

THE IMPACT OF THE COVID 19 PANDEMIC ON THE DYNAMICS OF DIGITAL TRANSFORMATION - CROATIAN PERSPECTIVE

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ABSTRACT

Digital transformation is a complex process whose comprehensiveness inevitably brings with it various challenges and obstacles. Its implementation requires significant amounts of time and money, especially in terms of hiring experts, the cost of introducing new digital tools and education. The onset of the COVID19 pandemic, due to a series of security measures and restrictions on physical contact between people, necessitated the accelerated development of digital transformation worldwide. Hence, the subject of this paper is the analysis of the impact of the pandemic on the dynamics of digital transformation from the Croatian perspective. Through the analysis of the media, reports of consulting companies and our own experiences, an overview of the state and development of indicators in key areas was made and placed in the context of European and world digital indexes. The aim of this paper is to present changes in the dynamics of digital transformation in the Republic of Croatia, in areas that we believe are a direct consequence of the pandemic and compare with the pre-pandemic situation, as well as Croatia's position in relation to neighbouring countries. The focus was on important software and network solutions, which improved the individual analyzed area. The actual situation and digital readiness for further progress have been assessed.

KEYWORDS: *COVID19, Croatian Perspective, Digital Readiness, Digital Technologies, Digital Transformation, Internet*

Article History

Received: 27 Dec 2021 | Revised: 30 Dec 2021 | Accepted: 03 Jan 2022

INTRODUCTION

The subject of this paper is a concise analysis of the impact of the COVID19 pandemic on the already initiated and necessary process of digital transformation (DT) within key areas of activity in the Republic of Croatia. Thanks to the digital revolution, the world is changing at an unprecedented rate. Digital technologies have changed: the way companies do business, the way they communicate and exchange information between people, but also the interactions in the public and private sectors. DT encompasses the integration of enterprise digital technologies and the impact on society of new technologies, such as: the Internet of Things, cloud computing, innovative digital platforms, and blockchain technologies. It is becoming an increasingly important condition for the development of modern economies and can affect many sectors of the economy (including transport, energy, agricultural and food sector, telecommunications, financial services, manufacturing and healthcare) and transform human lives. According to the Organization for Economic Cooperation and

Development (OECD), the increasing computing power of consumer devices, which are available at increasingly affordable prices, is accelerating this change. Furthermore, artificial intelligence and advanced robotics are considered important manifestations of digital transformation, with a strong impact across society, including productivity, employment, business models and public services, which require consistent public policies. [1, 2]

Therefore, the aim of this paper is to present changes in the dynamics of DT implementation in the Republic of Croatia, in areas of activity that we believe are a direct consequence of the pandemic, and to compare the situation of DT in relation to the pre-pandemic situation, as well as Croatia's position compared to neighbouring countries in the European Union (EU). Thereby, the focus was placed on important software and network solutions, which improved the individual analyzed area.

METHODS AND MATERIALS

The applied research methods in the preparation of this paper were: collecting materials from available written and Internet sources, conducting informal interviews with various factors within the analyzed areas, monitoring the presentation and content of scientific conferences in individual analyzed domains, as well as the analysis of statistical data from sources who conducted digital competitiveness research both inside and outside Croatia. The key references were the data presented by: The Institute for Management Development (IMD), the European Commission, and the regional leading business consulting company Apsolon.

In order to gain insight into the state of digital transformation of the Croatian economy, the leading Croatian consulting company Apsolon has developed the Croatian Digital Index (hr. *Hrvatski Digitalni Indeks*, HDI). Index analyzes the readiness of the Croatian economy to face the challenges posed by extremely rapid growth and development of new digital technologies. Data for HDI were collected from 300 Croatian companies, of which 43 large (with over 250 employees) 257 medium (with 50-249 employees) using CAWI (Computer Assisted Web Interviewing) and CATI (Computer Assisted Telephone Interviewing) method. The surveyed entities come from five major groups of activities, according to the National Classification of Economic Activities (NCEA): Agriculture (section A), Production (sections B to E), Construction (section F), Trade (section G) and Services (sections H to S). DT is a complex process whose comprehensiveness inevitably brings with it various challenges and obstacles. Awareness of the challenges of DT is important when creating a strategy because of the anticipation of challenges and the possibility of solving them in a timely manner. Apsolon's research showed that companies in Croatia face the following obstacles in implementing DT: financial reasons (costs), excessive focus on existing business priorities and lack of time to implement DT (human resources). [3, 4, 5]

