

## HOW THE COVID-19 PANDEMIC HAS INFLUENCED THE DIGITAL TRANSFORMATION OF BUSINESSES

**Florina PINZARU**

*National University of Political Studies and Public Administration  
30A Expozitiei Blvd., Sector 1, 012104 Bucharest, RO  
florina.pinzaru@facultateademangement.ro*

**Alexandra ZBUCHEA**

*National University of Political Studies and Public Administration  
30A Expozitiei Blvd., Sector 1, 012104 Bucharest, RO  
alexandra.zbucnea@facultateademangement.ro*

**Abstract.** *The paper presents explorative research aiming to map how the COVID-19 pandemic influenced digitalization worldwide. The narrative literature review both of academic studies and most of the investigations of professional organizations have revealed that the pandemic significantly increased the pace of digitalization in all companies and organizations, but at the same time, the digital gap increased between countries and organizations. Since digital transformation has a strong impact on efficiency and profitability, the identified phenomenon might strengthen the competitive advantage of companies that already were more advanced. The results show that a new type of leadership is needed, more resilient, open to collaborative approaches, and able to integrate agile solutions into strategic planning.*

**Keywords:** *digital economy; digital transformation; globalization 4.0; the impact of the COVID-19 pandemic.*

### Introduction

Digital revolution is a concept relatively frequently used both in the academic and professional environments since the 90s of the 20<sup>th</sup> century. Most studies are positive in documenting its impact in many fields, especially on the economy (Hearn, Mandeville, & Anthony, 1998; Morakanyane, Grace, & O'Reilly, 2017; Negroponete, 1995; Reis et al., 2018; Vial 2019; Małkowska, Urbaniec, & Kosala, 2021; Tiutiunyk et al., 2021), and healthcare (Agarwal, Gao, DesRoches, & Jha, 2010; Gopal, Suter-Crazzolara, Toldo, & Eberhardt, 2019; Herrmann et al., 2018; Iyawa, Herselman, & Botha, 2016; Kraus et al., 2021; Topol, & Hill, 2012; Tortorella et al., 2020), but it is considered even in research on arts & humanities (Gündüz, 2012; Goodman, 1990; Hutson & Olsen, 2021; Lanham, 1989; Lazzarotti, 2020; Li, 2020; Muenster, 2022; Paul, 2020; Taormina & Baraldi, 2022; Wechsler, 1998), or sports (Davenport, 2014; Savchenko, Filatova, & Vochozka, 2021; Stangl, 2020; Tan, Hedman, & Xiao, 2017). The digital seems to take control of contemporary economies and societies.

As Yuval Noah Harari (2017, pp.428-462) observes, the current society is guided by *data religion / dataism*. In this era, human knowledge and wisdom are less trustworthy than computer algorithms and data processing. All systems, including living organisms and human emotions, are now considered algorithms and this new dogma has changed

mentalities and behaviors. In this framework, the digital has become an organic part of society, and giant digital hubs (such as the stock exchange) are now ruling the world through the global economy. Harari believes that effective data processing is the only way toward the development/attaining of power and control. The depth of digital integration in most developed countries seems to validate his view. Also, Harari (2017, pp. 438-439) observes that humanity does not keep pace with technological/ digital change, at the moment. The human minds, or at least the ones of the present-day leaders, are tributary to 20th-century thinking patterns. Therefore, his question is who can understand and control the new global ecosystem.

The possible (not so far away in time) answer he pictures is already presented in science-fiction novels and films since the 60s of the 20th century. Harari (2017, pp. 443-445) predicts that the Internet of Things is the efficient all-inclusive data processing system that would lead to the disappearance of homo sapiens. The Internet of Things becomes the "*great web of life*". Harari (2017, p. 449) argues that "*the individual becomes a tiny chip inside a giant system that nobody really understands*". The COVID-19 pandemic seems to confirm de facto this vision when at least the knowledge workers have been working only digitally, longer hours than normal in many cases.

