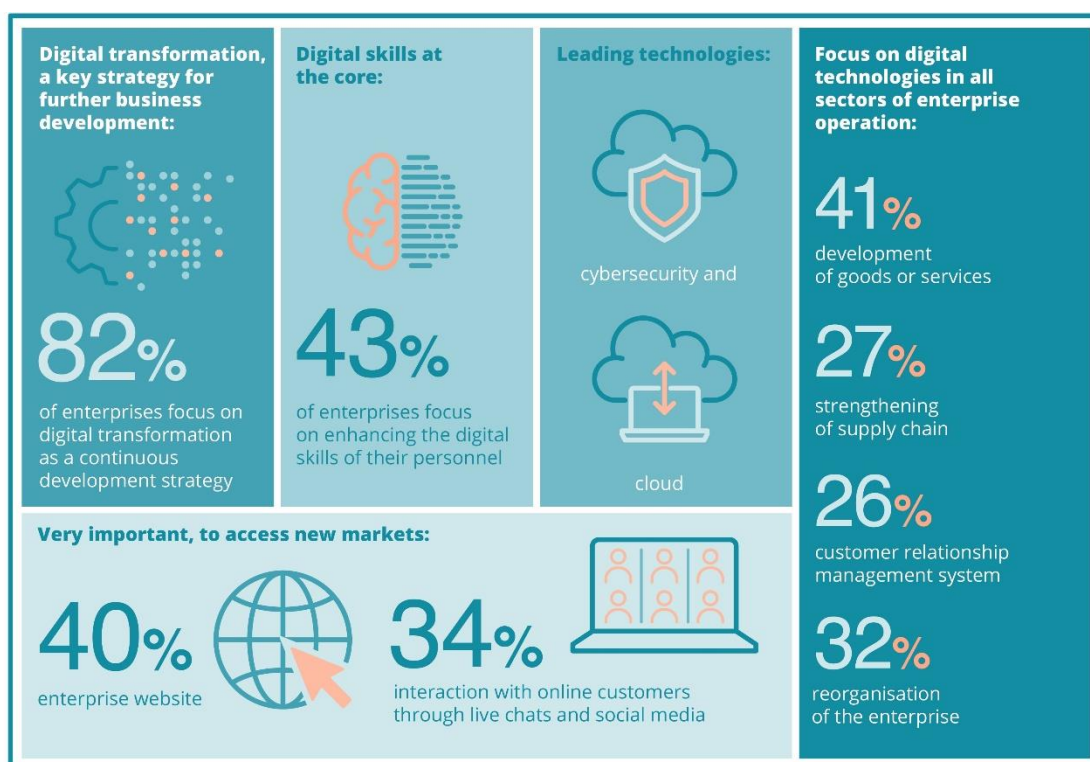
Almost all enterprises surveyed (91%) said they were able to access information on pandemic-related support programmes successfully, with only 1% of enterprises having difficulty accessing it.

Regarding the individual measures, the relief (tax and insurance) and the credit facilities were rated by the majority of enterprises as being the most useful, with percentages for small and medium-sized enterprises being much higher (up to 10%). Finally, a significant

number of small and medium-sized enterprises noted rent subsidies and overall financial support as useful measures that are directly related to their liquidity.

Digital Business Upgrade - The Next Day

Owing to the pandemic, digital transformation is being strengthened as a core business strategy. The majority of enterprises nationwide (82%) state that they intend to focus on digital transformation, assessing it as a very important (44%) or important (38%) continuous growth strategy. The emphasis on digital technologies concerns all areas of business operation and include continuous improvement and development of goods or services (41% of enterprises); reorganisation of business processes (ERP systems) (32% of enterprises); strengthening the supply chain; delivery and distribution (27% of enterprises) and installation or development of customer management (CRM) systems (26% of enterprises). Regardless of size, 43% of enterprises will focus on enhancing the digital skills of employees in order to accomplish overall digital transformation.



Source: Digital Transformation of Greek Enterprises. 2020: The Impact of the COVID-19 Pandemic.

Leading technologies such as cybersecurity and cloud computing are rated as the most important technologies for the future development of enterprises, with percentages of 37% and 36% respectively for all enterprises. 40% of all enterprises consider website operation to be a very important practice for their expansion into new markets after the pandemic, and 34% of enterprises consider interaction with online customers through live chats and digital social media to be very important.

The maturation of the Digital Transformation of enterprises

The publication also examines the degree of acceleration of the digital transformation of enterprises in 2020 due to the special conditions of the pandemic, presenting comparative

data for the enterprises that participated in both this statistical survey of EKT with reference to the year 2020 and the first survey of the series 'Digital Transformation of Greek Enterprises' with reference to the period 2016-2018, before the outbreak of the crisis.

The very high percentage of the use of digital media to enhance communication and exchange ideas between enterprise personnel during the pandemic period (48%) compared to the three years 2016-2018 (38%) is significant. The percentage of enterprises (33%) that consider market access interaction with customers through digital communication channels during the pandemic period to be a very important practice is also very high (20% during the three years 2016-2018).

2. Introduction

Digital Transformation is constantly accelerating, fueled by a set of digital technologies, new business models, media and social activities that are gradually maturing, being adopted on a large scale and are expected more and more to affect all sectors of the economy and society² in the coming years.

In recent years, the international statistical community has begun to implement a series of actions to strengthen the required evidence base for monitoring and shaping countries' digital transformation³. As the National Authority of the Hellenic Statistical System, EKT is in line with international developments and has already integrated and continuously broadens the statistics it produces with data that reflect important aspects of digital transformation in Greece. This publication is the second in EKT's new series of statistical publications titled 'The Digital Transformation of Greek Enterprises' and focuses on examining the course of digital transformation in 2020, a year of forced reduction of 'natural' economic and social activities due to the COVID19 pandemic.

In this context, the digital transformation of enterprises, the digitization of public services, the creation of secure, efficient and sustainable digital infrastructure and the strengthening of the digital skills of human resources, professionals and citizens, are now among the key strategies for achieving the transition to a digital, climate-neutral, cyclical and resilient economy to serve European humanitarian values and citizens⁴.

Following international trends and new development models in recent years, Greece has made continuous improvements in the digital environment and its overall level of digital maturity. As a natural consequence, the Digital Transformation of Greek Enterprises, an integral part of Greek society and economy, has already begun and reflects the way and the extent to which the enterprises themselves respond to the significant changes that occur in their external environment. Of course, the process of digital transformation of enterprises does not simply require the use of new technologies and still has a long way to go in order to reach the European average⁵. What it requires is for enterprises to implement a new organizational model and connect internal processes and people using technological tools⁶.

² European Union, 2020. Shaping the digital transformation in Europe.

³ OECD (2019), [Measuring the Digital Transformation: A Roadmap for the Future](#), OECD Publishing, Paris.

⁴ https://ec.europa.eu/commission/presscorner/detail/en/IP_21_983.

⁵ [DESI2020Thematicchapters-Integrationofdigitaltechnology](#)

⁶ EKT (2020), [Ο Ψηφιακός Μετασχηματισμός των ελληνικών επιχειρήσεων 2016-2018](#). Athens. National Documentation Centre.

The national strategy for the Digital Transformation of the whole of Greek society and economy is reflected in the Book of Digital Transformation (BDM)^{7,8}. It describes key objectives for the implementation of digital business transformation: the development of digital skills of all citizens, the facilitation of the transformation of every Greek enterprise into a digital business, the support and enhancement of digital innovation and the integration of modern technologies in all sectors of the economy. Digital Business, Digital Innovation and the integration of Technology in each sector of the Economy are distinct strategic pillars of the national strategy in which key interventions are expected to be made.

The Impact of the COVID-19 Pandemic on the Digital Transformation of Businesses

At the end of 2019 there was a surge of pneumonia in Wuhan city of Hubei province in China. On January 9, 2020, the Chinese health authority announced that this was a new, hitherto unknown, coronavirus strain (2019-nCoV)⁹. Its easy transmission and the serious infections it causes have aggressively led humanity to a new unprecedented daily way of life, that of the COVID-19 pandemic. Sixteen months later, according to the World Health Organization, despite extreme international restrictive measures, the total number of confirmed cases of the virus worldwide has exceeded 135.6 million and the number of deaths 2.9 million¹⁰.

In Greece, the COVID-19 pandemic spread from 26 February 2020 onwards. From the first days after the confirmation of the initial cases, measures were taken at local and national level in order to limit the spread of the pandemic. Measures included closing borders and suspending connections with other countries, restricting traffic and movement, suspending businesses and workplaces, suspending religious events, suspending educational institutions and information campaigns. On April 28, 2020, the partial lifting of the emergency measures began with the limited relaxing of travel restrictions, the reopening of retail, catering and careful 'opening' of tourism. On September 21, 2020, emergency restrictive measures once again came into effect, including a ban on outdoor and indoor gatherings, mandatory teleworking in public and private sector companies, introduction of flexibility of entry and exit of private sector employees, controls and penalties of employees and employers not following the health protocols. The restrictive measures, at sometimes stricter and at other times more relaxed depending on key indicators for monitoring the spread of the pandemic, apply up to the time of writing, This has created an unprecedented uncertain environment for economic and social activities.

⁷ Digital Transformation Bible 2020-2025, Ministry of Digital Governance, December 2020.

⁸ GG N.4727, article 5, 23 September 2020.

⁹ Coronaviruses are a group of viruses that usually cause respiratory infections of varying severity in humans and animals.

¹⁰ World Health Organization, <https://covid19.who.int/>, 135.646.617 cases 2.930.732 deaths, data up to and inclusive of 12 April 2021.

Since the beginning of the pandemic, the European Commission has been co-ordinating a common European response to the coronavirus outbreak¹¹. It is taking action to strengthen public health and mitigate socio-economic impacts in the European Union, co-ordinate national measures to address the situation, provide information on the spread of the virus, and work to reduce it. To mitigate the impact on citizens' livelihoods and the economy, the Commission approved an economic response to the pandemic, decided on the full flexibility of EU fiscal rules, revised its state aid rules and launched an investment initiative to tackle coronavirus and provide liquidity for small businesses and the healthcare sector. The Commission has also launched a new support initiative to mitigate the risks of unemployment in an emergency (SURE¹²), which helps maintain jobs and support families affected by the pandemic. It also suggested redirecting the available resources of the Structural Funds to tackle the coronavirus. Indicatively, since the beginning of the pandemic, the Commission has approved a total of 90.6 billion euros in loans through the SURE mechanism for 19 EU countries, with 2.7 billion euros being approved specifically for the economic recovery of Greece.

Despite the support measures, there has been a great impact on the operation of enterprises because of restrictive measures. In Greece, there has obviously been a major impact on enterprises in sectors such as tourism, retail, catering, entertainment, and in general in suspended industries¹³, while other industries seem to have been affected less or not at all. At the same time, the forced reduction of 'physical' activities marked a shift to digital practices for many enterprises. Indicatively, in 2020 the turnover in retail trade from internet sales recorded an increase of 18% compared to 2019, 464.1 million euros higher¹⁴. It is clear that the special conditions in which enterprises were obliged to operate, not only in Greece but at a global level, led them to rethink their workflow. One way to tackle much of these problems has been to harness the potential of digital technologies, an 'urgent opportunity' to accelerate their digital transformation.

In fact, the Digital Transformation of Business and the State has been incorporated as a key pillar of the Recovery and Sustainability Mechanism approved by the European Council on 11 February 2021 with a total budget of € 672.5 billion to address the economic and social impact of the COVID-19 pandemic. The National Plan Greece 2.0¹⁵, has a total budget from the Recovery Fund of almost 31 billion euros and Digital Transition support has 2.136

¹¹ https://ec.europa.eu/info/live-work-travel-eu/coronavirus-response_el.

¹² Support to mitigate Unemployment Risks in an Emergency, https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/financial-assistance-eu/funding-mechanisms-and-facilities/sure_en.

¹³ ELSTAT <https://www.statistics.gr/documents/20181/8318d66b-2585-1cf2-69a6-f36d0d1a0a32>

¹⁴ ELSTAT <https://www.statistics.gr/el/infographic-ent-retail-trade-2020>

¹⁵ <https://primeminister.gr/wp-content/uploads/2021/03/Greece-2.0-det-EL-31032021.pdf>

billion euros, which will be allocated for connectivity for citizens, businesses and the state, the digital transformation of the state and the digital transformation of enterprises.

Context and objectives of the EKT survey

In the above context, at the end of 2020, EKT designed and implemented a survey aimed at capturing the difficulties faced by dynamic Greek enterprises, enterprises investing in Research and Development (R&D), to record the strategies they adopt and digital technologies and practices they use to address the situation, and finally, to highlight the digital processes and practices that were initially necessitated by the pandemic but eventually proved important enough to remain after the pandemic, indicating a continued orientation towards a more digital business. This survey was carried out under the multiannual, periodic statistical survey on Research and Development¹⁶ in Greek enterprises conducted by EKT as the competent National Authority of the Hellenic Statistical System.

Section 3 describes the R&D enterprises that participated in the current survey and presents their key characteristics. Section 4 describes the impact of the pandemic and the problems it has created in business and Section 5 provides an assessment of how enterprises can support their response to the pandemic. Section 6 presents the main strategies and operational procedures adopted by enterprises to tackle the pandemic crisis. Section 7 examines the extent to which the obligatory increase in the use of digital technologies in the economic and social conditions imposed by the pandemic has led to a more comprehensive digital orientation of enterprises. Lastly, section 8 shows the degree of maturity of the Digital Transformation of Greek enterprises through the comparison of the pandemic period in 2020 with the three years 2016-2018.