IMD monitors the state of DT's global progress at the so-called World Digital Competitiveness Ranking, analyzing three key factors: knowledge, technology and readiness for the future. [6]

At EU level, the European Commission (EC) monitors member states' progress through the Digital Europe program in five key areas: supercomputing, artificial intelligence (AI), cybersecurity and trust, advanced digital skills and ensuring the widespread use of digital technologies across the economy and society. In addition to the IMD scale, the state of digital readiness of EU member states is also assessed by the DESI (Digital Economy and Society Index) index. The European Commission has been compiling this index every year since 2014. The DESI index is used to monitor progress in the field of digitalization in the areas of connectivity, human capital, use of Internet services, integration of digital technology, and digital public services. [7, 8]

Of course, all these indicators should be taken into account when analyzing the progress of DT by applying specific software solutions in certain areas of activity that are the subject of this paper. However, in contrast to the division of activities according to the NCEA, in our research we applied an empirically shaped division, i.e., a division formed on the basis of our observations during the period of consideration:

- Government, public institutions and public services
- Healthcare
- Education
- Economy

We tried to put actual forms of DT progress in Croatia within these four activity areas in the context of the area covered by the IMD and DESI index and to draw concrete conclusions and forecasts for further progress of DT in the Republic of Croatia.

ANALYSIS RESULTS

At the beginning of the COVID19 pandemic in March 2020, Croatia, like its neighbouring countries, entered the so-called *lockdown*. An unexpectedly difficult situation arose in which the government found itself overwhelmed by a number of seemingly unsolvable problems, the economy collapsing due to the impossibility of normal business, education in search of new forms of education, healthcare affected by a large number of infected citizens, and citizens confused by incomplete and contradictory information which arrived from the competent authorities and institutions. But rescue solutions have gradually come through increased activation, application and functional extensions of existing software platforms or as newly developed software solutions whether they are the result of the efforts of already reputable IT companies or development ideas of new *start-ups*.

Government, Public Institutions and Public Services

Since June 2014, within the DT of public administration, the Croatian government has launched the portal of integrated services called e-Citizens [9], which then contained 16 services and by the end of 2014 about 140,000 citizens had registered for it. This project is the result of a comprehensive project e-Croatia (paperless country) which was conceptually conceived in 2004. Unfortunately, until March 2020, this portal is despite simple login options: new smart ID cards, integration with almost all available IDs in Croatia (e-banking tokens of all major banks, FINA tokens, AAI identities, HT Telekom ID, ePošta ID) and other opportunities for login, were used by relatively few citizens. However, as the first pillar of defence against the COVID19 virus pandemic presupposed staying at home, social distancing and reducing exposure, the e-Citizens portal has finally come to life in full swing. The increase in the number of users from the beginning of work to the middle of 2021 is shown in Figure1.

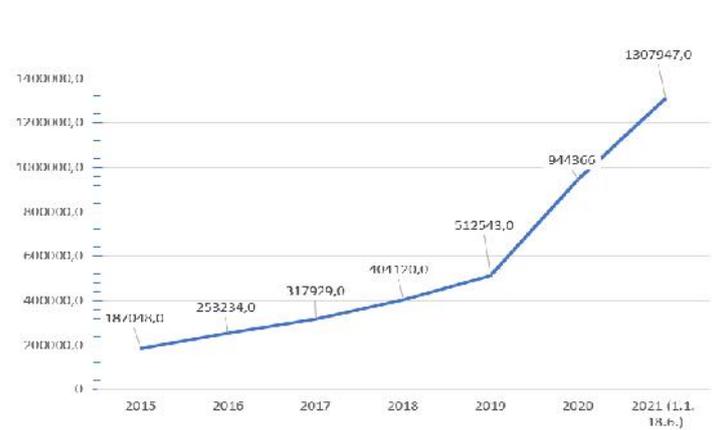


Figure 1: Increase in the Number of e-Citizens Users during the Pandemic [10].

