

Presentation

In recent years the digital economy has come to play an increasingly substantial, important role in our day-to-day lives, to the point where it is now an inherent part of our work, our education and our decisions on investment, consumer spending and savings, Bit by bit, the world has changed and we have hardly even noticed. New businesses have grown up and those which have failed to recycle themselves or adjust to the new reality are being left behind. The microchip era gave rise to information technology, then to the Internet economy. Now we can all see a new generation marked by artificial intelligence and driven by the millions of bits of data that make up the world.

The role of technology – and not just digital technology – is becoming more and more of a distinguishing feature in explaining growth rates in different countries. Intangible factors have long since outstripped the conventional «land, labour and capital» in terms of importance, but the changes that have taken place go even beyond that and technology is moving forward in ever faster leaps and bounds.

It should come as no surprise, then, that Asia (and China in particular) is waging a war with no quarter to take over global leadership of the fourth Industrial Revolution from the United States. The funding ploughed into disruptive technologies such as IA by Asia and the US is measured in billions of dollars, thousands of scientific papers and hundreds of innovative businesses. The EU, for its part, is attempting to respond with measures oriented towards the green and digital economy, as evidenced by the way in which European funding for the recovery of countries such as Spain in the wake of the Covid-19 pandemic is being distributed³.

The moves made by Europe seem patently insufficient, but they do at least signpost a path to be followed that can be supplemented by country-level and private initiative to help overcome certain barriers. Perhaps the biggest point in current circumstances is the provision of expertise and at least the minimum tools needed to bring about a shift in mindset towards the new digital paradigm. The Covid 19 virus has highlighted the advantages of home working in terms of reducing pollution and downtime, and of facilitating a good work-life balance. For many people this may not be the preferred option, but it is a path worth thinking about in a society that adores mobility and values climate awareness.

³ These conclusions can be drawn from the publication by Moreno Izquierdo & Pedreño Muñoz (2020), which takes an in-depth look at the lag in digitisation in Europe compared to the USA and China, and raises numerous doubts concerning the evolution of the EU economy and its level of welfare in the coming decades.

It may also be a turning point in narrowing the social gaps that have existed to date as a result of digitisation and globalisation, as evidenced in the acquisition of skills and in differences in opportunities. However, education problems are no longer an excuse thanks to the many tools and on-line facilities available to help us acquire new knowledge and hire specialists from all over the world. It is not hard to find on-line courses and specialisms at an affordable price (or even free of charge) backed up by the world's best universities in fields such as big data, data science, econometrics, biology, psychology and architecture. Such education is beginning to enjoy greater recognition than conventional diplomas among the world's leading digital businesses.

But the digital divide is also evident in other areas, such as access to high technology jobs for women, differences between small and large companies in capacity for innovation, the needs of businesses, the solutions offered by public administrations and indeed the way in which the general public use technology. Strikingly, data from all OECD countries together reveal that only one out of five IT and telecommunications graduates is a woman. Moreover, a survey on innovation conducted by the Spanish National Statistics Office reveals that investment in R&D in the services sector (particularly in tourism) is lagging largely because top management at companies do not see it as necessary for the future of their businesses. Another striking point is that according to World Bank data, it takes an average of more than 12 days to set up a business in Spain but barely 3 days in Estonia, which has the world's most highly digitised public administration.

The emergence of a new generation of digital natives does not factor mean *ipso facto* that the digital divide will be bridged: we must also adapt our society, our education system and our businesses to make good use of the talents of that new generation. Students lose themselves on social media and WhatsApp but fail to make good use of the resources that the new technology paradigm places at their disposal.

The ever-greater focus on things digital must be accompanied by a change of mindset among all the actors in our economies: specialists need to redirect their studies towards new branches of knowledge in computation and hybridisation with STEM (Science, Technology, Engineering & Mathematics) areas; businesses need to incorporate mechanisms to improve productivity and overall competitiveness; the public sector needs to embark on a process of transformation to cut red tape, reduce the need for face-to-face procedures and thus work more efficiently with the public and with the private sector; and finally investors need to bring new projects and ideas to fruition and venture outside the comfort zone of the conventional, speculative economy.

A society that advances towards a digital future without forgetting its roots and manages to proactively reconcile the risks and opportunities offered by technology will certainly dispel many of its doubts concerning future growth and the employability of

its young people, which are two major problems for the Spanish economy. In his interpretation of «economic miracles», Nobel laureate Robert E. Lucas spoke about economies that underwent radical transformations to adapt to new times. The so-called «Spanish miracle» of the 1990s turned heads with its infrastructure projects and its boost for conventional sectors which, as shown by the successive crises that have struck since the turn of the century, subsequently proved to have feet of clay.