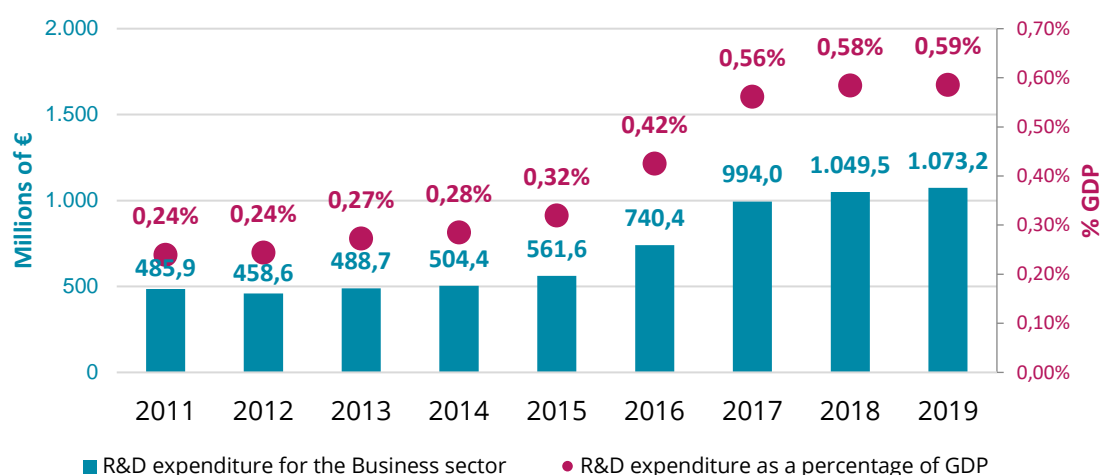
¹⁶ <https://metrics.ekt.gr/research-development/publications>.

3. Profiles of enterprises that participated in the survey

EKT's survey on the digital transformation of enterprises in 2020 was carried out in the context of its regular statistical surveys and focused on enterprises implementing R&D activities in Greece. These enterprises are highly innovative and are at the forefront of Greece's road towards a knowledge-intensive economy.

The dynamics of these enterprises is reflected in the evolution of their investments in R&D activities, which in recent years have followed a continuous upward trend. In 2019, the R&D expenditures of enterprises in Greece were 1,073.22 million euros, more than double that of 2011 (Figure 1).

Figure 1: R&D expenditures of enterprises in Greece and R&D expenditures as a percentage of GDP 2011-2019



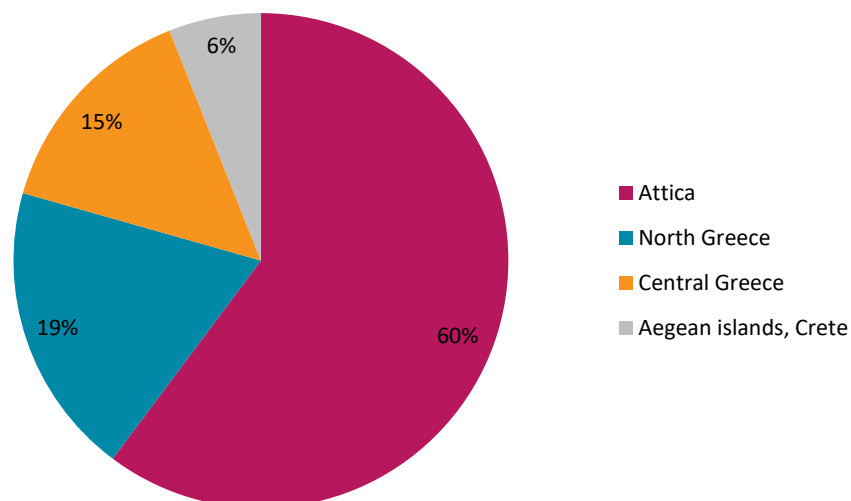
EKT has developed and maintains R&D records for enterprises, using information from its statistical surveys as well as from official administrative sources (funding of national or European projects, R&D tax exemption data, etc.). EKT R&D registers, which are updated on a regular basis, include all enterprises with 'systematic R&D' (enterprises that carry out R&D activities every year-R&D performers), and enterprises with 'potential R&D' (enterprises that may have carried out R&D activities in each reference year and are therefore included in the research - potential R&D performers).

The population of the current survey was taken from EKT registers and included both enterprises with systematic and potential R&D.

Figures 2 - 6 show the distribution of enterprises that participated in the survey by NUTS 1¹⁷, regional classification, size of employment, sector of economic activity and year of establishment.

Of the enterprises that participated in the survey, 60% are concentrated in Attica and a large percentage (20%) in Northern Greece (Figure 2).

Figure 2: Distribution of R&D enterprises by group of regions - NUTS 1 regional classification



The largest percentage (77%) of the enterprises that participated in the survey are small and medium -sized enterprises (SMEs), with less than 250 employees. Most of them employ 20 to 49 people (Figures 3 & 4).

¹⁷ ['nomenclature of territorial units for statistics'](#) (NUTS) created by the European Statistical Office (Eurostat) with the aim of implementing common statistical standards throughout the European Union. NUTS level 1 refers to groups of regions, namely:

Northern Greece: includes the Regions of Eastern Macedonia and Thrace, Central Macedonia, Western Macedonia and Epirus.

Central Greece: includes the Regions of Thessaly, Ionian Islands, Western Greece, Central Greece and Peloponnese.

Attica: includes the Attica Region, Aegean Islands,

Crete: includes the North Aegean, South Aegean and Crete Regions.

Figure 3: Distribution of SME enterprises by size (1-249 employees) and Large (>250 employees)

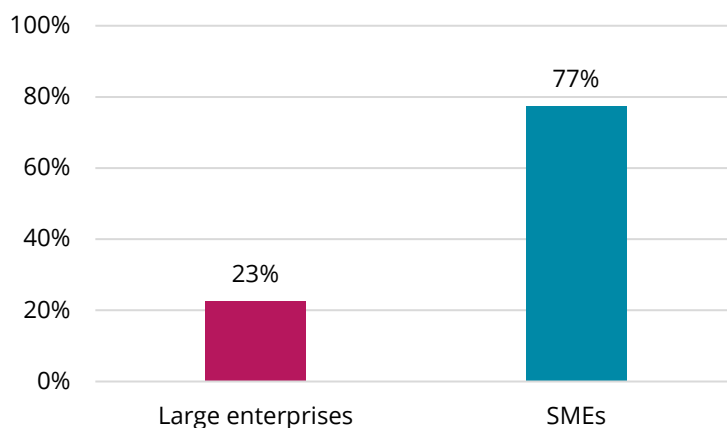
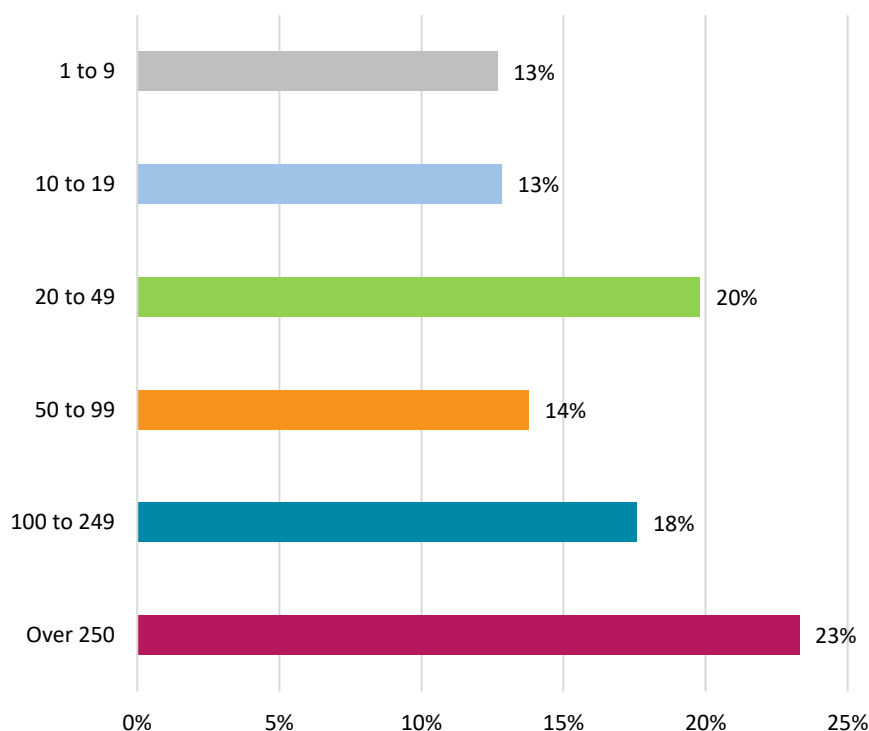


Figure 4: Distribution of enterprises by size class of employees



In terms of their economic activity¹⁸ (Figure 5), 49% of enterprises are active in the Services sector¹⁹ (Nace rev2 codes 45-82), 45% in Industry²⁰ (Nace rev2 codes 05-39) and 6% in other sectors²¹.

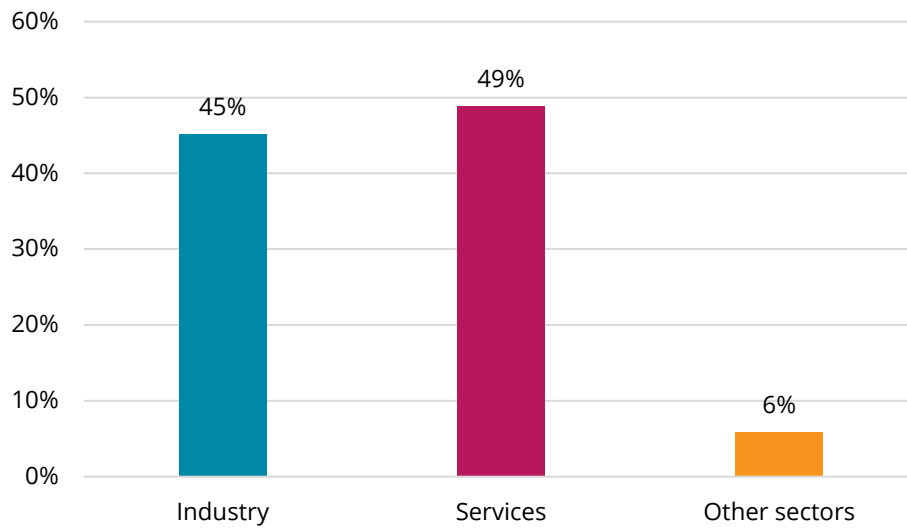
¹⁸ <https://ec.europa.eu/eurostat/statistics-explained>.

¹⁹ **Services:** Wholesale trade, Transport and storage, Information and communication, Financial and insurance activities, Professional, scientific and technical activities.

²⁰ **Industry:** Mining and quarrying, Manufacturing, Electricity, gas, steam and air conditioning supply, Water supply, Sewerage, waste management and remediation activities.

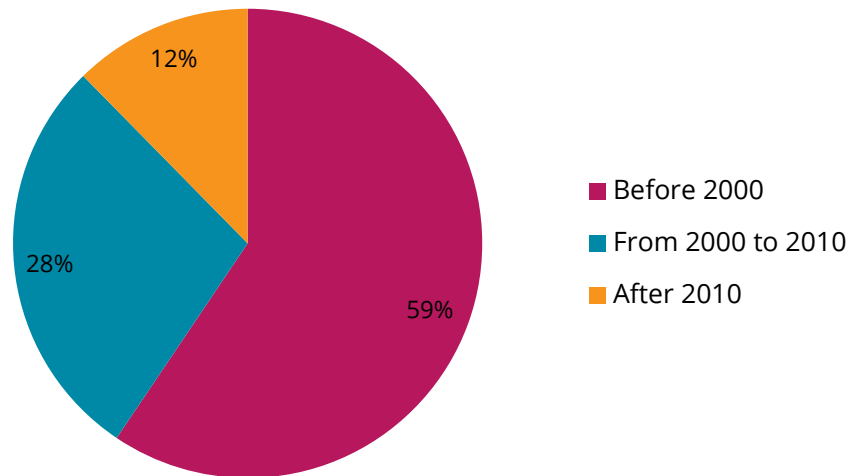
²¹ **Other sectors:** Agriculture, forestry and fisheries, Administrative and support activities, Human health and social work activities, Education, Construction, Real estate management, Catering and catering activities.

Figure 5: Distribution of enterprises by sector of economic activity



Finally, most enterprises (59%) have been active for more than 20 years, while almost 1 in 10 started operating in the last decade 2010-2020 (Figure 6).

Figure 6: Distribution of enterprises by year of establishment

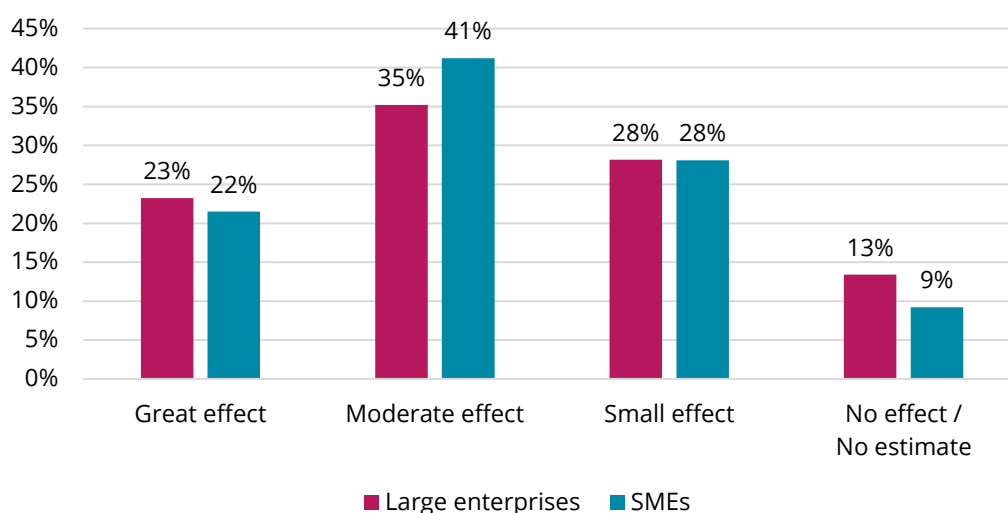


4. The impact of the COVID-19 pandemic on business

This section describes the magnitude of the impact of the COVID-19 pandemic on the activity of R&D enterprises in Greece in 2020. Areas such as R&D investment, access to raw materials and product sales, turnover and the main problems faced by businesses are presented.