So, only at the moment when the citizens were forced to stay at home, many of them realized that almost all administrative jobs and public services can be done from home and the portal came to life as it was originally intended. During the first lockdown period alone, in the first week of April, the e-Citizens system recorded an increase of 80,000 new users and was used by a total of 934,762 citizens. In the period from 2018 to 2020, the e-Citizens system increased the number of its users by over 120% from 404,120 to 944,366 users. So, in just one year during the pandemic, the number of beneficiaries has grown more than in the past five years (Figure 1). [10]

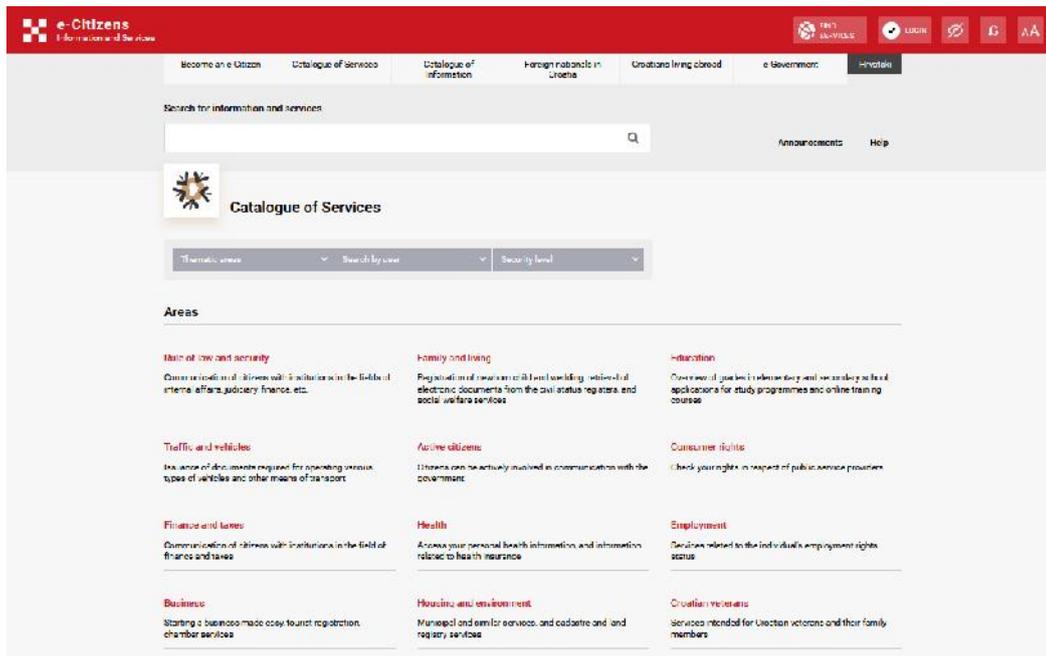


Figure 2: E-Citizens, Catalogue of Services – Website Detail [9].

In that period, a number of new digital services were launched, and the current portal includes 12 functional units with a total of 99 services. Available services are included in the following functional units:

- Rule of law and security
- Traffic and vehicles
- Finance and taxes

- Business
- Family and living
- Active citizens
- Health
- Housing and environment
- Education
- Consumer rights
- Employment
- Croatian veterans

Figure 2 shows a detail of the website with the catalogue of services displayed. Introductory pages, application pages and catalogues have also been translated into English. Each user has his own user box in which he receives notifications from the competent authorities, as well as the requested digital documents. [9]

At the beginning of the pandemic, the Croatian government established the Croatian Civil Protection Headquarters as the main advisory and regulatory body that monitors the situation and manages activities in the field. In cooperation with the government, the headquarters encouraged the development of additional software platforms for the management of activities for which it is responsible, as well as additional services within the e-Citizens portal. One of the first additional services was "e-Passes", a service for requesting and delivering approved passes for movement between counties during the lockdown. The listed software platforms are "Cijepise.zdravlje.hr" (for citizens to apply for vaccinations) [12], "BOOKING AN APPOINTMENT FOR CORONAVIRUS TESTING" (reservation of test dates on SARS-CoV-2) [13] and "CovidGO" (mobile application for verification and storage of EU Digital COVID Certificate) [14].

