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The digital transformation of companies, among the COVID-19: “Automation & Digitalization”

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Abstract

Thus, COVID-19 has had a major impact on businesses, society and the economy in general and has significantly accelerated the need for digital transformation of companies. Among other things, COVID-19 has built a new narrative for the way of doing business, taking into account the changes caused to companies in all sectors. Therefore, it is important to discuss ways for companies to orient themselves towards mitigating the economic consequences of the pandemic and adapt accordingly to withstand it. Considering, COVID-19 as the main driver of the digital transformation of companies, as well as digital transformation as a necessary process for companies to stay relevant and competitive in the market, this summary addresses the importance of digital transformation as a pillar for economic recovery.

Keywords: digitization, automation, digital transformation, C-19, enterprises, remote working.

1. Introduction

The significant disruption brought about by the COVID-19 crisis has forced companies to reorganise production and use automation to ensure business continuity, increase processing capacity and provide responses to customers. Constraints on human interaction have resulted in the creation of COVID-19-secure workplaces, with increased use of robots and drones. To put it bluntly, robots do not get sick. The

pandemic could therefore lead businesses to adopt automation technologies to reduce the risk of contagion.

The deployment of industrial robots has been severely hit because of their reliance on the automotive and electrical/electronic industries – sectors that were particularly affected by the COVID-19 crisis. Although the outbreak of the pandemic in early 2020 disrupted most businesses all over the world, the outlook for recovery at the end of 2020 accelerated companies' decisions to invest in automation. An acceleration in the adoption of robots is expected across a wide range of industries, including healthcare, defence and security, logistics, inspection and maintenance, automotive, electronics, and food and beverages.

According to a Deloitte survey of 441 executives from 29 countries, more than two-thirds (68%) of business leaders used automation to respond to the impact of the COVID-19 pandemic. Around three in four (73%) organisations worldwide are now using automation technologies – such as robotics, machine learning and natural language processing – up from 58% in 2019. In manufacturing, robotic process automation is expected to be almost universal in the coming years (93% of business leaders expect to be using robotics by 2023).

There has been acceleration in the use of robots in hospitals and in other sites where people gather, such as healthcare facilities and warehouses, to make social distancing easier. The more structured the environment is, the more feasible it is to automate. More dexterous robotic hands and better object-tracking software allow for more effective order picking in warehouses, while the use of drones and autonomous forklift trucks has risen sharply, mainly due to the huge increase in e-commerce and delivery needs.

In turn, the implementation of automation technologies has improved the customer experience and demand for services, which has fed into the development of new business lines. Thus, in the retail sector, Amazon is opening the Amazon Go convenience and Amazon Fresh grocery stores using computer vision, sensor fusion and deep learning technologies to detect when products are taken from or returned to shelves. Customers are charged automatically when they leave, eliminating the need for cashiers or self-service checkout assistants.

During the pandemic, sophisticated drones have played a role in preventing further spread of the coronavirus. They have provided medical delivery services in rural and remote areas in Africa, for example, transporting medical supplies, medical equipment and consumables, and urgently needed blood samples and testing devices. The Opportunities include:

- Investments in automation can contribute to improved human capital and up skilling, creating opportunities for work and inclusion;
- Drones are becoming valuable tools for reducing the risk of COVID-19 infection and are being used to support a range of work activities and public health goals;

As drones are remotely controlled, they are proving to be a valuable tool in helping to reduce the risk of COVID-19 transmission. They are also becoming a support tool for public authorities in several cities and territories for many other purposes, such

as issuing instructions and warnings, performing logistical tasks and disinfecting contaminated areas.

It seems clear that companies will continue to invest in automation processes, keeping up the momentum created by the pandemic, as they have acknowledged the competitive advantage of being digitalised. As a risk can be seen the increased data collection that includes the monitoring of health issues moving towards the surveillance of individuals.

Although contact tracing systems have the potential to save lives and help authorities flatten the coronavirus curve, the vast trails of collected data could see the monitoring of health issues moving towards the surveillance of individuals.

2. Digitisation

There has been a strong relationship between the pandemic and the use of certain digitised technologies in online education, telemedicine, and the manufacturing of medical devices and equipment to mitigate its effects. Digitisation technologies such as AR/VR and additive manufacturing are playing a key role in supporting the COVID-19 response.