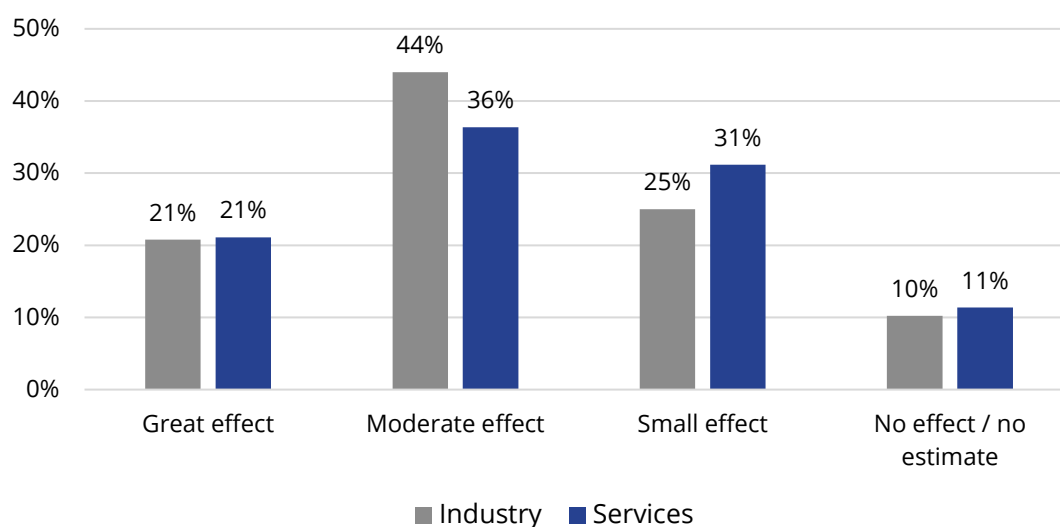
For all enterprises in the country, the pandemic affected, to a greater or lesser extent, business activity for almost 9 out of 10 enterprises with R&D, with 22% of enterprises being significantly affected by it. More specifically, it had a great effect on 23% of large enterprises and 22% of small and medium-sized enterprises (Figure 7), while a moderate effect on 35% of large and 41% of small and medium-sized enterprises, respectively.

Figure 7: Magnitude of the impact of the pandemic on business activity by enterprise size



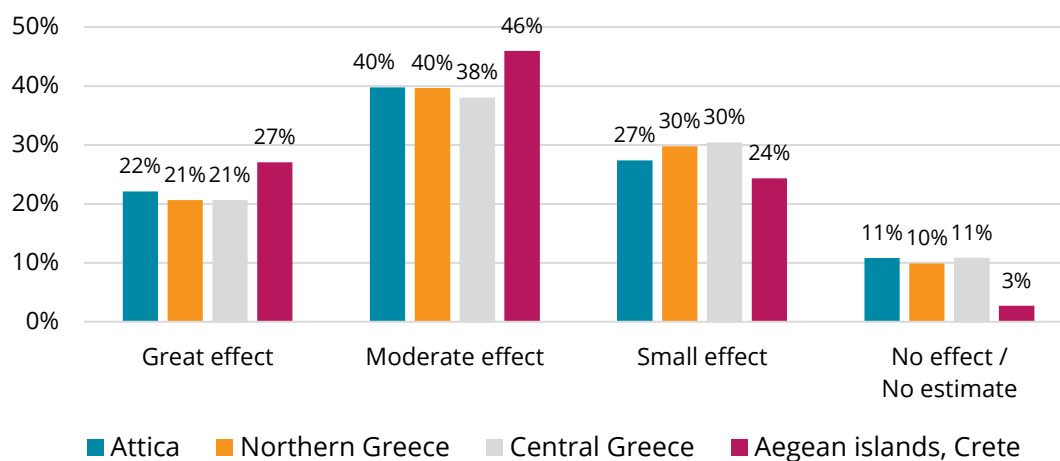
This picture is similar in terms of response rates of each category and individual distribution according to the sector of economic activity of enterprises (Figure 8). However, differences are observed between the two sectors (Industry - Services) in terms of the distribution of responses when the impact is small or moderate. While the percentages of enterprises in these two categories of responses are similar (69% Industry - 67% Services), it seems that for most of the enterprises operating in Industry the pandemic had a moderate impact (44%), while in the category of enterprises operating in the Services there is a greater difference in percentage between the categories (36% Moderate impact - 31% Minor impact).

Figure 8: magnitude of the impact of the pandemic on business activity by main sector of economic activity, Industry and Services



There are slight differences in the magnitude of the impact on regional distribution of enterprises. As shown in Figure 9, the Aegean islands and Crete have been most affected (73%).

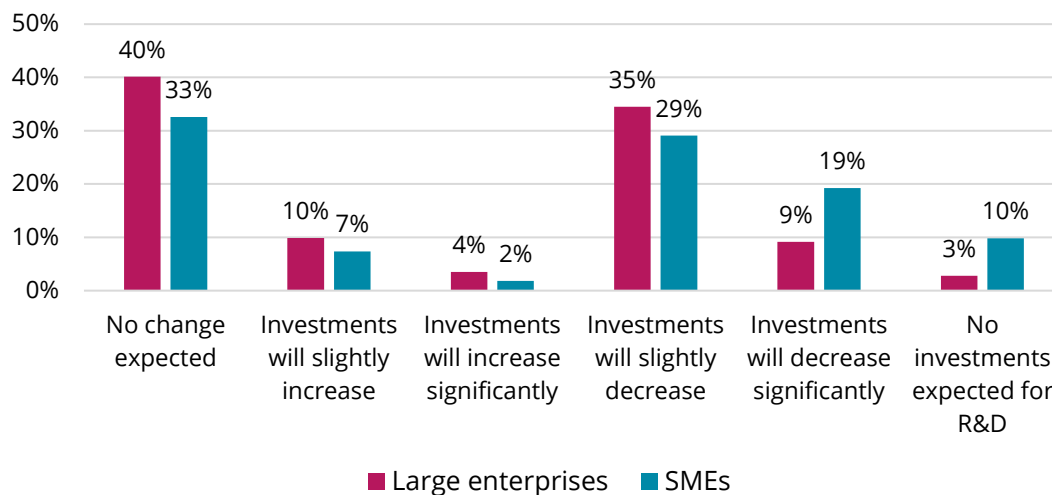
Figure 9: Magnitude of the impact of the pandemic on business activity by group of regions - NUTS 1 regional classification



Regarding the impact of the pandemic on business investments for R&D activities, 10% of all enterprises estimate that investments in this sector will be positively affected, 8% of enterprises do not expect any investments at all, while, with higher percentages, enterprises either estimate that R&D investment will decrease (47% of enterprises) or do not expect change (34% of enterprises). In more detail, Figures 10, 11 and 12 present the enterprise ratings of the impact of the pandemic on R&D investments, depending on their size, their sector of economic activity and their regional distribution, respectively.

Most of the large enterprises have not changed their investments in R&D, and 14% even expect an increase. In contrast, however, most small and medium-sized enterprises estimate that investment in R&D will be adversely affected.

Figure 10: Impact of the pandemic on business investment in R&D by business size



The Services sector seems to be more affected than the Industry sector in terms of R&D investments, while enterprises operating in the Aegean islands and Crete also seem to be more affected than the other regions of the country.

Figure 11: magnitude of the impact of the pandemic on business investment in R&D by main sector of economic activity Industry and Services

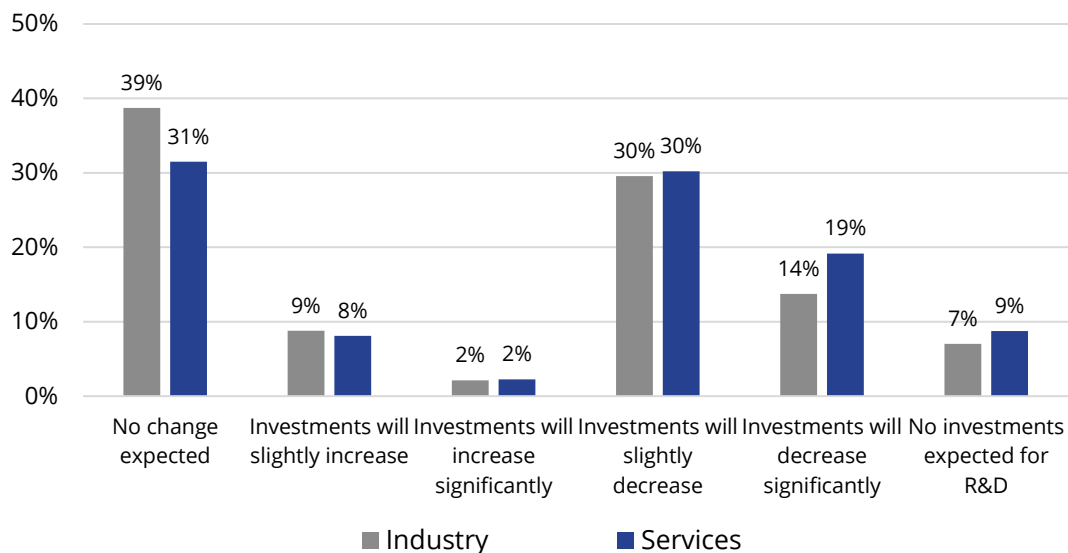
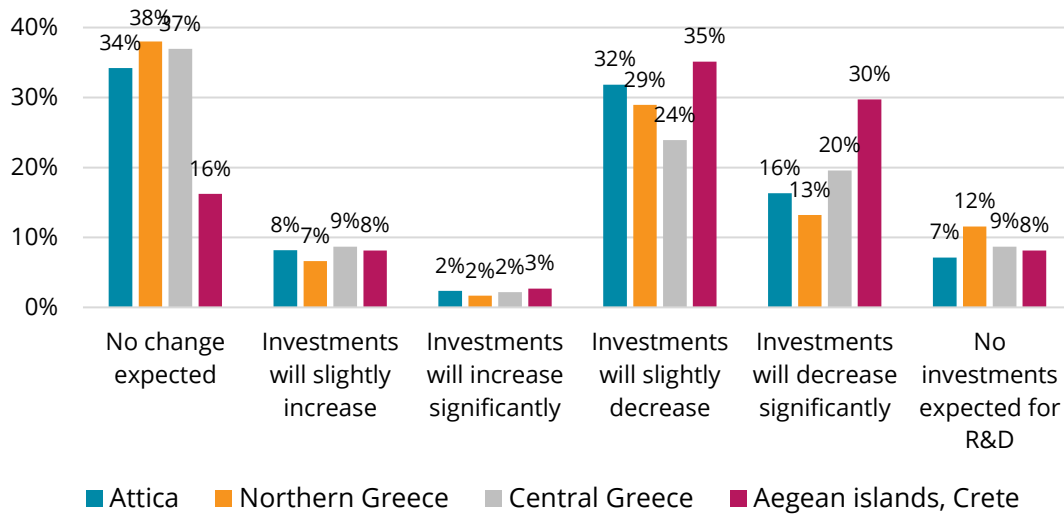


Figure 12: Impact of the pandemic on business investment in R&D by group of regions - NUTS1 regional classification



Regarding the possibility of purchasing and accessing raw materials and intermediate flows, the difficulties are mainly found in the import of raw materials from abroad for 24% all enterprises.

More specifically, most enterprises, at a rate of 71% of large and 67% of small and medium-size respectively, state that there is no change in their ability to purchase raw materials (Figure 13). However, 28% of large and 27% of small and medium-sized enterprises report difficulty in importing from abroad, with the corresponding percentage being slightly increased for the enterprises located in Central Greece (Figure14). As for access to raw materials from within, only a small percentage of small and medium-sized enterprises (7%) and large enterprises (2%) encountered problems. 11% of enterprises in Northern Greece also had difficulty accessing raw materials from within the country, a slightly higher percentage compared to other regions.