Healthcare

The Ministry of Health, through the Croatian Institute of Public Health (CIPH), in coordination with all health institutions and the Civil Protection Headquarters of the Republic of Croatia, tried to provide all necessary activities and resources to provide the necessary capacities for the treatment of COVID19 patients and patients of all other diagnoses. Some hospitals were transferred to the so-called "cold drive" regime and received the status of "COVID hospitals", while other hospitals handled only emergencies and urgent surgical procedures, because their employees also worked shifts in "COVID hospitals". The key role in the field was given to primary health care (especially family medicine practices) and the epidemiological service of regional Institutes of Public Health. Epidemiologists kept records of necessary tests, monitoring of infected persons and monitoring of persons in self-isolation. Family physicians monitored their patients (infected and self-isolated), provided test referrals, received and forwarded test results to patients, and conducted their daily non-pandemic work program. In order to reduce the contact risks of infection, efforts were made to reduce unnecessary contact and patient mobility. This has resulted in an increased number of consultations via e-mail, SMS, communication platforms (WhatsApp, Viber), automated telephone systems for ordering chronic therapy and classic telephone conversations. [15] Of particular importance and contribution in this situation was the Central Information Health System of the Republic of Croatia (CEZIH) [16], which was also developed within the e-Croatia project as a sub-project e-Health. It is an information

system that enables: keeping health records of patients with storage in the central repository, e-prescribing (e-prescription is available in a short time in all pharmacies in Croatia), e-referral, e-ordering for secondary specialist examinations and procedures, as well as accepting findings and discharge letters directly into the patient's record. During this period, the e-referral for consultations of the family doctor with specialists in secondary health care without the presence of the patient (the so-called A5 referral) became especially interesting [17]. This referral has existed since 2014, but it has not entered into wider practical application. However, in the newly created situation, it significantly reduces the unnecessary migration of patients between family doctor's offices and hospital offices. The problem of its application was shown only when referring to hospitals that have outdated information systems that cannot be connected to CEZIH.

An additional advantage of the CEZIH system is the delivery of data on health procedures, referrals, prescriptions and findings directly in the patient's personal health record, which patients can access by logging in to the "Health Portal" (Figure 3) within the e-Citizens system. From this portal, patients can download all the necessary findings, as well as COVID certificates, without having to go to their doctor unnecessarily. In short, the use of the CEZIH information system in conjunction with the e-Citizens system, use of the additional testing and vaccination management platforms and widely used information and communication systems - has reduced risk of unnecessary migration and patient contacts, while increasing access to the health system. [18]

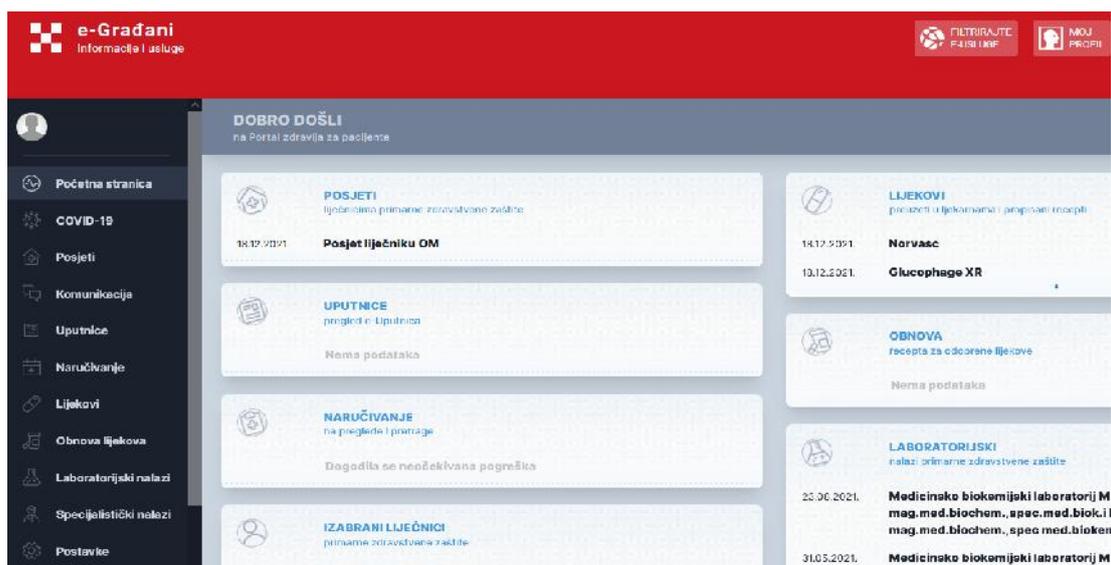


Figure 3: E-Citizens, Health Portal – Website Detail [18].

