

# HOW CAN DIGITALISATION CONTRIBUTE TO THE GROWTH OF THE EUROPEAN ECONOMY?

*The digital transformation of Europe's economies and societies is accelerating. It is entering the next stage, propelled by a convergence of technologies that is gradually blurring the lines between the physical, digital, and biological spheres and pushing the limits of what computers can do. These innovative technologies, and the new business models they create, building on the use of data, are progressively coming to maturity for at-scale deployment, and will increasingly impact all sectors of the European economy.*

*Until recently, the adoption of digital technologies was regarded as critical to market success and was usually linked with the most forward-thinking and cutting-edge businesses. Now, however, the pandemic has made the digital transformation critical to companies' survival. Many of the digitalisation-related innovations, such as remote services, work-from-anywhere, and online collaboration, are expected to stay. Investment in digitalisation is vital for preventing business disruption, organising work remotely, improving communication with customers, suppliers and employees and selling products and services online. We live in times when understanding and recognition of the importance of digital transformation is shaping the future of our lives and business.*

## Current State of Digitalization

According to the results of the EIB Investment Survey (EIBIS) in 2021, 46 percent of enterprises in the European Union took steps to become more digital — for example, by providing services online.

However, significant differences exist across firm size classes, sectors, and countries. Companies operating in countries where a higher share of the population has above-average digital skills tend to have implemented advanced digital technologies more often. They are also more likely to report having acted on

increasing their digitalisation or made investments. It is critical to strengthen education and training systems, as well as online learning, for populations that are currently excluded from the digital economy, in order to experience the benefits of digitalisation.

It has also been recognised that companies that have invested in digital transformation tend to implement better management practices. Companies with developed strategic business monitoring systems and key performance indicators are more likely to implement advanced digital technologies. This practice

has been especially visible during the time of the pandemic.

A significant increase in productivity is a direct result of digitalisation. The non-digital or low-level digital firms that started investing in their digital transformation only during the pandemic never reached the level of using advanced digital technologies and have lower total factor productivity compared to digital companies. The pandemic has led to major changes in the nature and organisation of work, with implications for productivity, employment, wages, and investment. (Revoltella, Maurin and Pál, 2020).



## Technologies Helping the Growth

The digital transformation is fuelled by a broad set of technologies, ranging from everyday products such as mobile phones, and personal computers, and the infrastructure, and connectivity that support them, to innovative solutions that blur the borders between technological areas and open previously unimaginable possibilities for what machines and humans can do together. This new set of technologies is progressively coming to maturity for at-scale deployment in the coming years and decades. They can fundamentally transform our daily lives when combined.

## Enabling technologies and infrastructure

Implies underlying technology groups, structures or models that enable transformative digital applications. They can include general-purpose technologies like artificial intelligence (AI), big data analytics or high-performance computing, and support a wide range of applications across most sectors of the economy and society by providing the digital infrastructure for other high-impact applications, such as platforms and cloud.

## High impact applied technologies

Are applications of technologies that could have a transformative impact on a specific sector, area, or function. They make use of one or a set of technologies to create tangible value and can partly overlap with enabling technologies and each other (e.g., smart cities are a combination of IoT, and AI applied to urban systems; autonomous mobility is an application of combined AI, IoT and other technologies).



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**European Market Growth Drivers**

Most of the technologies discussed above share advanced data processing and applications as a common theme, while others stand for new business models and reinventing value chains through digital applications. They will affect all aspects of the economy and society, they will change and improve the way we do business in many fields, and they can contribute to solving some of the most pressing issues that Europe and the world are facing by managing epidemic diseases, improving medical diagnostics, reducing traffic and workplace accidents, increasing manufacturing productivity, increasing system-wide energy efficiency, and overall sustainability.

By adopting advanced digital technologies, companies are more likely to export goods and services to another country and increase their market share. Investing in digital technologies, therefore, appears to be especially relevant to firms wanting to compete in international markets. Exporting products or services has also improved firms' resilience during the COVID-19 crisis and recovery, as export-led sectors tend to bounce back faster than non-export-led ones.