Nevertheless, let's step back and consider an exterior perspective. Many decades ago, Sterling (1997) warned that humanity puts the same weight on atomic energy which, even if changed greatly the society and economy, lost much of its significance. Maybe such hopes/expectations placed on digital will prove to be inaccurate. Still, the COVID-19 pandemic seems to have determined a great advance toward an increasingly more integrated digital world and economy. It is not the aim of the present study to investigate the future of the economy and humanity, but rather to document how the pandemic influenced digital advancement.

Based on a narrative literature review methodology, this opinion paper explores how digitization around the globe has speeded as a direct consequence of the pandemic. The authors discuss the digitally enhanced structural effects of the COVID-19 pandemic on the organizational structures, cultures, and processes, in a manifesto for a new type of leadership oriented toward resilient agility using the new digital advances as a source for efficiency and profitability.

## **Literature review**

### **Digital transformation and leadership**

The impact of digital on humans, societies, and economies should not be surprising, considering the effects of previous "revolutions". Culkin (1967) observed many decades ago that "*We shape our tools and then our tools shape us.*" Digital transformation implies the "*system-level restructuring of economies, institutions, and society that occurs through digital diffusion*" (Uruh & Kiron, 2017) in the framework of innovative business models based on digital platforms and tools. As already presented, digital transformation significantly impacts business organizations, considering many dimensions. For instance, in documented cases, injecting digital technologies such as analytics, AI, and digital platforms into business processes make them 40-50% more efficient (Bendor-Samuel, 2020). IBM (2020) reports for client companies up to 6% revenue growth through reimagining core business processes and 70% improved enterprise agility

through artificial intelligence-enabled automation while reducing costs and risks (with up to 40% decreases in operating costs and 20% reduced security and compliance risks). It can increase customer satisfaction and a strong competitive advantage (Lowson, 2021). Digital transformation has a significant impact on efficiency and profitability. Also, the digital transformation of business models determines an increased and diverse added value for clients and other stakeholders (Schallmo, Williams, & Boardman, 2017), influencing business outcomes. We also mention that during the pandemic, 9 in 10 organizations' business models should change (if they haven't yet) in the following few years to fit the digital challenges (McKinsey, 2021).

In these new circumstances, leaders' responsibilities and approaches have to adapt. Digital transformation is imperative, therefore, business leaders should be able to put together digital teams relevant to all functions of management/organizations, to design and continuously manage digital transformation (IBM, 2020). This is a complex task and a fast and collaborative process (Hansen, Kraemmergaard, & Mathiassen, 2011). As Tabrizi et al. (2019) argue, digital transformation is not a matter of technology but of changing organizational mindset and culture. They also recommend relying on inside employees instead of outside consultants. Stimulating the development and valorization of inside knowledge could lead to more effective transformation. They also propose agile decision-making, rapid prototyping, and flat organizational structures which are more flexible and better face uncertainties. Klein (2020) developed a review of previous studies and identified the following main characteristics necessary for leaders of digital transformation: innovative vision, networking intelligence, adaptability, motivating coach, digital intelligence, complexity master, social intelligence, democratic delegation, agility, and learning by errors.

Digital transformation also requires new leadership roles, such as chief digital officer, ensuring the collaboration between IT and business functions (Vial, 2019). At the same time, leadership style impacts the effectiveness of digital transformation (Sow, & Aborbie, 2018). A new collaborative and open organizational culture is also required (Ismail et al., 2017). This culture should embrace technological development and continuous integration rather than feel upper-down imposed (Ismail et al., 2017).

The leadership style influences digital transformation and organizational agility (AlNuaimi et al., 2022). The leaders are also responsible for guiding employees not only related to traditional responsibilities, but also for acquiring new skills and perspectives. At the same time, the IT team should be supported to be more aware of business-related processes and requirements. To capitalize on digital opportunities, employees should possess new knowledge and skills. The digital leadership style, defined as the strategic use of an organization's digital assets, proved effective in motivating employees and cross-generational communication (Lubis et al., 2019). Employees could better cope with the disruption and challenges of digital transformation if leaders provide them with vision and support (Kazim, 2019). Co-creation, co-design, and integrated stakeholders' ideas proved beneficial processes for effective leadership and successful digital transformation. Kazim (2019) concludes that "the digital era of disruptive transformation is the catalyst that has influenced leaders to better clarify and communicate ideas to achieve improved solutions that stem from increased cooperation and co-creating value, and built through increased cross-functional relationships using a leadership style that is open and authentic".