However, this transformation of the way of communication within the healthcare system has introduced radical changes in the way of working and working hours. Physicians' working hours have lost clear boundaries, and the number of communication channels has increased significantly.

Education

The pandemic and the protective measures introduced because of it, caused disruptions at all levels of education. Compliance with lockdown rules has created a number of problems, starting with the organization of teaching and non-teaching staff, distance learning, designing a new structure of teaching materials, ensuring the same quality levels for live and distance teaching, selection and adaptation of software platforms for online teaching, further improvement and adapting e-learning systems, designing new approaches to knowledge testing (exams and colloquia). A small advantage in

primary education was achieved in the short period before the pandemic by purchasing free tablets as a basic teaching tool for all students. Thus, there was some basic advantage to moving to online teaching in primary education. Almost all higher education institutions in the Republic of Croatia had some versions of e-learning systems at their disposal in the previous period (e.g., Moodle, Merlin, etc.), but the level of their use was very low. With the appearance of the pandemic, their use became necessary and mandatory. Rapid increase in the use of these software platforms has set new criteria for the bandwidth of Internet connections. There was also the problem of students' access to specific licensed software installed on school systems (e.g., CATIA, SolidWorks, ACAD, MATLAB, etc.). Laboratory exercises that need to be done on specific equipment installed in school laboratories were also a problem (e.g., mechanical workshops, chemistry, food technology). However, such exercises had to be carried out in school premises in strict compliance with anti-epidemiological measures.

The new situation required accelerated education of teaching staff in the field of e-content preparation for e-learning and designing online exams, which would guarantee satisfactory supervision of students during the exam without the possibility of using illicit materials and communications. Practice has shown that students in online exams in many cases achieved significantly better results than in live exams. In both cases, e-learning platforms were used to test knowledge. [19, 20]

Economy

Changes in the economy can be observed through several functional levels: industry, trade, tourism, agriculture (including fishing), cultural activities and information and communication services.

At the time of the beginning of the pandemic, i.e., the COVID19 crisis, we are witnessing new standards in the market. The value of digital technologies and products has become invaluable to businesses and customers around the world, and the phrase “adapt or die” has never been more applicable. For years before the coronavirus pandemic swept the world, the digitalization of businesses and their business models was considered one of the strongest trends changing the global economy. Digital transformation, which lasted for decades, had to be unexpectedly accelerated due to the pandemic in order to be able to respond to new needs in the business world. Regardless of the sector in which they operate, economic actors had to quickly find a solution to get in touch with their clients and partners or even their employees, due to the rapid pace at which the pandemic transformed the economic environment. Over a period of just over a year, there have been significant changes in the way organizations operate in all sectors and regions. Many of them have accelerated the digitization of their internal processes and interaction with partners and customers and reached a level they would normally achieve in a few years, while the share of digital or digitally enabled products in their portfolios is absorbed even faster. Many companies have been forced to introduce at least temporary solutions to meet the many new demands that lie ahead, but much faster than they thought possible before the pandemic. Companies with more advanced digital infrastructure have switched to working from home (wherever possible), holding meetings and communicating with employees through online platforms such as MS Teams. For those companies, which did not have such opportunities and which faced inability to do business and reduced labour needs, the government introduced temporary financial assistance for survival during the lockdown period. [21]

The global pandemic has affected business models in a variety of industries and has forced many companies to change their traditional way of doing business and digitize services. Traditional ways of doing business, such as that in tourism (hotel, catering), traditional retail and most other service industries, are more difficult to change their business

model as they require physical closeness to consumers. However, change is not impossible for them either, as evidenced by the digitalization introduced into their business by many fruit and vegetable producers, restaurant owners, retail stores and conference organizers in order to preserve their business. Thus, a significant number of restaurants, family farms, and small household goods stores have introduced telephone and online sales of their products with their own delivery or using delivery and online service portals of companies such as Volt, Glovo, Pauza and the like. [5, 21]

It should be emphasized that at the beginning of the lockdown, a large number of logistical problems arose. Namely, due to the ban on leaving the place of residence, the closure of shopping centres and the ban on the operation of markets and fairs, citizens were faced with a lack of the most basic foodstuffs. Supply chains from abroad were cut off and local food producers could not offer products to customers because markets were closed. As the majority of citizens were not able to access foodstuffs, there was a deterioration of goods in stock, and economic entities that depended on income from the sale of goods were placed in an unfavourable economic situation. In order to alleviate the above problems, local governments have begun to massively create online portals for the purchase of products from family farms [22] that would be delivered to the end user without the need for mass gatherings in the markets. An example of such a portal is shown in Figure 4. Such applications were most often the product of independent IT experts or small Croatian start-up companies.