Figure 13: Impact of the pandemic on the ability to purchase raw materials and intermediate business flow by enterprise size

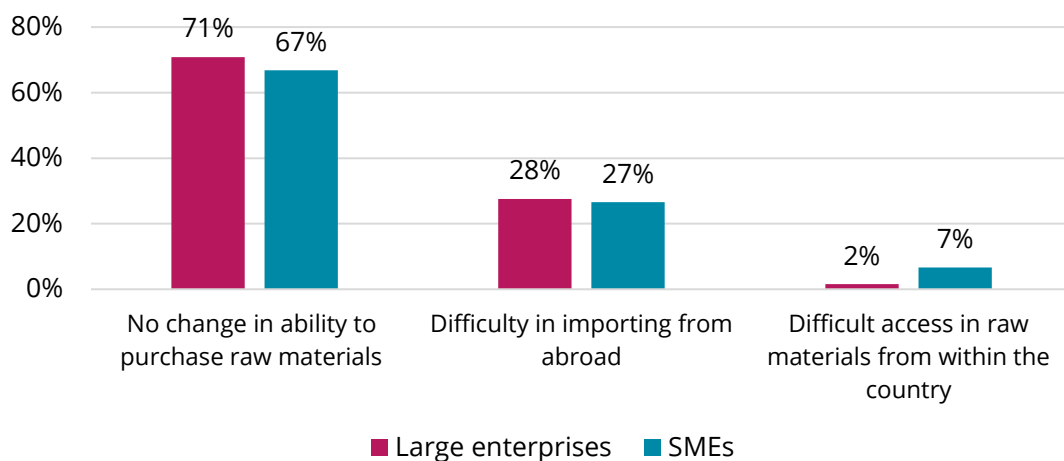
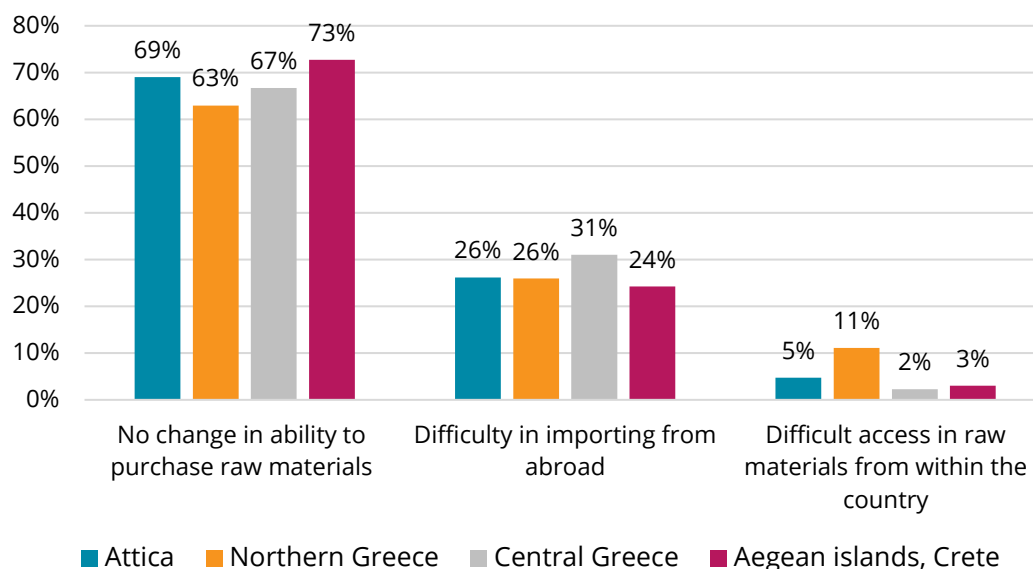


Figure 14: Impact of the pandemic on the purchasing power for raw materials and intermediate business flow by group of regions - NUTS 1 regional classification

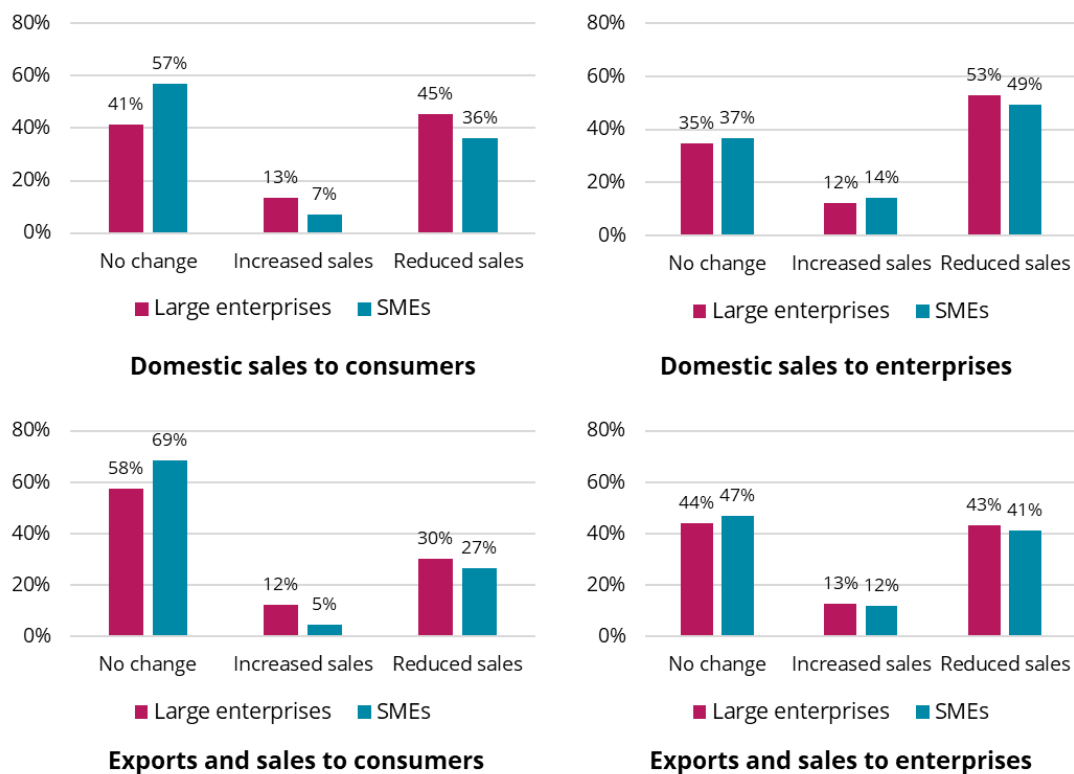


For a significant percentage of enterprises, sales and exports of goods or services, both to consumers (B2C) and to other enterprises (B2B), were negatively affected. Specifically, nationwide, 50% of enterprises (5 out of 10) reported reduced domestic sales to other enterprises and 42% of enterprises reported reduced exports to other enterprises. Overall, domestic sales appear to have been most affected by their respective exports and sales to both businesses and consumers.

In terms of domestic sales, a significant percentage of large enterprises reported reduced sales to both consumers (45%) and other enterprises (53%) (Chart 1). Similarly, most small and medium-sized enterprises showed reduced domestic sales to other enterprises (49%), with the majority (57%) not showing any change in their sales to consumers due to the pandemic.

With regard to exports, 12% of large enterprises showed increased sales to consumers and 5% of small, reduced sales showed almost 1 in 3 companies (30% of small and medium enterprises and 27% of large ones), while most enterprises did not show any changes. in their sales due to the pandemic. Sales to other enterprises show a similar behavior, except that the percentages for enterprises with reduced sales to other enterprises are significantly higher (43% of large and 41% of small and medium size) compared to the corresponding percentages of sales to consumers.

Chart 1: Impact of the pandemic on sales of business goods or services to consumers or other enterprises, by enterprise size



Regarding enterprise assessment of the impact of the pandemic on their total turnover, 16% of all enterprises expect increases in their sales, 20% expect no change and the largest percentage of enterprises (63%) expect reduced sales (significantly or slightly). The subdivision of this estimate into large and small enterprises is shown in Figure 15. The majority of large enterprises (52%) expect small losses in total turnover, while a significant percentage of small and medium-sized enterprises (23%) expect significant losses in total turnover. Finally, 18% of large and 21% of small and medium-sized enterprises do not expect any change in their overall turnover.

Figure 15: Enterprise assessment of the impact on their overall turnover due to the pandemic

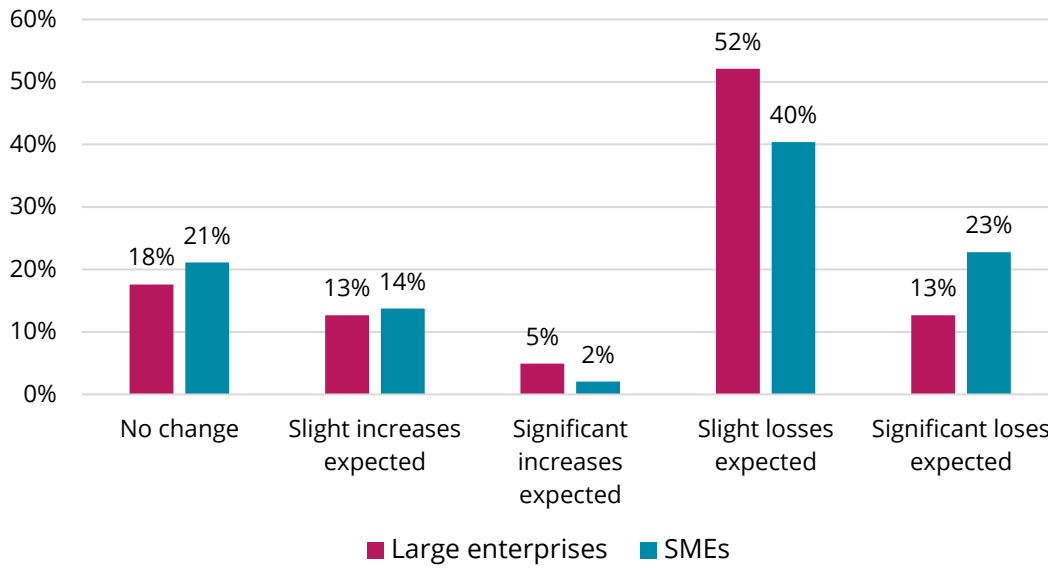


Chart 2 presents the main problems faced by enterprises. The majority of enterprises (55%) faced internal problems in terms of their smooth operation due to the absence of employees with special childcare leave. For a large percentage of enterprises (52%) problems arose from delays in payments. Other problems concern the absence of employees who belong to vulnerable groups, increased administrative obligations, reduced supply-chain services, and problems with existing digital business infrastructure.

Chart 2: Problems in the operation of enterprises caused by the pandemic

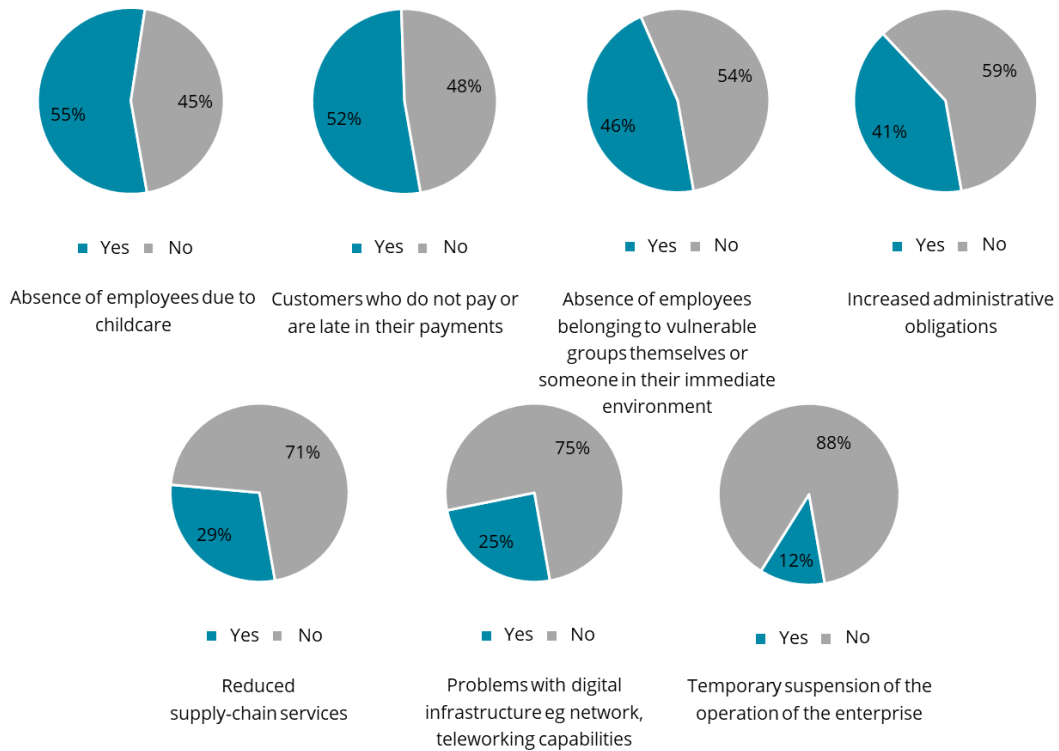
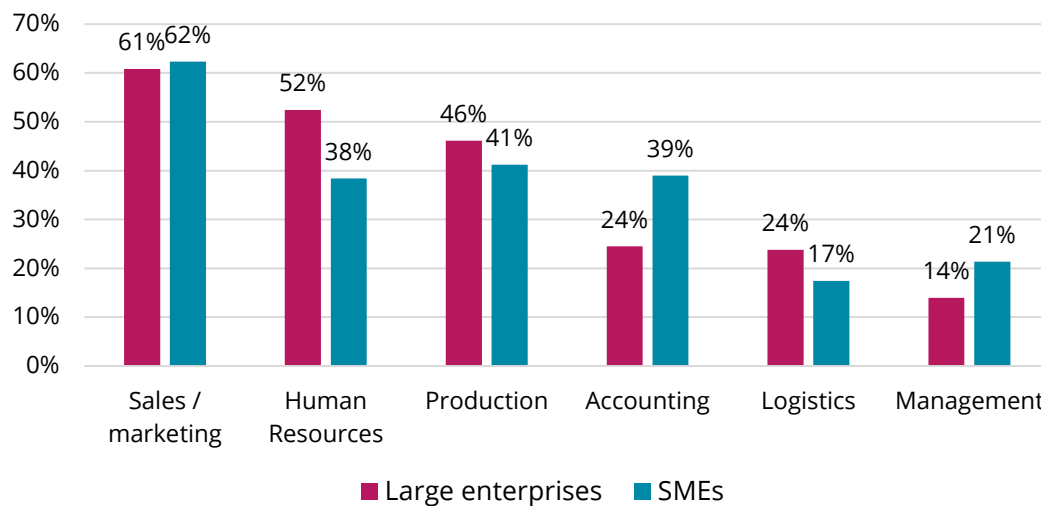


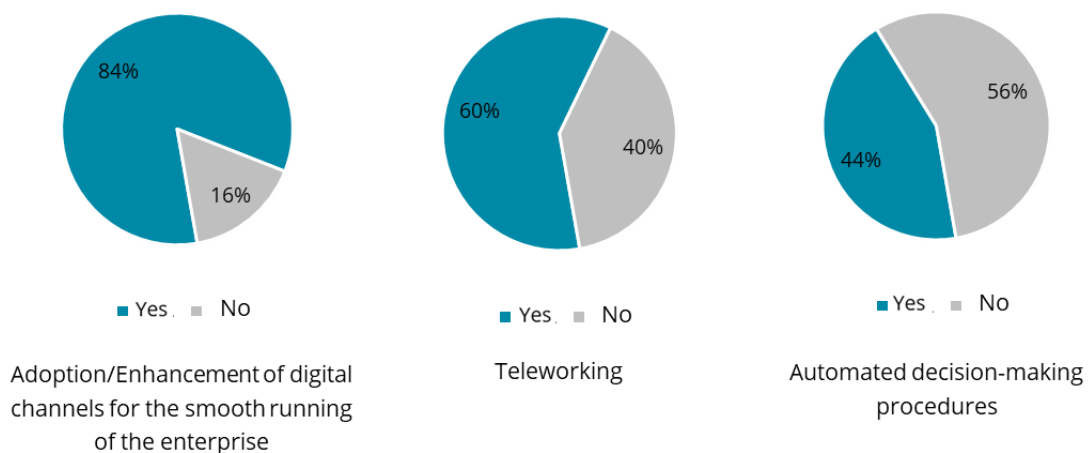
Figure 16 shows the sub-sectors of enterprises most affected by the pandemic crisis. These include: Sales / Marketing Departments, (with no differences between large and small enterprises), Human Resources Departments (mainly of large enterprises), Production Departments (with no differences between large and small enterprises), and Finance /Accounting Departments (mainly in small and medium-sized enterprises).