## The COVID-19 pandemic and the digital transformation

The terrible disruption generated by the global COVID-19 pandemic has had a significant impact at macro-, mezzo-, and as well as individual levels. International relations and public policies have been considerably impacted. We highlight the main evolutions at the macro-level by limiting the present study only to digital-related impact. Previous challenges related to the ethical use of data, collecting and using statistics, or even implementing e-health systems have been rapidly overcome even in the first months after the start of the pandemic (Hantrais et al., 2020). Artificial intelligence was used to track and fight the virus in a global effort to control the pandemic. Innovation was high, determining rapid development and adoption of new approaches.

For instance, AI was an increasingly important concern at the EU level before the pandemic. A white paper was published in February 2020, developing a policy launched less than two years in advance, supporting ethical development in the field, cooperation, and excellence (EC, 2020). We would observe that during 2020 the EU tried to observe these pillars, despite member states' strong national egotistic interests. This white paper also stressed the support for SMEs and the encouragement of a bottom-up approach. After one year through the pandemic, in March 2021, some shifts could be observed across the EU. Trust has become a pillar of AI development in Europe, and the support for excellence is connected to capacity building for the industry overall and research centers. A horizontal regulatory proposal was planned for 2021 (EC, 2021).

At the global level, Tsekeris and Mastrogeorgiou (2020) argue that COVID-19 has a positive long-term effect, by supporting Globalization 4.0 against Globalization 3.0. The former is considered more sustainable, a more responsible path for development. In December 2018, Globalization 4.0 was announced as the key topic for Davos 2019, observing at the same time that humanity is "vastly underprepared for it" (Baldwin, 2018). Maybe the optimism placed both on Globalization 4.0 and the positive outcomes of COVID-19 are too early to validate, especially since the recent political, energetic, and economic crises are making the environment turbulent and unpredictable. We give only two examples in this context – the rich seem to have become richer in the past years, including during the pandemic times (Kelly, 2020; Neate, 2020); the decrease in pollution associated with the first months of the pandemic has been reversed in various parts of the world (Edmond, 2020; IQAir, 2021; Wilks, 2021), while the war in Ukraine has had also unforeseen impact on the energy industry and its footprint on the environment (Nerlinger & Utz, 2022; Pereira et al., 2022). Voices argue that the pandemic stressed the need for de-globalization (Thangavel et al., 2022). Nevertheless, a need for rethinking international political and economic relationships and business chains has emerged.

Governments seem to have been paying more attention to fake news and cybercrimes than ever (Europol, 2020). Significant changes in how fake news and manipulative online approaches are treated by the online industry giants have taken place (Crouch, 2021; Spring, 2020). Nevertheless, these regulations are hard to implement, they are debatable and their impact is limited by the fake news spread effectiveness. Also, larger-scale cooperation in this sense is needed (Hartley & Vu, 2020), especially since the pandemic was a fertile ground for increased propaganda and the spread of fake news (Balakrishnan et al., 2022; Bargaoanu & Nastasiu, 2022).

The global communication system and interconnectedness define the pandemic, which has been considered the first digital pandemic (Tsekeris & Mastrogeorgiou, 2020). Also, digital technologies helped governments fight the pandemic, but also various aspects of digital pandemics determined additional challenges (Wang et al., 2022). This “title” also stresses that access to quality information and the news influence the ability of individuals and organizations to overcome biases and effectively react to this new challenge.

At the business/organizational level, the impact of the COVID-19 pandemic was complex and required agile resilience and intelligent new business models/ manufacturing to rebuild operations and recover revenues (Pinzaru et al., 2020). The negative business outcomes are numerous but we will mention only some of the most impactful: facilities closing, a decline in revenues, a drop in supply chains’ performance, increased costs related to sanitary security and risk reduction, and new employee-related challenges. In this framework, the winning strategies were rethinking the organization and boosting digital transformation. We also mention that the pandemic evolutions and their impact on the business sector attracted the attention of policy-makers and practitioners and the academic environment (Tiutiunyk et al., 2021).