One of the hardest hit sectors was the cultural and stage sector, especially musicians. Due to the pandemic, all concerts and cultural and stage events were cancelled indefinitely, and there were no live performances in catering facilities and as part of tourist events. Unfortunately, for group music making via video conferencing platforms, where each of the performers plays music from their home, the existing communication solutions generally did not have enough bandwidth, and there is also the problem of time synchronization. Exit from the strict lockdown regime allowed concerts and cultural gatherings with a reduced number of visitors with strict adherence to anti-epidemic measures. [23]

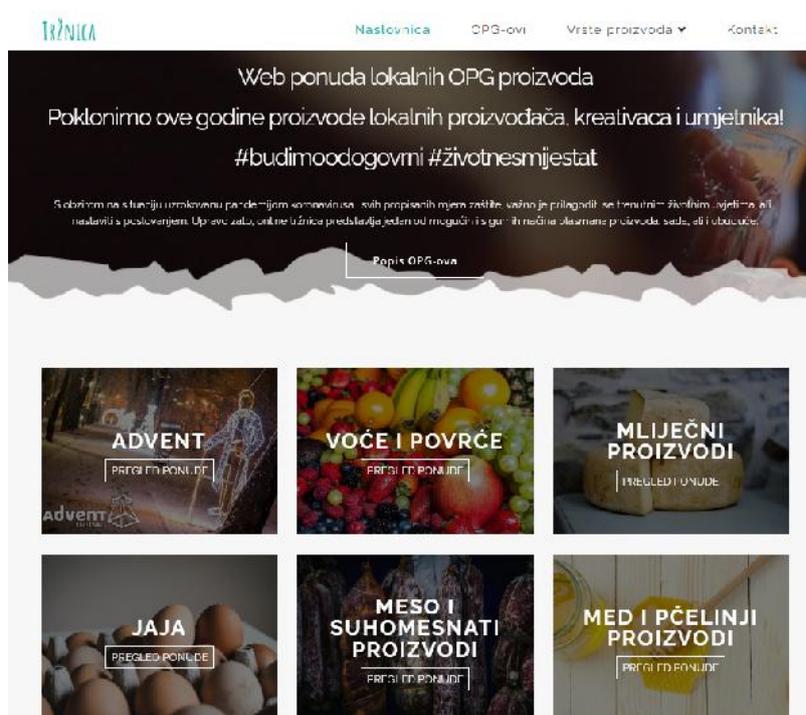


Figure 4: Example of a Web Market for the Area of the City of Karlovac [22].

Adequate communication infrastructure is a key basis for the realization of all elements of DT. The availability of quality and reliable broadband access, conditions faster development and a better quality of life in all environments. In order to increase the coverage of broadband internet in Croatia, the Ministry of the Sea, Transport and Infrastructure has developed a strategy for the development of broadband access in the Republic of Croatia in the period from 2016 to 2020 [24]. The strategy is aimed at stimulating broadband supply and demand for electronic services and ensuring effective competition in the telecommunications sector. Thus, as far as the ICT sector is concerned, the development framework has already been defined by the strategy, but the emergence of a pandemic and a sharp increase in demand for online services has accelerated the development and improvement of ICT infrastructure and a wider and more accessible set of digital services. [25]

DISCUSSIONS

From the relatively concise overview of the conducted analysis, a generalized impression can be imposed, that the Croatian government and citizens found themselves in a difficult and hopeless situation at the beginning of the pandemic, but with great joint efforts, accelerated DT was implemented in all areas of activities and the most of the problems caused by lockdown have been overcome in this way. It could also be concluded that by relaxing preventive measures and stabilizing the economy, this momentum of DT's progress has been further enhanced by similar dynamics. Unfortunately, that is partly true, but the situation should by no means be seen as black and white.