Figure 16: Sectors of companies most affected by the pandemic



In their quest to run smoothly, enterprises have used several new digital procedures, most notably the adoption (or enhancement) of digital channels, the extension of teleworking, and the automation of decision-making processes. Chart 3 shows enterprise assessments regarding the adoption of these practices once the pandemic is over.

Chart 3: Practices adopted during the pandemic that are expected to remain



5. Business support to address the pandemic crisis

In 2020, a number of measures and relevant business support programs were implemented at national and European level to address the effects of the COVID-19 pandemic. This section presents results on business access to primarily digital information on support measures and evaluates the usefulness of individual measures depending on the size of enterprises.

Almost all enterprises surveyed (91%) said they were able to access information about support programs successfully.

Difficulties ('difficult' & 'very difficult' access) were encountered by 10% of small and medium-sized enterprises, while the corresponding percentage for large enterprises is only 2% (Figure 17).

Figure 17: Access to information about pandemic business support programs

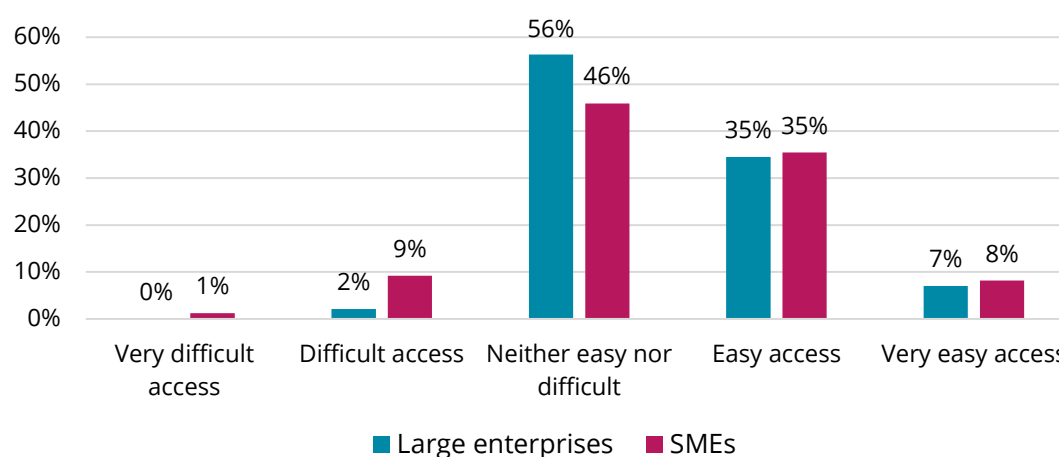


Figure 18 shows evaluation of the individual measures implemented to support enterprises. These measures consist of credit facilities²², tax relief²³, employment support programs²⁴, insurance relief²⁵, tariff relief on imported products, rent subsidies and financial support for freelancers, and self-employed business owners.

Relief (tax and insurance) and credit facilities were rated by most enterprises as the most useful business support measures for tackling the pandemic crisis. Percentages are much higher (up to 10%) for small and medium-sized enterprises. Finally, a significant number

²² E.g. low interest rate credit limits, credit guarantees, loan debt extensions, etc.

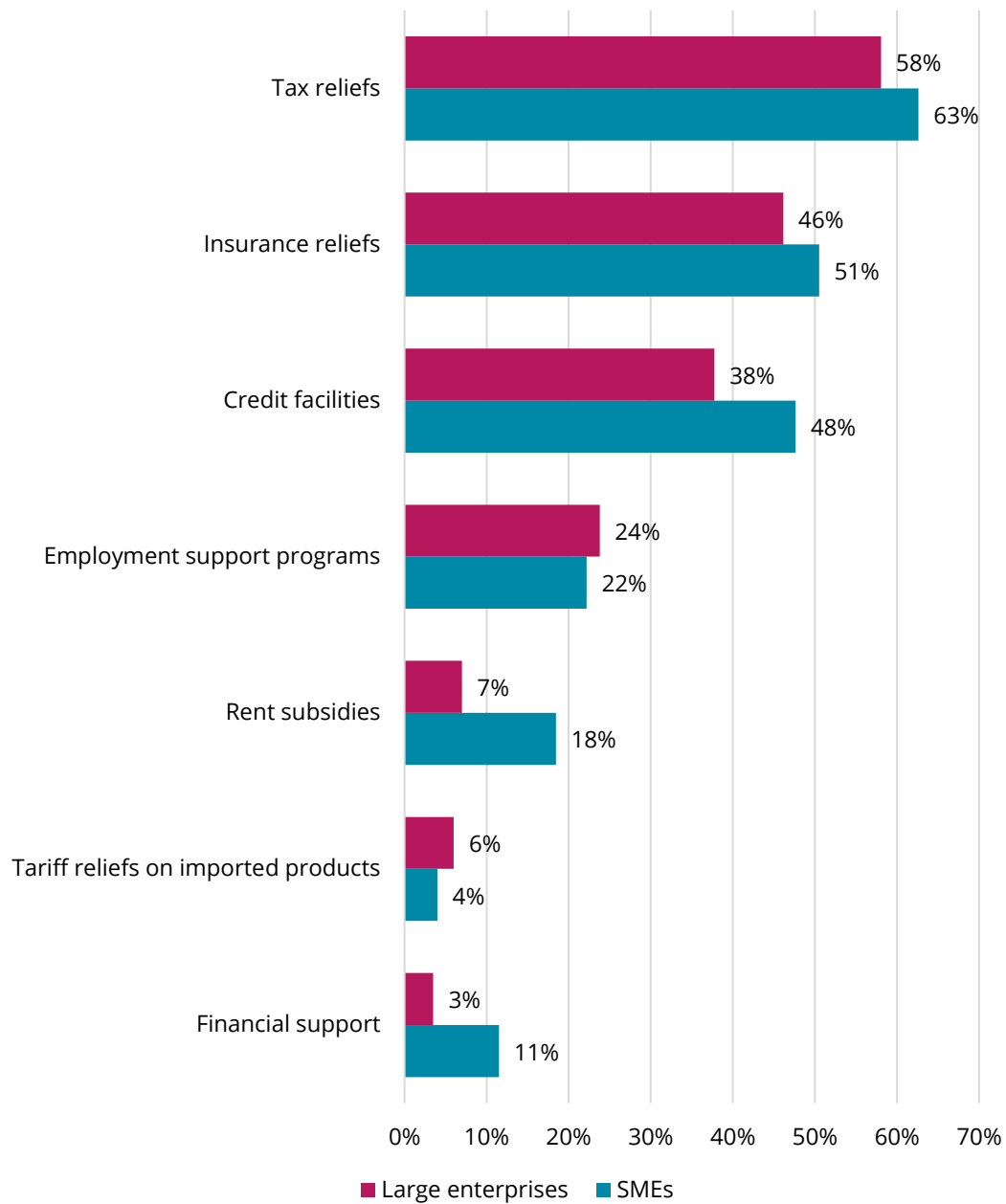
²³ E.g. exemptions from taxes, suspensions of payments of confirmed debts and VAT, etc.

²⁴ E.g. temporary unemployment programmes etc.

²⁵ E.g. suspensions of insurance contributions of employers and employees, exemption from social security, etc.

of small and medium-sized enterprises rated rent subsidies and financial support as useful measures, i.e. measures that are directly related to their liquidity.

Figure 18: Assessing the usefulness of measures for tackling the pandemic crisis by size of enterprise

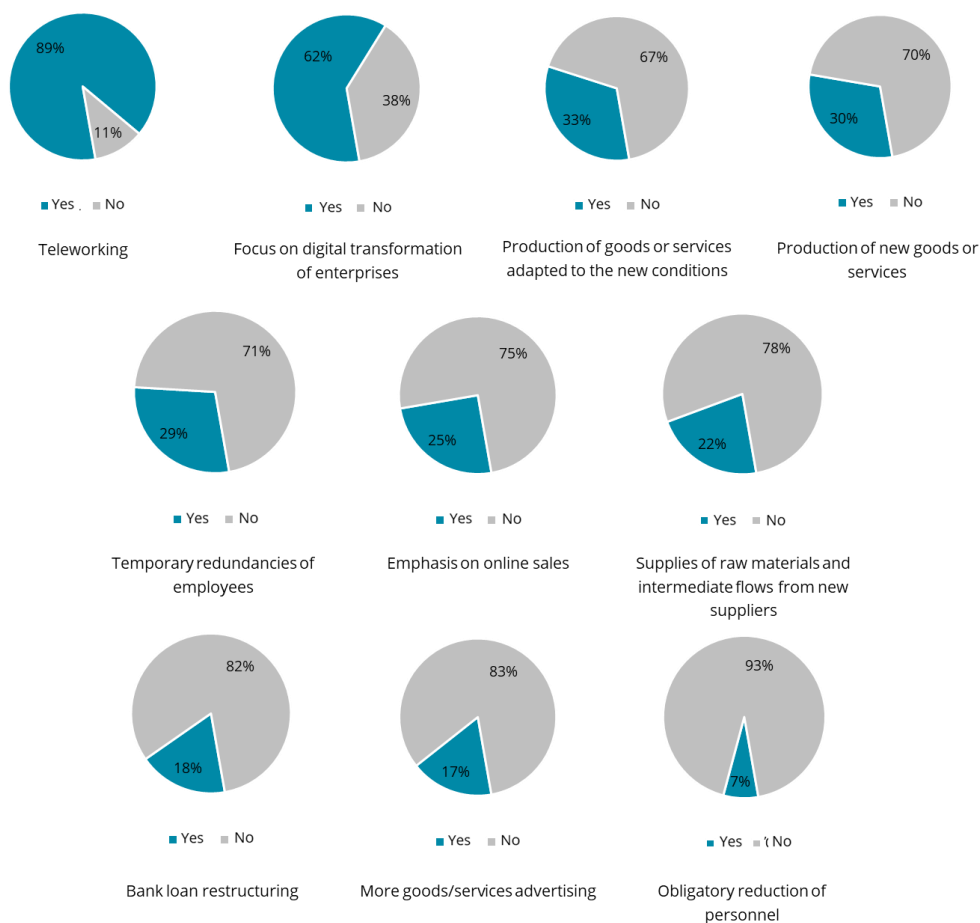


6. Strategies followed by enterprises to address the crisis

This section presents the main strategies, tactics and operational procedures adopted by enterprises in tackling the pandemic crisis. The EKT survey examined different strategies employed by enterprises in 2020 such as temporary redundancies, forced layoffs, teleworking, bank loan restructuring, the production of goods or services adapted to the conditions, and the overall focus on the digital transformation of business, the emphasis on online sales and the increase in advertising spending.

Chart 4 shows the percentages for adoption of the above main strategies by enterprises to tackle the crisis. Almost 9 out of 10 enterprises have adopted teleworking, 6 out of 10 enterprises have placed special emphasis on their digital transformation and 1 in 3 enterprises has changed its business model to produce goods or services adapted to the new conditions.

Chart 4: Main strategies adopted by companies to deal with the pandemic crisis

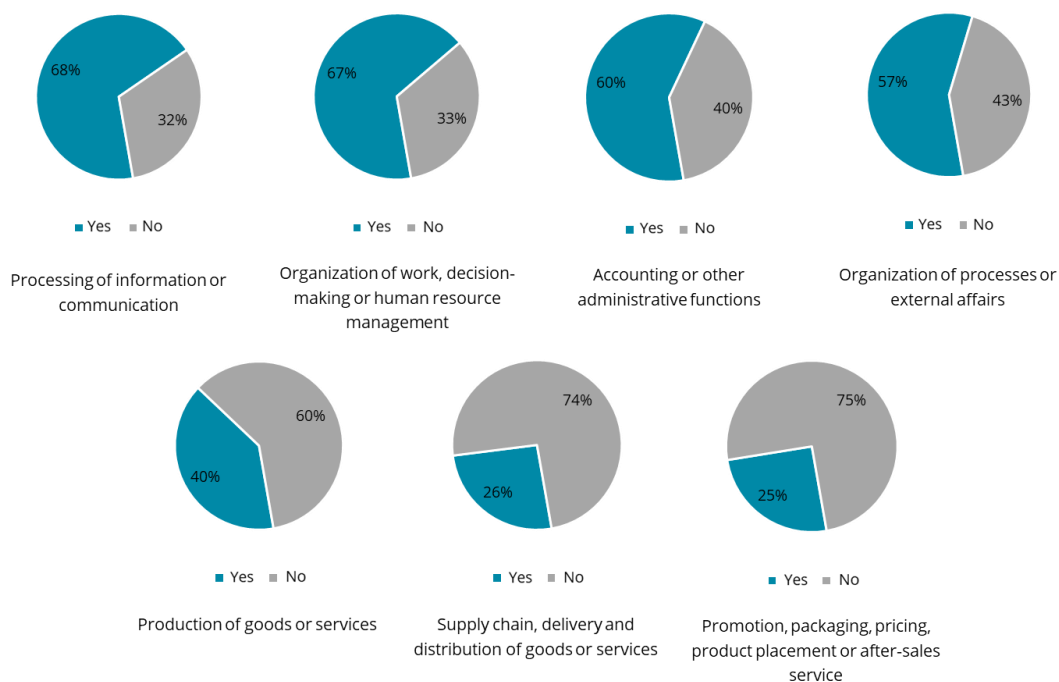


It is significant that the majority of enterprises have adopted mainly growth and footprint strategies to address the crisis caused by the pandemic. Indicative of this is the fact that only 7% of enterprises proceeded with obligatory staff reductions.