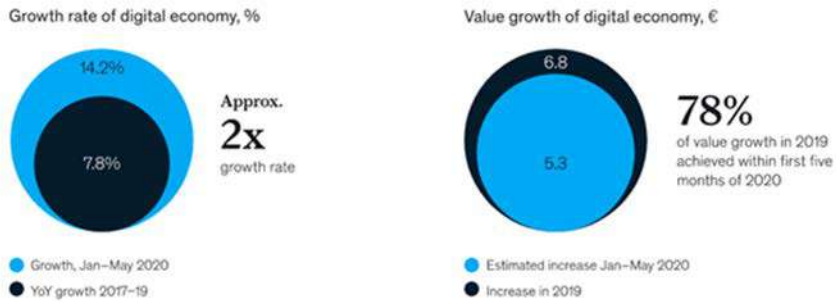
### **A new timeframe induced by the COVID-19 pandemic**

Success of digital transformation has not been a simple process. A McKinsey study (Martin, 2018) developed before the pandemic showed that only 16% of investigated organizations reported successful digital transformation, compared to a figure twice higher for other types of organizational transformation. Even the “digital savvy industries” did not report a success rate higher than 26%. Smaller organizations performed better than very large ones. The study also reveals that management has a significant role in the success of digital transformation by influencing in several ways the processes: communicating frequently, empowering people, giving a sense of direction and urgency, and ensuring cooperation within the organization.

The advances in digital transformation are visible. Nevertheless, one might wonder how fast – if at all – the changes were compared with the organic digital transformation. A study by McKinsey (Filip et al., 2020) developed in Central and Eastern Europe shows that in the first five months of the pandemic, the digital economy increased almost double compared with the evolution in the previous two years. Also, its monetary value exceeded the previous forecast. Romania experienced one of the fastest growth in the region. Also, the number of digital service users increased significantly, with a large contribution from Romania. Interestingly, the steepest increase was registered in the 65+ cohort (McKinsey, 2020a) Nevertheless, the CEE countries continued to lag behind the Baltic States and Nordic countries, and the gap even increased. This data shows that being agile is not effective enough compared with planning and being already on a strategic development path.

The study observed that just before the pandemic, although the evolution was positive above organic development, the growth potential has been missed. The study notes that *“the region has not yet managed to fully leverage digitization of the public and private sectors, and has failed to significantly boost e-commerce and offline consumer spending on digital equipment”* (McKinsey, 2020a). Figure 1 documents the main evolutions.

**In Jan–May 2020, the digital economy of CEE grew almost twice as fast as in previous years, achieving 78% of the total increase seen in 2019 in just 5 months.**

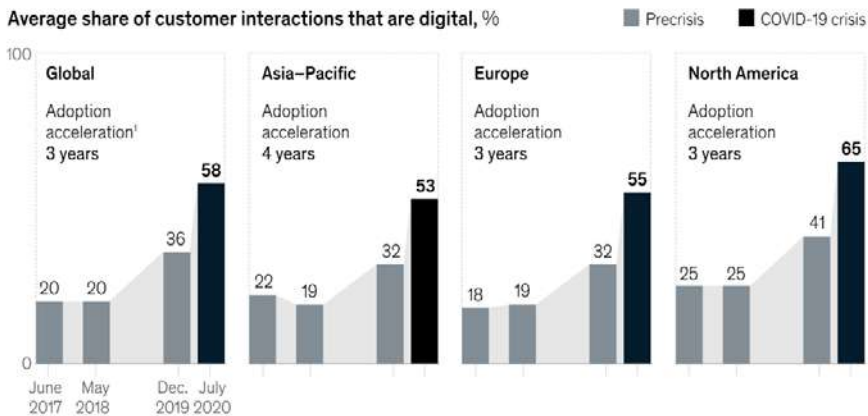


Source: Eurostat; Euromonitor; McKinsey analysis

**Figure 1. The evolution of the digital economy in the CEE region (McKinsey, 2020a)**

Another McKinsey study (2020b) investigating the global executives on specific evolutions shows that digitization around the globe speeded with several years. The greatest jump, of over seven years, has been documented for digitally enabled products. Disparities are also registered among regions, with Asia showing the fastest dynamics compared with the forecasted evolution, based on previous surveys. Figure 2 presents the evolution of various regions.