There is not enough relevant data on the state of DT in Croatia to provide an objective picture of the situation, both at the level of companies or corporations, and at the level of the Croatian economy. The results of the Apsolons study of DT conducted in Croatia in the period from October 2018 to September 2020 [3, 4] indicate insufficient preparation of the Croatian economy for the challenges of the digital age. According to the study, almost every second company in Croatia believes that DT is among the ten most important topics, but the vast majority of them believe that digital challenges will simply be solved by digitizing analogue business processes. That is why most companies leave the management of the challenges of DT to the company's IT department. However, those better informed understand that DT is not just about changes in IT systems, but that it encompasses all segments of the organization's business (people, culture, processes, partners, etc.). More knowledgeable members of the business community understand DT as digital business transformation - a fundamental change in the organization and way of traditional business, using digital technologies and applying new business models to improve organizational performance and faster adaptation in a constantly changing environment. [21]

As we have already mentioned in the Methods and Materials section, the research of the consulting company Apsolon showed that the biggest obstacles to the implementation of DT in the Croatian economy are:

- Financial reasons (costs) - DT is a process that requires significant amounts of time and money in terms of hiring experts, the cost of introducing new digital tools and education,
- Excessive focus on existing business priorities - preoccupation with existing business priorities often causes the postponement of all new strategic directions, often including DT,
- Lack of time to implement the DT (human resources) - due to too excessive focus on existing business priorities, given that DT requires significant time and human resources that medium-sized companies often do not have.

Segmentation of responses by size has shown that financial reasons and lack of time to implement DT are equally present in large and medium-sized enterprises, while excessive focus on existing business priorities has a greater impact on medium-sized enterprises. Given the financial investment required by digitalization and DT, these responses are expected. The results of the analysis of industrial areas are almost the same with the exception of agriculture, forestry and fisheries, where the main obstacle is the fear of necessary, far-reaching and radical decisions / changes. Furthermore, the survey showed that 89% of respondents highlighted the digitalization of administration (e-services for citizens and legal entities, shared service centres) as particularly important for the digital future. Then, 72.8% of respondents believe that education about digital technologies in education should be a priority in creating a digital future in Croatia. The obsolescence of the Croatian curriculum is also shown by the fact that until the introduction of the "School for Life" program, Croatia was one of 8 countries that did not introduce informatics as a curricular unit in primary schools. In addition, 57.4% of respondents believe that the availability of quality and reliable broadband access in all environments (construction of a broadband network), conditions the development and better quality of life as well as the basis for achieving the previous two goals. [3, 4, 5]

According to the IMD Digital Competitiveness Index, Croatia ranks 52nd in 2020, 51st in 2019 and 44th in 2018 out of a total of 63 countries (Figure 5).

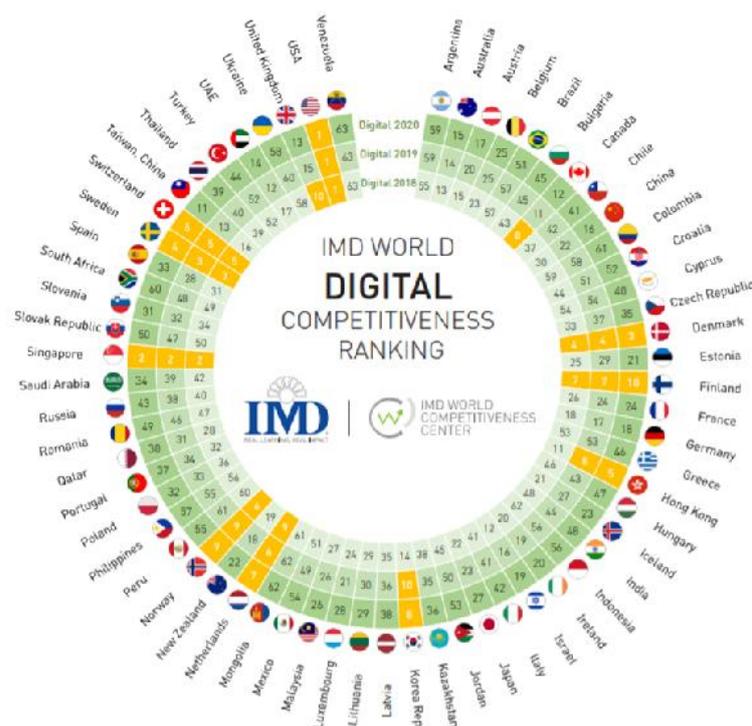


Figure 5: IMD Digital Competitiveness Index 2018-2020 [6].