While digital technologies can lead to more competition, companies that use advanced digital technologies are often in a relatively privileged market situation, with above-average mark-ups. This backs up research made by (Brynjolfsson and McAfee,

2011; Calligaris, Criscuolo, and Marcolin, 2018) showing that digital technologies often come with:

1. Network effects
2. Economies of scope in data collection and analysis
3. A high and increasing level of price and product differentiation that leads to a concentration of market power.

In practice, companies that are most advanced in digitalisation tend to implement better management practices than non-digital firms and invest more, particularly in R&D, which generates growth for the company and the market. More advanced digital firms have higher investment intensity (defined as investment spending over turnover). This higher investment intensity can be explained by the higher productivity of digital firms and the stronger demand for their goods and services. Companies that have adopted advanced digital technologies tend to distribute a larger share of their investment activities to R&D. This creates immense potential for the growth of the whole European market if properly supported by the governments and institutions.

Since the beginning of 2020, the number of workers employed by EU enterprises that adopted sophisticated digital technology and invested in becoming more digital has grown on average. The share of non-digital firms that downsized after the COVID-19 outbreak was also higher than the share of digital firms

with positive employment growth.

This also correlates to the observed trend that companies adopting new digital technologies tend to be more profitable. Such organisations are also in a better position to invest in the human capital of their employees. Similarly, digital companies that invest in digital skills are indeed more likely to supply training than their non-digital peers.

Sustainability and climate change have become two of the key drivers and metrics in digital transformation efforts. It has been recognised that digitally advanced firms invest more in measures to improve energy efficiency. Fifty-nine percent of enterprises in Europe, which are considered digital, have invested in measures to improve energy efficiency. These points support the idea that digitalisation can serve as a critical enabler for reaching the ambitious goals of the European Green Deal. If implemented and used in the right way, emerging technologies could be critical to tackling today's environmental challenges. Digital technologies are put forward as critical enablers of the green transition and meeting the sustainability goals defined in the European Green Deal.

Raising the investment level in digital technologies along with promoting digital skills is essential. This investment need is unlikely to be covered by the private sector alone because the business case is lacking (e.g., connectivity investments in rural areas), because there are information barriers or risks to be mitigated (e.g., in industrial transformation), and because the scale is such that investments exceed the capacity of any individual company or sector (e.g., high-performance computing or HPC, quantum computing, data spaces). To leverage the capital required for the digital transformation, public funding is required. In addition, it is anticipated that education, upskilling, and reskilling of the workforce to manage the digital transition will cost €42 billion each year.

**CONCLUSION**

Without government involvement, both economic and labour effects are likely to be unevenly distributed between countries and regions, favouring the most advanced economies, and hence possibly worsening existing imbalances. On the positive side, measures that effectively promote the development, adoption, and diffusion of innovative technologies can help capture digital's potential to the benefit of all citizens, in an inclusive and sustainable manner.

Strategic initiatives and investments are needed on all levels. Europe is lagging behind other leading regions in some areas of digital technology development, and adoption of both basic digital technologies and the emerging high-impact technologies mentioned earlier. Major differences remain within and between the European countries, and fragmentation itself is a barrier to the development and widespread adoption of European digital solutions, which often require a large critical mass – of data, users, or connected nodes – to be viable. As a result, some digital investments and interventions are likely to be most effective on the European level, where the world's largest single market can produce a value greater than the sum of its parts.

A holistic perspective is needed for European countries along with comprehensive decision-making on initiatives and investments to promote the green and digital transition – two intertwined priority areas, where investments are much



needed. This is the area where EUTECH and Pyron Technology can provide support.

By implementing digital solutions and supporting the government services, enterprises and European citizens on their digital journey, the whole European market and ecosystem can gain the benefits and level up the overall market agility, citizen prosperity and government transparency.

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