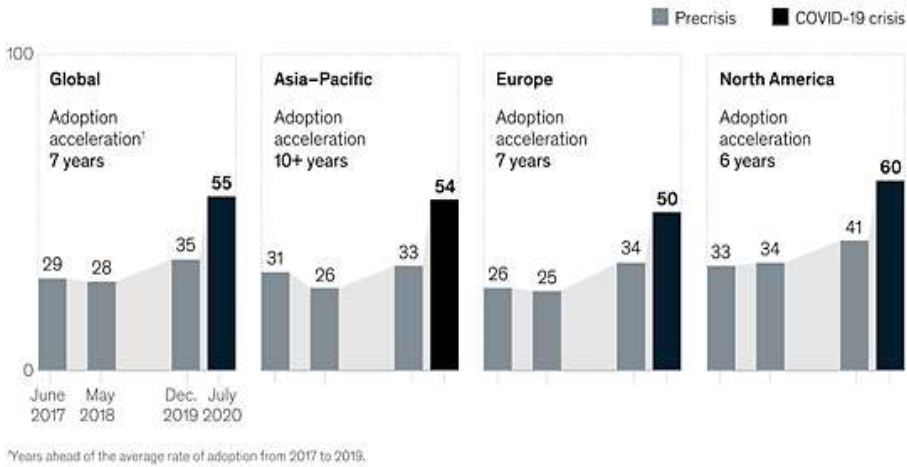
**The COVID-19 crisis has accelerated the digitization of customer interactions by several years.**



\*Years ahead of the average rate of adoption from 2017 to 2019.

**Across business areas, the largest leap in digitization is the share of offerings that are digital in nature.**

Average share of products and/or services that are partially or fully digitized, %



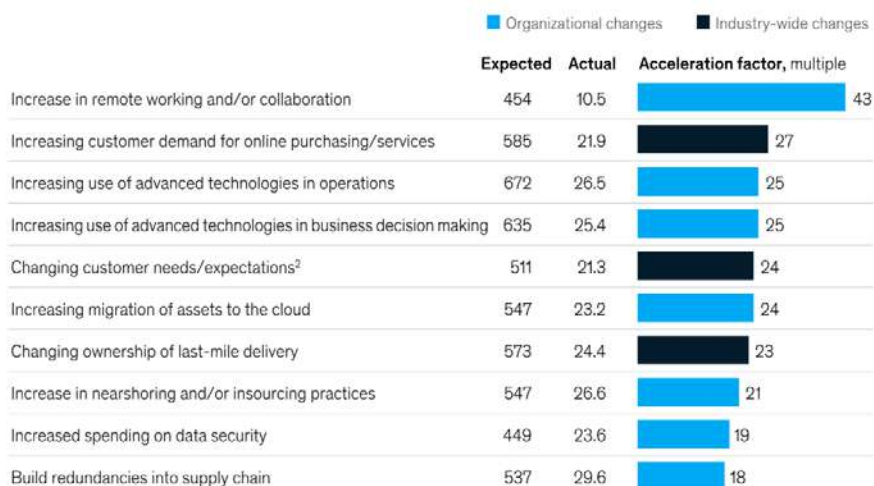
**Figure 2. The digital growth due to the pandemic (McKinsey, 2020b)**

One observes that customers were better adapted to the digital than companies previous to the pandemic. The need to adapt to sudden crises proved to be a much more stimulating factor than the desire to align previously the offer and the organization with its customers. Digital evolved from a tool for cost cuts to a strategic development tool. Two years ago almost half of the respondents considered digital as a means of reducing costs, while the pandemic reduced the percentage to 10% (McKinsey, 2020b).