Chart 5 shows various business processes for which enterprises used digital technologies during the pandemic. The processes examined are: production of goods or services,²⁶ supply chain, delivery and distribution of goods or services, processing of information or communication²⁷, accounting or other administrative functions, organization of procedures or external relations, organization of work, decision-making or human resource management, and finally promotion, packaging, pricing, product placement or after-sales service.

The procedures for which digital technologies were used by the majority of enterprises were mainly information or communication processing (68% of enterprises), work organization, decision-making or human resources management (67%), accounting or other administrative functions (60%) and the organization of procedures or external relations (57%).) and the organization of procedures or external relations (57%).

Chart 5: Business processes using digital technologies during the pandemic



²⁶ Includes procedures for the development of goods / services.

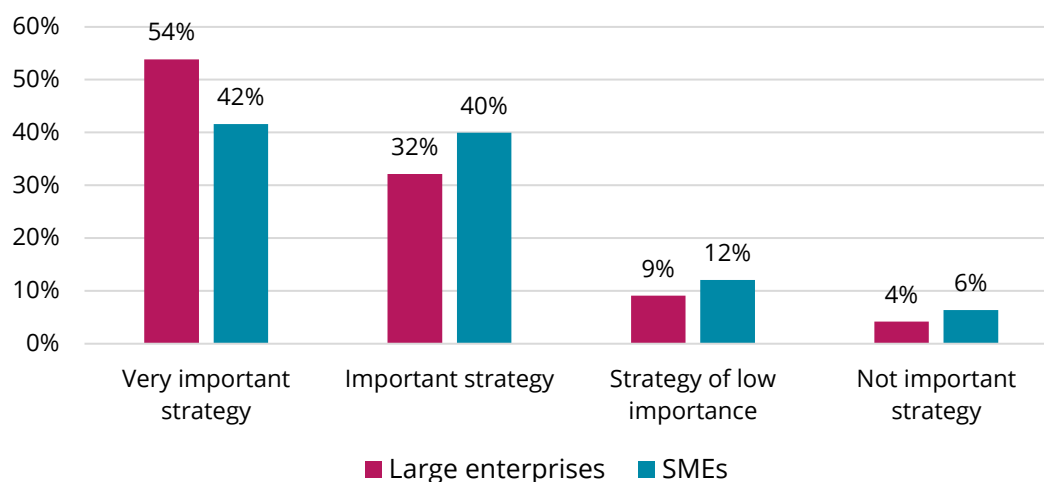
²⁷ Concerns computer applications (software / hardware), processing, databases, etc.

7. Digital upgrade of enterprises due to pandemic- the next day

This section examines the extent to which the necessitated increase in the use of digital technologies in the economic and social conditions imposed by the pandemic has led to a more comprehensive digital orientation of enterprises. More specifically, enterprise assessment of the adoption of digital strategies, practices and tools in the individual areas of business operation both during and after the crisis are presented.

According to the results, digital transformation is being fostered as a central business strategy. Having started with the pandemic, the majority of enterprises across the country (82%) say they intend to focus on digital transformation, assessing it as a very important (44%) or important (38%) ongoing growth strategy. Of small and medium-sized enterprises, 42% rate digital transformation as very important and 40% as significant growth strategy (Figure 19). The corresponding percentages for large enterprises are 54% and 32%. The percentage of enterprises that do not place any emphasis on digital transformation are very low (6% for SMEs and 4% for large ones).

Figure 19: Digital transformation as an ongoing strategy for further business growth

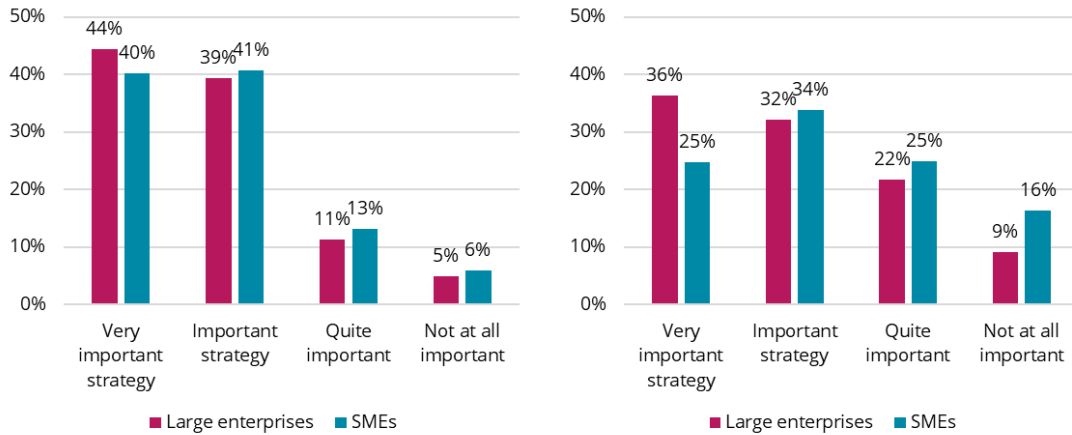


Areas focusing on digital technology include the continuous improvement and development of goods or services and the strengthening of the supply chain, deliveries and distribution, strategies that are considered very important for 41% and 27%, respectively for all enterprises. Emphasis will also be placed on the installation or development of customer management systems (CRM) and the reorganization of business processes (ERP systems), strategies that are considered very important for 26% and 32% of all enterprises respectively.

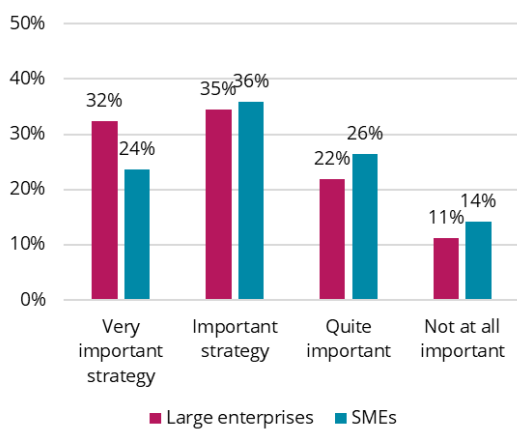
More specifically, the focus on digital technology through the continuous improvement and development of new products is considered a very important strategy for 44% of large and 40% of small and medium-sized enterprises (Chart 6). Strengthening the supply chain,

delivery and distribution is considered a very important strategy for 44% of large and 40% of small and medium-sized enterprises and the installation or development of CRM systems is considered a very important strategy for 32% of large and 24% of small and medium-sized enterprises. Finally, the use of ERP systems is considered a very important strategy for 36% of large and 30% of small and medium-sized enterprises.

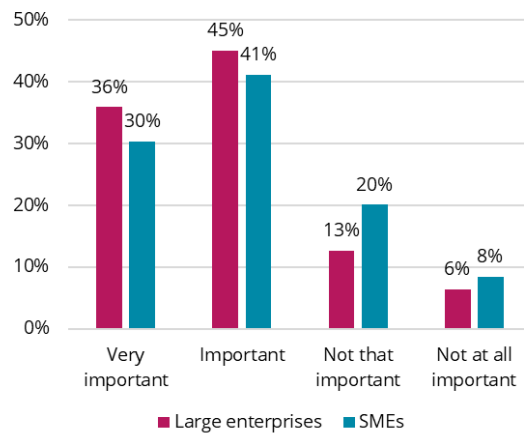
Chart 6: Emphasis on digital technology



Emphasis on digital technology for the continual improvement and development of goods or services



Emphasis on digital technology to strengthen supply chain, delivery and distribution



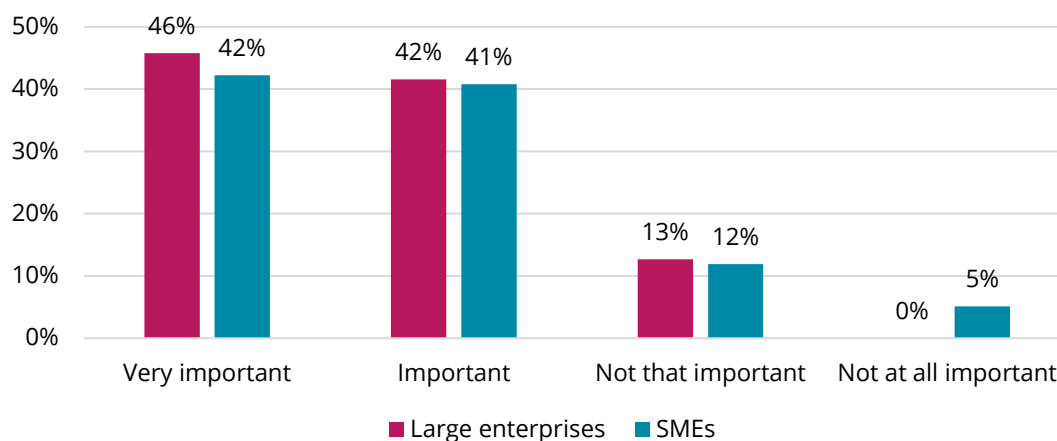
Emphasis installation or development of customer relationship management (CRM) systems

Emphasis on restructuring enterprise procedures using new digital technologies (ERP systems)

As the digital skills of personnel has become central to digital transformation²⁸, the majority of enterprises across the country (43%) intend to focus on enhancing the digital skills of their personnel so as to achieve overall digital transformation and their further development, with similar percentages for all sizes of enterprise (Figure 20).

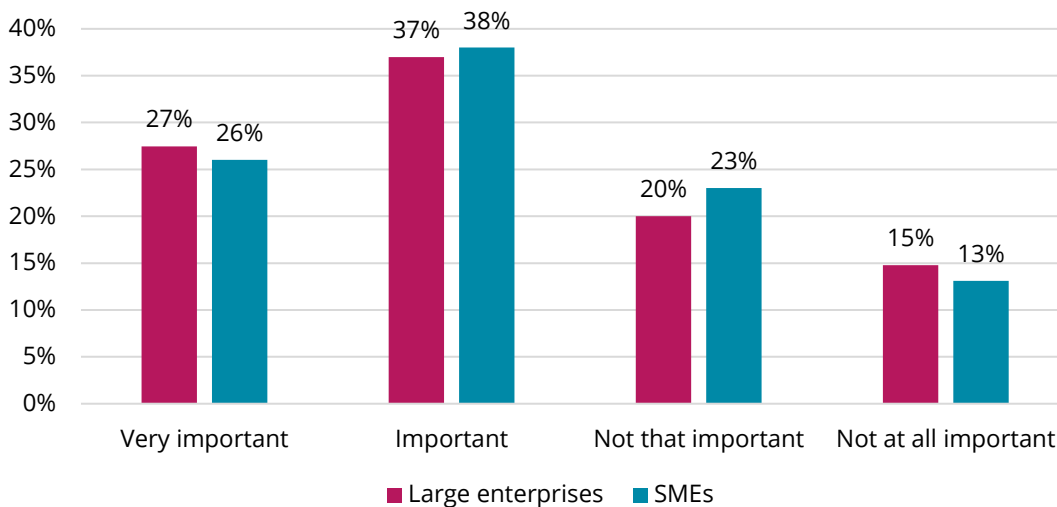
²⁸ OECD (2019), [Measuring the Digital Transformation: A Roadmap for the Future](#), OECD Publishing, Paris.