At European, national and regional levels, our economy has the chance to undertake a process of transformation that will put us back on the path of sustainable growth. Accordingly, this monographic issue of *Ekonomiaz* seeks to spark discussion about the current situation and future prospects of Europe, Spain and the Basque Country as regards cutting-edge technologies. It is a special issue that could not come at a better time, as forecasts for economic growth in 2021 indicate that a major shake-up is urgently needed. The digital economy could be just the stimulus that we are looking for.

This monographic issue comprises thirteen sections which seek to tackle the challenges of the digital world from a varied, multi-faceted perspective. It includes contributions from lecturers and specialists in economics, law, marketing, tourism, artificial intelligence and cybersecurity.

Alexandre Peretó, Luis Moreno and Andrés Pedreño open the issue with an interesting review of indices for measuring innovation, focused on the field of artificial intelligence. Using new indicators, they cast doubt on the optimism with which Europe regards its efforts to stand at the forefront of technology, and show that China has become the world's leading technology power, overtaking the USA at the vanguard of the new technology paradigm. The decline of Europe can be read in many different ways, but they all suggest an urgent need to draw up new plans to counteract the continent's loss of weight in things digital.

Senén Barro provides a brilliant exercise in foresight as to the role of machines in the future of work, with their increasingly surprising ability to make complex decisions. Centuries ago machines began to replace human beings in tasks requiring physical labour and brute strength, and now they are doing so in cognitive tasks, to the extent that they are making decisions on consumption that are more beneficial to us than those that any human could make. Algorithms are set to change the way in which we understand society, the economy, marketing, logistics, payment, legislation, etc., and not for the worse.

Agustín Zubillaga uses the Digital Economy and Society Index (DESI) to monitor the digitisation of Basque society and the economy via the 2020 Basque Digital Agenda. The DESI comprises various digital performance indicators (connectivity, human capital, Internet use, integration of digital technology and digital public services), and enables Europe-wide comparisons to be made. The article reveals that the Basque Country's DESI rating has risen by over 5% in all areas except human

capital, where it has fallen. The Basque Country stands above the European average in four of the five areas, but the economy needs to tackle the issue of human capital.

In her article, **Raquel Álamo** argues that there is a need to find alternative forms of taxation in the framework of the digital economy, because the delocation that can result from remote services poses a serious problem for the coffers of Europe's economies. The EU has very few digital businesses which are competitive on a global scale, and the uneven distribution of wealth across the EU means that just a few territories (mainly Ireland, The Netherlands and Luxembourg) benefit from the mobility of major technologies. The article highlights that tax decisions made decades ago have outlived their usefulness in view of the rise of firms based on digital platforms which lie outside their sphere of fiscal control. There are many potential ways of re-directing the situation, so an international consensus is needed. This is also highlighted by the EU and the OECD, because without a large-scale jurisdiction any measures taken could prove insufficient.

María Núñez-Romero and **Leticia Serrano** present an interesting exercise using Twitter and geolocation data as their basis for measuring the impact of innovation in the Basque Country and locating the most favourable environments for boosting digital technology. They analyse the appearance of words and expressions related to innovation and look at the geographical locations where the cutting edge of technology is most important. The presence of innovation-related terms on Twitter is greatest in those areas where provincial capitals are located (Greater Bilbao, Donostia-San Sebastián and Llanada Alavesa). These same areas show the highest rates of creation of businesses and entrepreneurship. They are also the areas where there is most diversity of economic activities, the greatest technology infrastructure and the highest levels of human capital.

Beatriz Pérez highlights the need to create a true digital single market (DSM) in the EU. This is one of the top priorities if Europe are to stop losing ground on its main competitors – the USA and China – in global markets with hundreds of millions of inhabitants. The goal is to establish a single, country-level position that goes beyond individual organisations. The article argues that the fragmentary nature of regulations in the EU results in delays in areas such as e-commerce and digital governance. Creating a true DSM and harmonising digital regulations throughout the EU are the first steps towards closing the digital and economic divides that arise from the returns on forward-looking sectors.

Josetxo Soria analyses the status of the public and private sectors in various countries worldwide in the context of artificial intelligence public policies. This interesting analysis brings to light certain areas where Spain needs to redouble its efforts so as not to lag behind the leaders in digital ecosystems. The measures needed include urgent emphasis on digitisation of businesses, with support to help SMEs digitise, and the provision of the mechanisms and personnel required by the Secre-

tariat of State for Digitisation to fulfil its remit. Finally, there is also a need to generate talent, encourage women to take up more jobs in technology-related areas and increase their ratio of participation in IT courses.