Nevertheless, the rate of growth varied across industries. The fastest growth registered in healthcare, pharma, financial, and professional services. This evolution is not surprising and shades some concerns about the consistency of transformations in other domains. Also, the growth is related to increased budgets allocated to digital transformation. Even if in many cases budgets for various costs, especially variable ones, decreased, for 2 in 3 organizations the funding of digital initiatives increased, while for only 7% of the organizations, this funding decreased due to this specific crisis (McKinsey, 2021). The same study shows successful companies are more likely to invest in R&D, new talent, and partnerships. They are also more innovative.

### Executives say their companies responded to a range of COVID-19-related changes much more quickly than they thought possible before the crisis.

Time required to respond to or implement changes,<sup>1</sup> expected vs actual, number of days



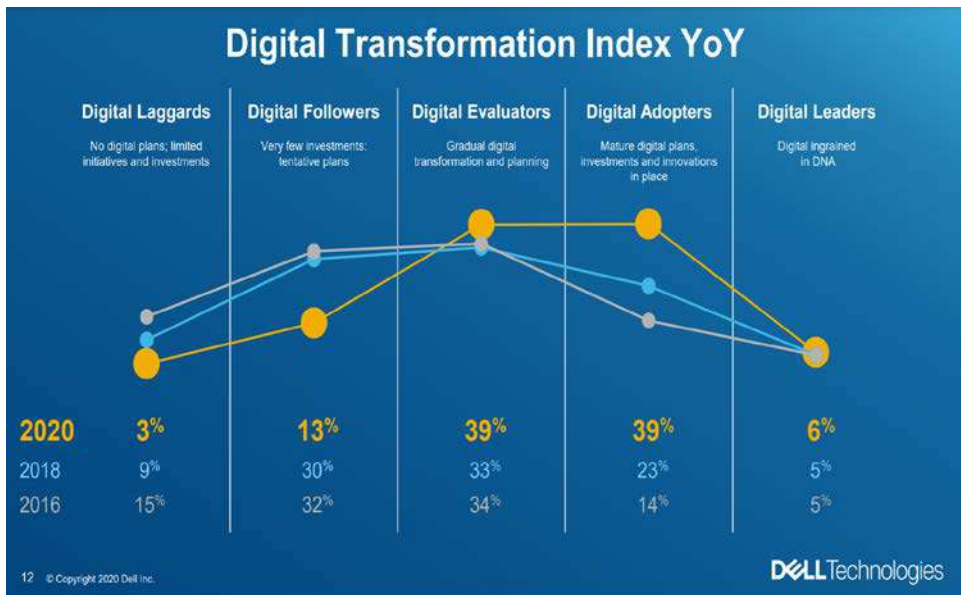
<sup>1</sup> Respondents who answered "entry of new competitors in company's market/value chain" or "exit of major competitors from company's market/value chain" are not shown; compared with the other 10 changes, respondents are much more likely to say their companies have not been able to respond.  
<sup>2</sup> For instance, increased focus on health/hygiene.

**Figure 3. Response to the pandemics**

The pandemic proved to be a good chance to measure how prepared various countries are for digital transformation. In the case of the EU, the McKinsey study shows that the most fitted proved to be the Nordic countries, including the Baltic States (McKinsey, 2020). In the case of previous pandemics, the negative impact of the pandemic was limited and the adaptation was boosted by the existence of reliable broadband with high penetration rates (Katz, Callorda, & Jung, 2020). This relationship has not been specifically investigated for the current pandemic, but this phenomenon could justify the evolutions in Romania exceeding other CEE countries. An IMF study also suggests a country's digitalization level is another factor positively influencing the recovery (Katz et al., 2020). Of course, not only the level of digitalization and the flexibility to offer a digital response to the pandemic are factors influencing the effectiveness in these turbulent times, but also the infrastructure already existing in a country (Banga & te Velde, 2020). In this context, corporate agility is relevant, and public policies and support are vital.