Figure 20: Emphasis on enhancing digital skills of employees



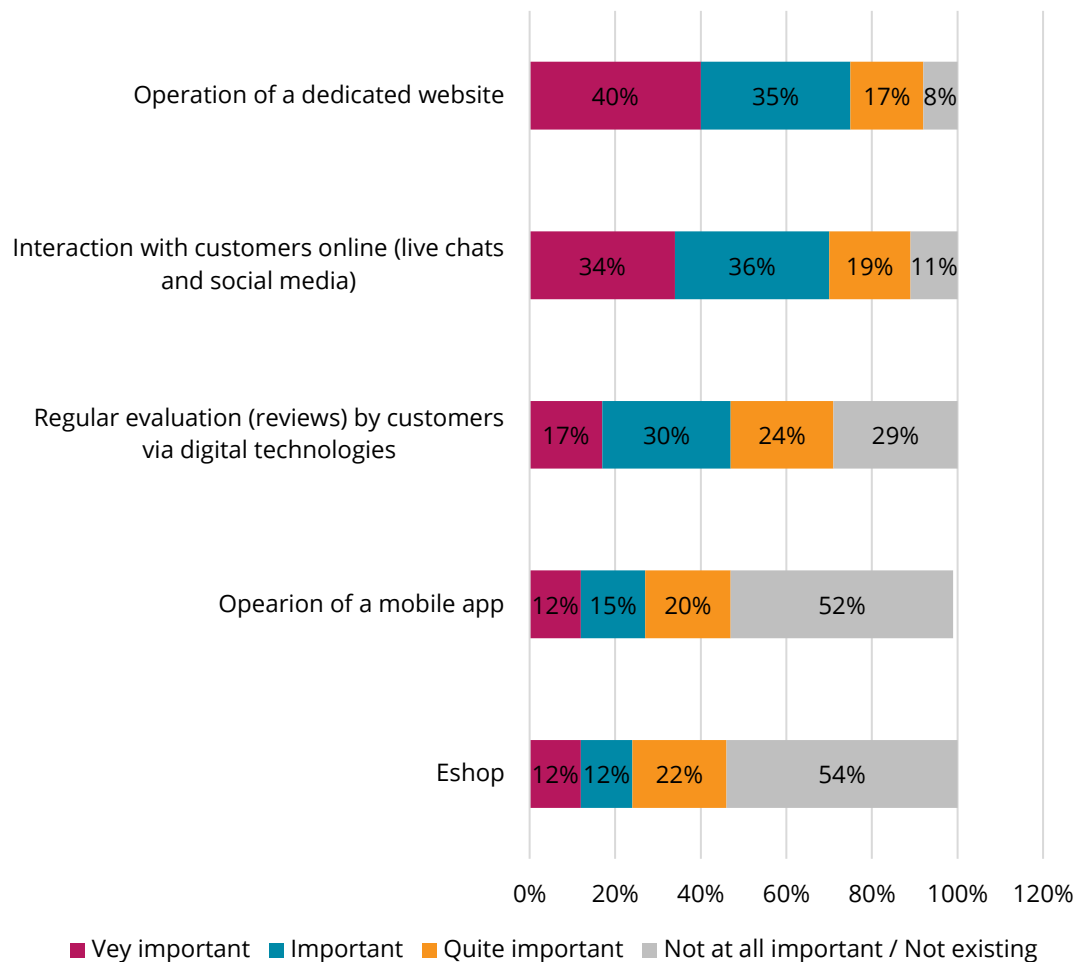
In terms of communication with their customers, 27% of large enterprises and 26% of small and medium-sized enterprises consider strengthening digital communication channels (social media, apps, etc.) to be a very important strategy (Figure 21).

Figure 21: Emphasis on strengthening digital channels for the continuous improvement of communication with customers



The EKT survey also assessed various digital transformation practices of enterprises to expand into new markets after the pandemic (Figure 22). Of these, 40% consider the operation of a dedicated website with detailed information about the enterprise and its goods or services to be a very important practice and 34% of the enterprises consider interaction with customers online through live chats and digital social networks very important.

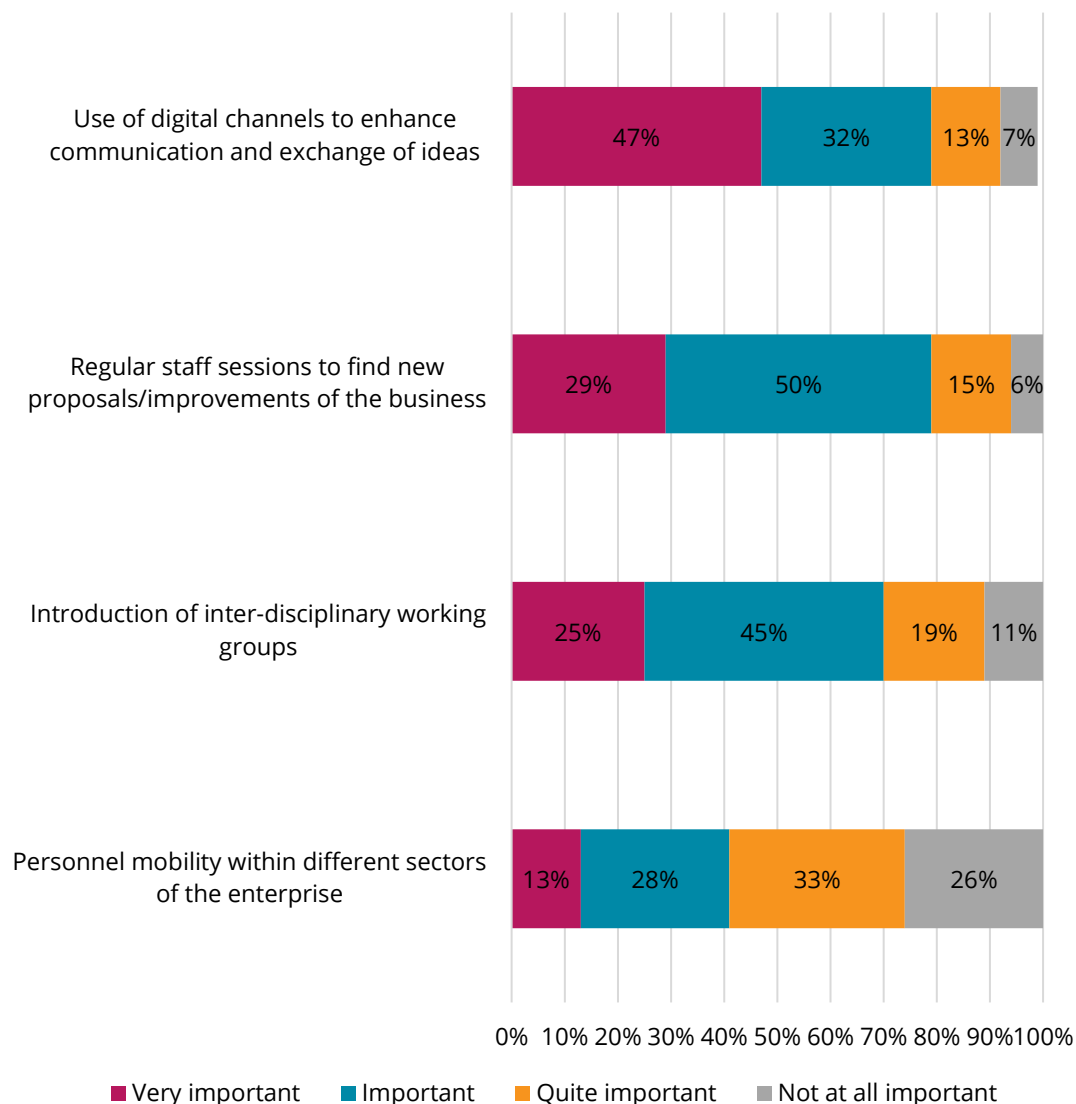
Figure 22: Evaluation of digital transformation practices for expansion into new markets after the pandemic



Regarding the methods of work organisation for business administration (Figure 23), the use of digital channels (such as web conference, skype, intranet, internal communication chat, etc.) to enhance communication and exchange of ideas between personnel of the enterprise is considered, at a rate of 47%, to be the most important method of organizing work in an enterprise. Similarly, the regular staff sessions to find new proposals/ improvements of the business (brainstorming), was rated as the second most important method of organization (29%). It is interesting that in EKT's previous Digital Transformation of Greek Enterprises²⁹, publication, rating of these particular methods were reversed.

²⁹ EKT (2020), [Ο Ψηφιακός Μετασχηματισμός των ελληνικών επιχειρήσεων 2016-2018](#). Athens: National Documentation Centre.

Figure 23: Evaluation of work organisation methods for business management



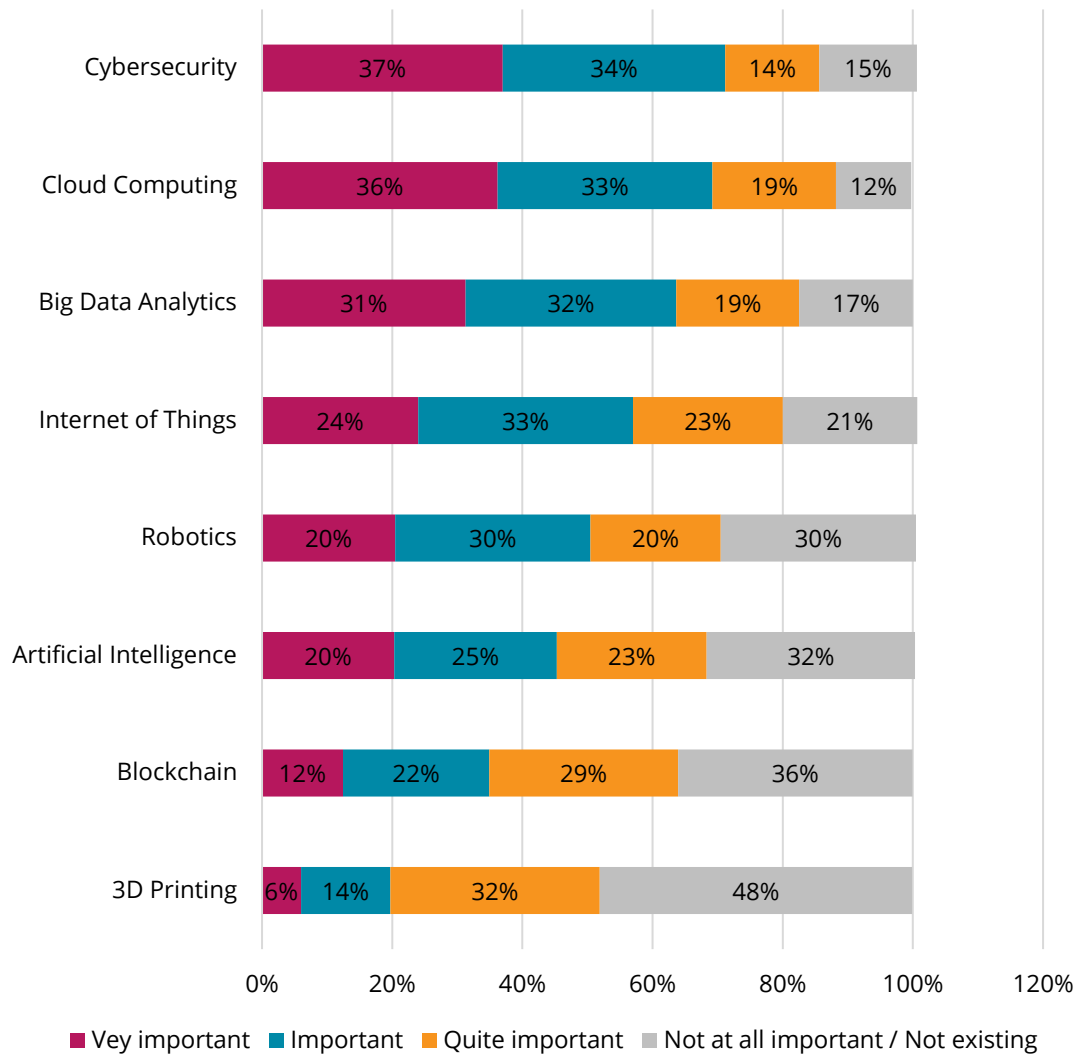
Finally, Figure 24 presents the results of the evaluation of leaders in digital technology sectors³⁰, based on their importance for the future growth of enterprises. The technologies evaluated are³¹: Big Data Analytics technologies, 3D Printing, Automation and Robotics, Artificial Intelligence, Cloud Computing & services, Internet of Things, Blockchain technologies and cybersecurity³². Cyber security technologies and cloud computing are rated by all enterprises as the most important, with 37% and 36% respectively, while the least important are the 3D printing and Blockchain technologies.

³⁰ Digital Economy Report (DER) 2019, United Nations.

³¹ <http://helpdesk.metrics.ekt.gr/index.php?Knowledgebase/Article/View/59/11/>.

³² 'The term refers to all actions and actions that are appropriate and must be taken to ensure the protection of cyberspace against those threats directly inherent in it and which may harm interdependent information and communication technologies', National Cybersecurity Strategy (3rd revision) 07/03/2018, National Cybersecurity Strategy 2020 – 2025, December 2020.

Figure 24: Degree of importance of digital technology leaders for the future growth of enterprises



8. Maturation of Digital transformation of Enterprises

This section examines the degree of acceleration of the digital transformation of enterprises in 2020 due to the special conditions of the pandemic. For this purpose, comparative data are presented for the enterprises that participated in both the current statistical survey of EKT with reference to the year 2020 and the previous survey with reference to the period 2016-2018³³, before the onset of the crisis.

Figure 25 records innovative business processes developed using digital technologies in the period 2016-2018 and the same business processes, for which digital technologies were used during the pandemic period, regardless of innovation.

During the three years 2016-2018, the highest percentage for the use of digital technologies for innovation is recorded for procedures for the processing of information or communication (57%), followed by the operational procedures for production of goods or services with a percentage (51%) and operational procedures for the organization of work (40%). The lowest percentage for the use of digital technologies (25%) is recorded for operational procedures for the supply chain or delivery and distribution of goods or services.

Similarly, during the period of the pandemic, the highest percentage for use of digital technologies is recorded for procedures for the processing of information or communication and operational procedures for the organization of work (69%), while the lowest was for supply chains with 24%.

³³EKT (2020), [Ο Ψηφιακός Μετασχηματισμός των ελληνικών επιχειρήσεων 2016-2018](#). Athens: National Documentation Centre.