Xabier Mitxelena's article argues that cyber-security is a fundamental element in 21st century society, and one which extends beyond the economy and competitiveness. He analyses its growth and development in Europe, in Spain and specifically in the Basque Country. Creating a secure, trustworthy digital environment is essential to enable the private sector and public administrations to work in partnership to offer products and services to the public, and to enable the public to connect in confidence with one another, with businesses and with public authorities.

Adrián Más, Ana Ramón and Patricia Aranda focus on tourism, one of the most representative businesses in the economies of Southern Europe, and look at how it is adapting to digital changes. This is Spain's biggest industry, and the article brings to light a clear lack of innovation and renovation in terms of output and employment. However, it also reveals great potential in a sector that is set to continue being vitally important for the Spanish economy. The platform economy does not pose a risk to the attractiveness of towns and cities: in fact its capacity for dissemination makes them more attractive. It does, however, substantially reduce revenues at the point of destination and thus undermines many conventional business models, which must adapt urgently if they are to compete.

Beatriz Benítez presents a case study from the tourist industry which contributes to the debate on the sharing economy. It is set in the Basque Country and looks at Airbnb as a representative example of the platform economy. The collaborative accommodation market has consolidated itself especially in the Basque provincial capitals and in coastal towns, affecting demand for and prices at hotels. That effect is not just a concern but an established fact. However, Airbnb is not equally well established in all areas. In Donostia-San Sebastián the number of tourist apartments is on a par with that in Europe's major capital cities, which could lead to overtourism if appropriate measures are not taken. However for the moment there is no such threat in Bilbao or Vitoria. The article concludes by recommending that the Basque competition authorities adapt the regulatory framework to the actual situation in each area.

Isabel Álvarez and Raquel Marín confirm in their article that information and communication technologies are conducive to international activity for Spanish firms, and that there is an ever greater dependence on global communication tools such as email and on foreign direct investment. Results such as these highlight that globalisation and digitisation are mutually complementary processes that feed back into each other in a way that goes beyond the mere benefits of e-commerce. Technology is leading to a reconfiguration of international activities by multinational businesses, encouraging communication between subsidiaries, shareholders and dependent companies at hitherto unheard of levels.

Carmen Pastor reviews blockchain technology and looks at how it has gradually taken on a major role in society, business and law in Europe. Bitcoin has given way to a whole range of new possibilities for management, structure and analysis thanks to distributed accounting, but also to potential new crypto-currencies issued privately such as Stablecoins, which could replace more conventional forms of money and even cause banking operations to be reinvented. The article asks why institutions should not just passively look on in the face of the advantages and possibilities for monetary policy that arise from such new currencies. It argues that in spite of the difficulties, getting ahead of the curve in terms of regulations could prevent future risks and enable attractive yields to be obtained for European economies as a whole.

Elena Alfaro outlines the way in which managing the emotions of users in all sectors can be a real driver of growth. Based on data from emotion research by EMO Insights International, she highlights the impact that emotional ties between customers and banks have on corporate returns, and looks at how digital strategies help increase and consolidate more loyal demand. In an issue dedicated almost entirely to the supply side and to macroeconomic values, this article provides a highly interesting view of demand and its adaptation to a digital framework.

Finally, in the Brief Essays section, **Cristina Colom** analyses and outlines the phenomenon, at the beginning pointed, of digital divides (based on gender, age, digital skills, disability, education, use, location and content), looking at both difficulties in accessing the Internet and the exclusion of certain groups from the digital world. Lockdown has brought these divides to light, but there can be no doubts that technology has also been a great facilitator of tasks and an effective way of combating loneliness and social exclusion. It has been shown that urgency and technological innovation can go hand in hand, with people at the core and technology in the service of ordinary citizens. Closing these divides and fostering digital cooperation between stakeholders is the most effective way of addressing their complexity. An across-the-board, collaborative, multidisciplinary approach is needed that prioritises the increasing of digital literacy. As well as improvements in access infrastructures and the provision of digital tools, there must be initiatives to heighten awareness, training and inclusion in things digital.

BIBLIOGRAPHY

LUCAS JR, R.E. (1993): «Making a miracle», *Econometrica: Journal of the Econometric Society*, 61 (2), 251-272.

MORENO IZQUIERDO, L.; PEDREÑO MUÑOZ, A. (2020): «Europa frente a EE.UU. y China. Prevenir el declive en la era de la inteligencia artificial». KDP Publishing.