A significant acceleration of digital transformation was also documented by the Dell Technologies Digital Transformation Index (Dell Technologies, 2020). The highest jump was registered by the "digital adopters" – i.e., organizations with mature digital strategies (see Figure 4).





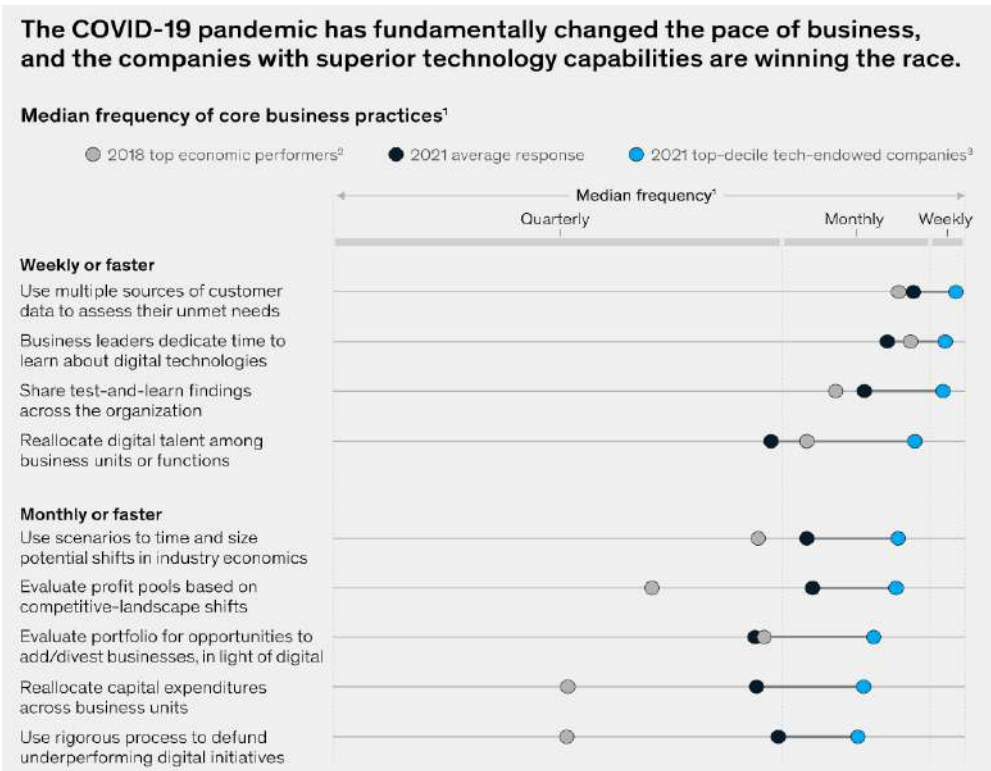
**Figure 4. The evolution of the Dell Digital Transformation Index (Dell Technologies, 2020)**

Despite the generally positive reaction, only 41% of companies adopted a holistic approach. The most popular acceleration programs identified in 2020 were: cybersecurity defenses; broader working-from-home/remote working capabilities; delivering digital experiences to customers & employees; using data in completely new ways; and transforming services and consumption models. Although the digital transformation was faster than ever in 2020, half of the companies worry they were not fast enough. The study also reveals that funding the necessary transformation and the adaptation to the changes in the market is lagging.

The 2021 Global Tech Outlook documents that 16% of companies are at the beginning of digital transformation with integration issues as the main barriers (Red Hat, 2021). Although the main challenges seem to be cultural and cooperation between IT and business functions, most companies invest in technical aspects, starting with IT security.