Figure 25: Business process innovations developed using digital technologies during the period 2016-2018 and during the period of the pandemic

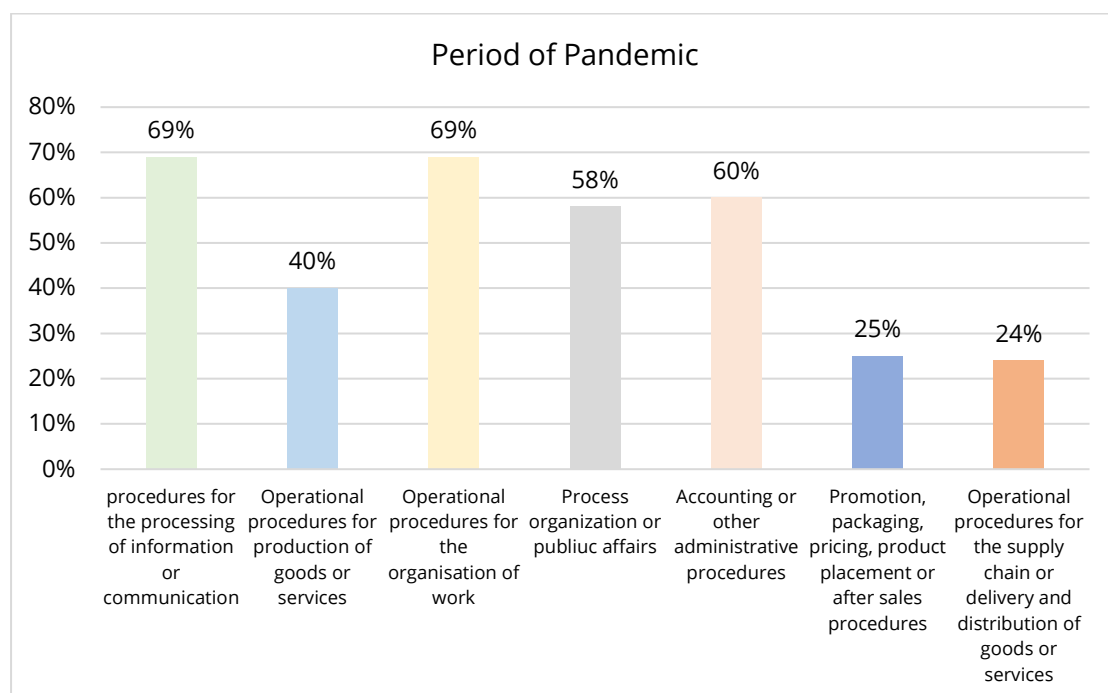
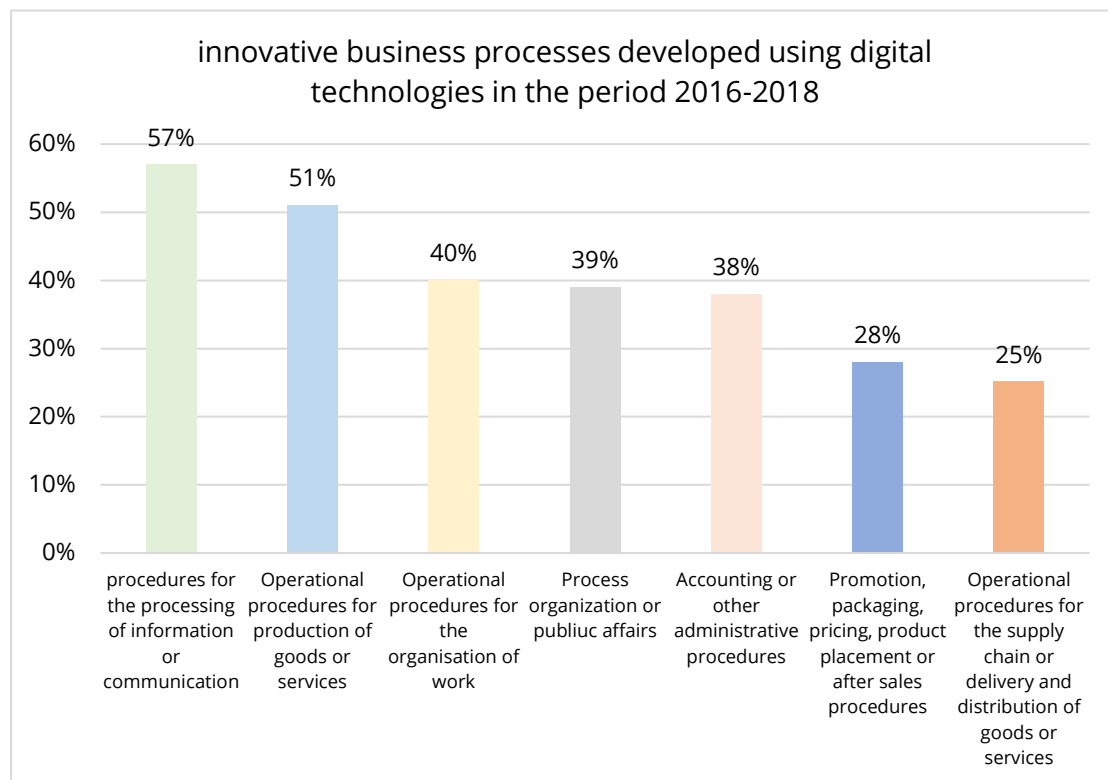


Figure 26 shows various methods of work organization that are regarded by companies as very important for their management. What is noteworthy is the very high rate of use of digital channels³⁴ to enhance internal communication and exchange of ideas.

³⁴ E.g web conference, skype, intranet, internal chat etc.

Figure 26: Work organization methods that are considered very important for business management

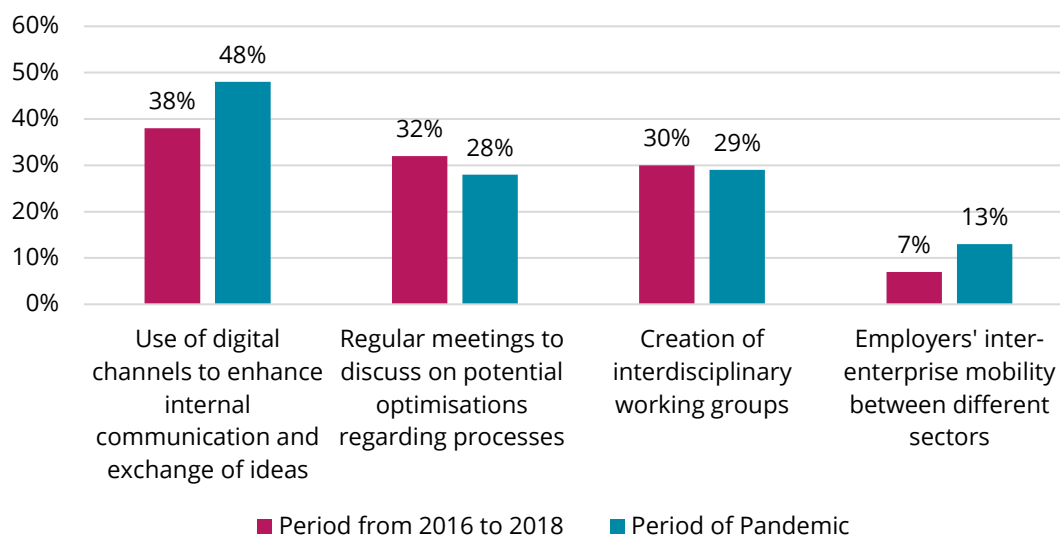
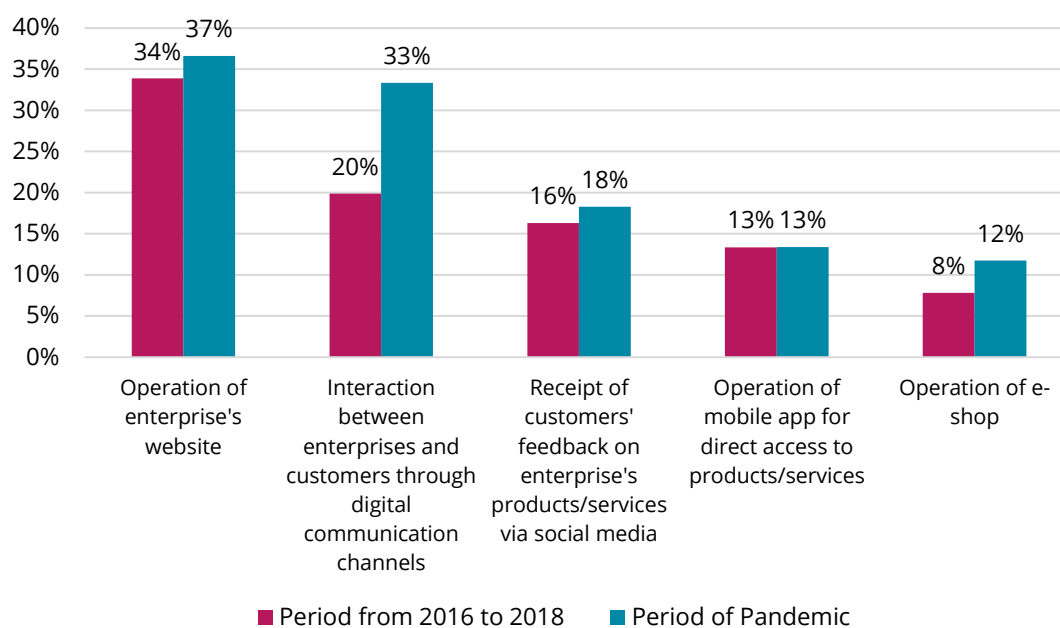


Figure 27 presents various practices that are considered very important for the enterprise's access to markets during the two time periods, i.e. during the three-year period 2016-2018 and in 2020, the period of the pandemic.

In a time such as that of the pandemic, where social distancing is the most basic means of prevention, it is natural for there to be a high level (33%) of interaction between enterprises and customers through digital communication channels and an increase in the percentages related to the digital presence of the enterprise.

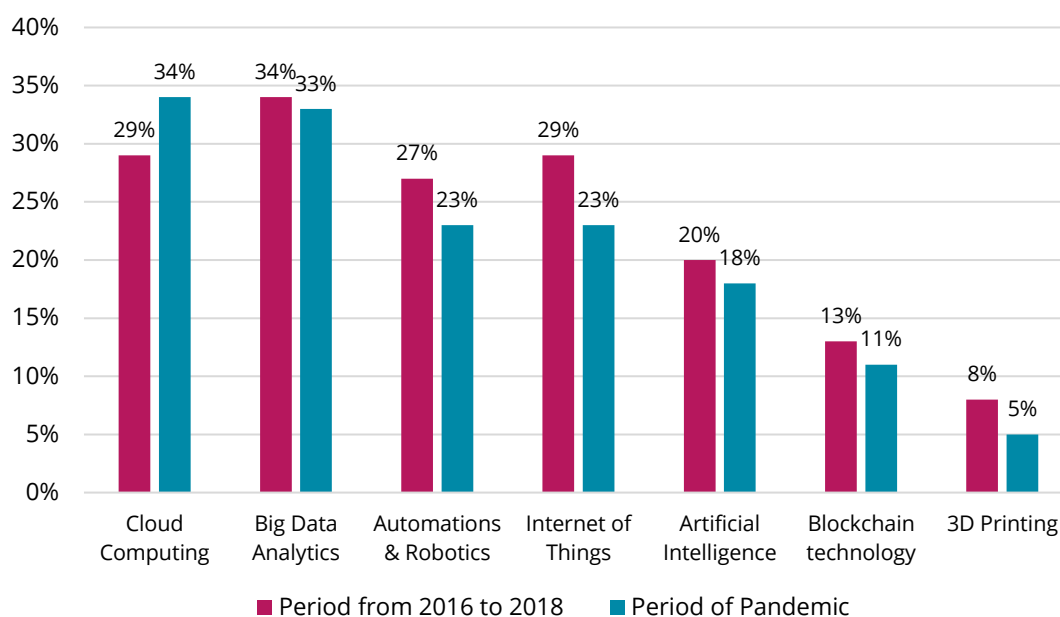
Figure 27: Practices that are considered very important for the enterprise's access to markets



Finally, Figure 28 shows the differences in the assessment of the importance of leading digital technologies ³⁵ during the three-year period 2016-2018 and 2020, the period of the pandemic.

The most important digital technology that emerged during the pandemic is cloud computing, with several important benefits such as improved access to information, fast data retrieval, automatic updates, the facilitation of remote work and the increase of business data security.

Figure 28: Leading digital technologies that are considered very important for the future development of the enterprise



³⁵ <http://helpdesk.metrics.ekt.gr/index.php?Knowledgebase/Article/View/59/11/->.

9. Methodological notes

Objective and context of the survey

The National Documentation Centre (EKT) survey on the digital transformation of enterprises in 2020 was carried out in the context of its systematic statistical surveys and focused on enterprises in Greece that implement R&D activities.

More specifically, at the end of 2020, EKT designed and implemented a survey in the context of the multiannual, periodic statistical survey on Research and Development in Greek Enterprises, which it conducts as the competent National Authority of the Hellenic Statistical System.

The aim of this survey was to capture the difficulties faced by dynamic Greek enterprises, enterprises that invest in Research and Development (R&D), to record the strategies they adopt and the digital technologies and practices they use to achieve this, and finally, to highlight the adopted digital processes and practices that were initially necessitated by the pandemic but that will now remain, indicating a continued orientation towards a more digital business.

EKT has developed and maintains R&D records for enterprises, using information from its statistical surveys as well as from official administrative sources (funding of national or European projects, R&D data, etc.). EKT R&D registers, which are updated on a regular basis, include all enterprises with 'systematic R&D' (enterprises that carry out R&D every year- R&D performers), as well as companies with 'potential R&D' (enterprises that may have carried out R&D activities in each reference year and are therefore included in the research - potential R&D performers). The survey population was drawn from EKT registers and included both enterprises with systematic R&D and potential R&D.

The survey was conducted with electronic questionnaires about the 'Impact of the COVID-19 pandemic on the activities of Greek enterprises'. Electronic procedures were applied for the real-time monitoring of the research process and the daily quality control of the collected data based on the estimated quality indicators.

A total of 631 fully completed questionnaires were collected from enterprises throughout Greece. Their demographics are presented in chapter 2.