During the COVID-19 pandemic, additive manufacturing – often referred to as 3D printing, although other additive manufacturing processes exist – was brought to the front line in the fight against the virus. For hospitals, healthcare centres and individuals, there was a massive shortage of medical equipment and devices – a situation aggravated by the disruption in global supply chains and the transport of physical goods – particularly during the first months of the pandemic. For example, as COVID-19 is mainly associated with respiratory issues, there was a much-increased demand for ventilators. In this context, logistical and design advances in 3D printing emerged as a relatively simple way to address shortages and gaps in medical supplies. These advances made it possible to produce and deliver personal protective equipment (such as masks and face shields) and other 3D-printed medical accessories (such as valves and nasopharyngeal swabs). Other 3D-printable alternatives could be printed and assembled on site, such as splitters that allowed multiple patients to use a single ventilator machine, entirely 3D-printable ventilators, and adaptors that enabled commercially available snorkelling masks to be used for ventilation purposes.

This success was possible thanks to a combination of factors. Among them, the patent expiration period for some desktop 3D printers (20 years) contributed to reducing market prices considerably, making this technology available for anyone to use. Between 2002 and 2014, about 225 early 3D printing patents expired.

2.1 *Augmented reality and virtual reality*

While VR has been used during the pandemic for telemedicine and drug discovery, among other applications, AR has been used in healthcare, marketing, universities and schools. The advantages of using these technologies include the ability to provide

high-resolution audio and video communication, facilitate remote collaboration and visualise abstract concepts.

Because of lockdown restrictions, both of these digitised technologies have been used for education and training during the pandemic. Furthermore, there has been increased use of VR for skills management and safety protection. For example, Oxford Medical Simulation made a VR medical training system available to healthcare facilities in Canada, the United Kingdom and the United States; training administered in this way was provided to medical personnel and additional nursing staff in an effort to strengthen the capacity of hospitals engaged in the care of patients infected with the virus.

2.1 Telemedicine

The COVID-19 pandemic has accelerated the rise of digital health, a broad concept that includes solutions for telemedicine – which the WHO defines as ‘the delivery of health care services ... using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries’ – and teleconsultation, remote monitoring, connected devices, digital health platforms and health apps. The concept also covers related health data analysis and its application in systems based on big data, for instance in epidemiological research and AI-enabled diagnosis support.

According to research, since the pandemic began more than half of EU countries have been using telemedicine to replace face-to-face consultations. The diverse digital solutions that have been implemented include mobile applications, websites, chatbots, e-prescriptions, remote patient monitoring to diagnose COVID-19 patients in their homes, and screening in real time. Technology has acted as a great enabler of continuity of care through remote consultation, on-going monitoring and patient education by telephone and through videoconferencing. Furthermore, videoconferencing has enabled patients to stay in touch with their families when hospitalised, including in intensive care. In addition, telemedicine has allowed medical professionals to collect new data from their patients and provide new services.

The flexibility in prototyping and the versatility of 3D printing have been demonstrated during the COVID-19 crisis, when global supply chains for medical devices and equipment were significantly disrupted. This decentralised, digitised technology has provided a valuable response to the emergency by producing designs – many of them shared online – that are highly customisable, as well as printing applications that cover a wide range of medical products. In combination, 3D scanning and 3D printing may contribute to the EU’s climate neutrality goals by using recyclable materials and creating reusable products.

Some businesses have adapted their additive manufacturing production processes to provide specific medical supplies to public health systems. In addition, the 3D printing community and makers’ hubs have worked together with professionals in the health sector on the design and manufacturing of 3D-printed products – this could be a mutually beneficial way to further innovative collaboration in the future.

In the education sector, teachers and students in many school systems and universities have become increasingly adept at creating virtual lesson plans for online classes. This achievement has great potential for those who might have previously struggled to attend education because of distance or any other personal condition or socioeconomic reason.

Scientific studies have shown that, in various therapeutic programmes, AR/VR may contribute to the assessment and treatment of mental health concerns, including stress-related psychopathological symptoms, depression and anxiety disorders. These technologies can help patients to deal with the emotional aspects of traumatic memories and to better manage COVID-19-related stressors. Such risks include:

- Amid the expansion in the use of 3D-printed medical devices and equipment during the pandemic, concerns have been raised about whether the designs and the materials comply with international safety and biomedical standards;
- The massive deployment of telemedicine has created a risk of widening the digital divide between citizens, as well as raising concerns about the quality standards of the services provided;
- Cyber security issues have increasingly been highlighted as growing risks that need to be considered;

The expansion in the use of 3D-printed medical devices and equipment during the pandemic has raised concerns about the suitability of the designs and the materials. All devices intended for medical use must comply with international safety standards and biomedical standards to avoid losing the essential confidence of medical professionals and the public. Some government authorities have implemented regulations and drawn up guidelines with which manufacturers of 3D-printed medical devices must comply. Another risk is high levels of copyright infringement, since much 3D printing design is based on digital file sharing.