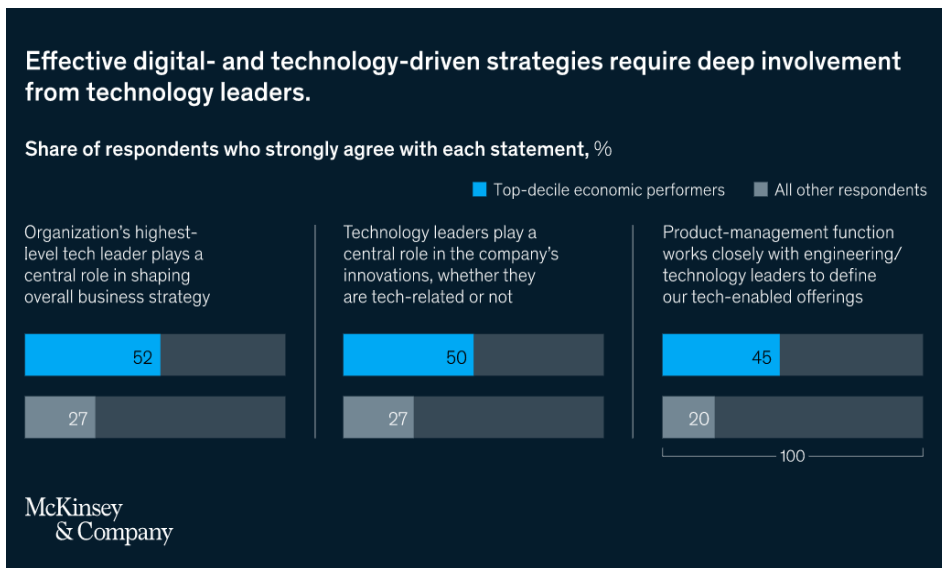
Another global study, developed by Twilio (2021), evaluates that the overall time jump for digital transformation was 6 years. Digital communication was key for the great majority of companies. Traditional bureaucratic barriers have been overcome and in many cases, funding for digital transformation increased, according to this study.

A McKinsey (2021) study showed that during the pandemic, digital transformation was positively influenced not only by technological capabilities, but also by adequate leadership (see Figure 5). The companies with enhanced learning capabilities and which allocated talents flexibly among business units were more successful. We also observe that the investments in the digital transformation during the pandemic have not led to the sought performance for most organizations (McKinsey, 2022), still companies are focusing on additional development of their digital investments.



**Figure 5. Successful business practices during the pandemic (McKinsey, 2021)**

Also, digital leadership seems to be a successful differentiator, as illustrated in Figure 6.



**Figure 6. Success associated with tech leadership (McKinsey, 2021)**

## Conclusions

Since the COVID-19 pandemic was a significant disruptive factor for all businesses worldwide, no matter their characteristics, its impact, and the successful recovery strategies were important aims of academics and especially of business reports. These studies have documented that resilient and agile organizations thrived, benefiting from a significant leap forward in digital transformation. Companies already advanced in this field were the ones making more progress. Therefore, even if organizations jumped several years ahead, the digital gap actually increased.

The digital gap has widened in both considering countries and organizations. If we focus on companies, considering that digital transformation has a strong impact on efficiency and profitability, the identified phenomenon leads to a stronger competitive advantage for companies that already have been more advanced, with a leadership oriented more on digital transformation embedded in all processes.

Although the main challenges associated with accelerated digital transformation seem to be cultural and cooperation between IT and business functions, most companies concentrate on investing in technical aspects, starting with IT security. This might be a sign of weak digital leadership. Effective leaders in digital transformation should possess many skills, the technical ones being less relevant than vision, agility, and ability to change the organizational culture. Summing the necessary leadership capabilities, we would mention vision and purpose, governance, culture and engagement, workforce enablement, technology, and business. Another unique aspect is that the bottom-up solutions, accepted by inspired leaders, have offered fast and valid solutions to various complex and simultaneous challenges during the pandemic. The crises generated by the COVID-19 pandemic proved that all these factors are vital for an organization to thrive, for effective leadership.

Although existing studies did not concentrate on the quality of digital transformation, they suggest that this might be a strong differentiator for success. Companies investing more in people, partnerships, and being more innovative proved to have a more significant advantage. Digital transformation leadership is pragmatic and empowering, contributes to organizational learning, invests in talents, ensures digital talents' flexible distribution across organizations, focuses on value flows digitally enhanced, and continuously invests in further creative digital transformation.

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