In telemedicine, there is a risk of widening the digital divide, since reliable connectivity is not guaranteed in all rural areas in the EU. In addition, elderly and socially disadvantaged people who are not engaged with technology and are not familiar with – or, in fact, distrust – these technologies are also at risk of being left behind.

Cyber security issues have been highlighted as growing risks that need to be considered, as cyber-attacks on hospitals are on the rise. In this regard, risks concerning the transfer of personal health data raise questions about fundamental rights.

3. Platforms

An analysis of about 1,400 active online platforms by the OECD shows that, during the lockdowns, businesses and individuals increasingly turned to online platforms to pursue economic activities. This was especially the case in areas of activity requiring little or no physical proximity for product or service delivery, such as mobile payments, consumer marketplaces, professional services and restaurant delivery. However, in areas of activity requiring physical proximity, such as accommodation,

restaurants and transport, platform activity declined markedly (by around 90% in the first half of 2020), reflecting the generalised economic disruption caused by the COVID-19 pandemic.

The COVID-19 crisis has impacted platform businesses differently. Those mediating delivery services tend to have expanded their services to other types of goods, including groceries and medical supplies, because of the increased demand. Other platforms, mediating household services or personal transport, have experienced a decline driven by a lack of demand due to lockdowns and travel restrictions.

The pandemic has enhanced access to work and income generation in some types of platform work, for example where delivery services have expanded. In this regard, employment opportunities have been created by the increased demand during lockdowns.

On the consumer side, the COVID-19 crisis has caused a structural shift in demand towards digital commerce that is likely to continue in the years to come. Most platforms have seen increased use of digital payments, notably using digital wallets. This presents an opportunity to invest in and develop digital payment infrastructure and services, including mobile banking. Furthermore, the expansion of e-commerce resulting from the COVID-19 pandemic could facilitate a surge in specialised platforms and marketplaces with new business models.

In contrast to the expansion of business operations and hence employment in some platforms, other platforms and platform workers have experienced job losses and loss of income during the pandemic. Soon after the start of the pandemic in 2020, the Fairwork Foundation estimated that 50 million platform workers globally would be affected by the COVID-19 crisis, with half of them losing their jobs and those still in work losing two-thirds of their income on average.

Work during the pandemic on some platforms has meant physically demanding working hours and higher work intensity because of increased demand, as well as psychological pressure for front-line workers, without proper social recognition. Furthermore, because of the uncertain employment status of platform workers, it has been unclear who is responsible for implementing precautionary health and safety measures, such as equipping platform workers with masks or hand sanitizer.

Platform work has been carried out during the pandemic despite the inherent health risk accompanying some types of work, resulting in dangerous situations, particularly for those platform workers in a precarious situation and lacking social protection and medical insurance.

The expansion of the business operations of some platforms due to the COVID-19 pandemic has increased concerns about the disproportionate power of these giants, as well as the use of the personal data gathered through their operations.

4. Conclusion

The pandemic experience is very likely to result in the continued acceleration of automation across different sectors of the economy. The applications of automation

during the pandemic have supported the fight against the virus; robotic disinfection systems have been introduced in warehouses to reduce infection risk and drones have been used for the delivery of products and services in different parts of the world. A correlated investment in automation skills and digital capabilities is needed to build new competencies and create jobs.

The technology has helped to mitigate medical shortages during the COVID-19 crisis by supplying additional devices and equipment to healthcare systems. In this regard, the pandemic has given citizens the opportunity to see this digitised technology at work in the medical sector. It is expected that 3D printing industries and makers will maintain the momentum in the post-pandemic period, and this technology may scale up in combination with the internet of things and AI.

AR/VR have been used to virtually break social distancing rules, for training, and to support the sale of products and services, helping to prevent the complete shutdown of the economic ecosystem.

Telemedicine to provide care to patients infected with the coronavirus has limited exposure to, and the spread of, the virus in healthcare facilities and hospitals. Furthermore, the mass adoption of telemedicine as a result of the pandemic has created a breakthrough; in the years to come, healthcare will be available regardless of geographical location, assuming that broadband speed is sufficient and 5G connectivity is reliable.

Cyber security incidents are on the rise and the healthcare sector has been targeted by cyber-attacks using ransom ware almost since the start of the pandemic. Healthcare has been recognised as a critical sector, and its protection from cyber-attacks needs to be at the top of the EU agenda.

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