IMD's Global Digital Competitiveness Index measures the capacity and readiness of 63 economies to adopt and explore digital technologies as a key driver of economic transformation in business, government and society at large. The Digital Competitiveness Index is based on an analysis of three factors: knowledge, technology and readiness for the future. The knowledge factor refers to immaterial infrastructure, i.e. research, understanding and learning of new technologies that are the basis of digital transformation. The technological factor analyzes the environment through which the development of digital technologies is enabled. Readiness for the future analyzes how much the economy is ready for DT. The first place in the ranking was taken by the USA, followed by Singapore and Denmark. The US, as the world's largest economy,

has long recognized the importance of DT for its own economic progress. Sweden is in fourth place, Hong Kong in 5th place, Switzerland in 6th place, the Netherlands in 7th place, the Republic of Korea in 8th place, Norway in 9th place, Finland in 10th place. The results show little change in the top ten compared to 2019. However, three clear trends in the 2020 results run through all economies that have made a higher level. One is the effective use of digital talents, then the reflection of the existence of technological infrastructure and the use of available technology. [6]

According to the DESI index for 2020, Croatia ranks 20th among the 28 member states of the European Union, and is in the category of less successful countries. The report for Croatia states that Croatia is achieving poorer results primarily in the area of connectivity and public services. In both areas, Croatia ranks 25th according to the DESI index. Croatia achieved the best results in the Integration of Digital Services, in which it advanced from 17th to 12th place. Also, in the area of Human Capital, Croatia advanced from 14th to 13th place. In the category of Internet service use, Croatia fell slightly from 14th to 15th place. Since 2015, when the measurement of the digital economy and society index for Croatia began, Croatia has made progress in all areas, but is still below the EU average in most areas. A comparative graphical presentation of the DESI Index for Croatia and the overall EU average from 2015 to 2020 is shown in Figure 6. [3, 4, 5]

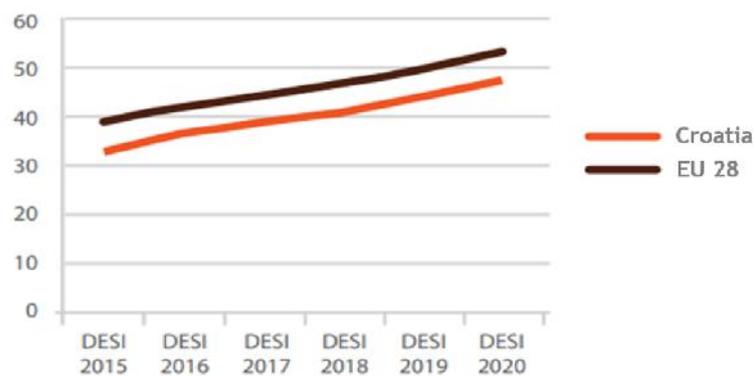


Figure 6: DESI Index for Croatia and EU Average from 2015 to 2020 [5]

In determining the DESI index, the EC monitors five key areas individually:

- Connectivity
- Human capital
- Use of internet services
- Integration of digital technology
- Digital public services

Figure 7 shows the ratio of normalized values of indicators for five key areas and the total DESI in relation to the overall EU average. In terms of connectivity, Croatia is above the EU average in fixed network coverage and is approaching the EU average in high-speed broadband coverage. The fact is that the guaranteed minimum data rate from 1 January 2020 has been raised to 4 Mbit/s from the previous 1 Mbit/s. Besides, by the then decision of the Croatian regulatory agency HAKOM, the basic package of Internet services must be provided to a socially vulnerable group of end users with a 50% discount, and additional discounts and benefits are provided to people with disabilities and other special

categories of end users. However, Croatia is still one of the countries with the most expensive internet access. The worst result was achieved in the coverage of ultra-fast broadband network of 39% compared to the EU average of 60%. Hence, the overall connectivity index is significantly lower.

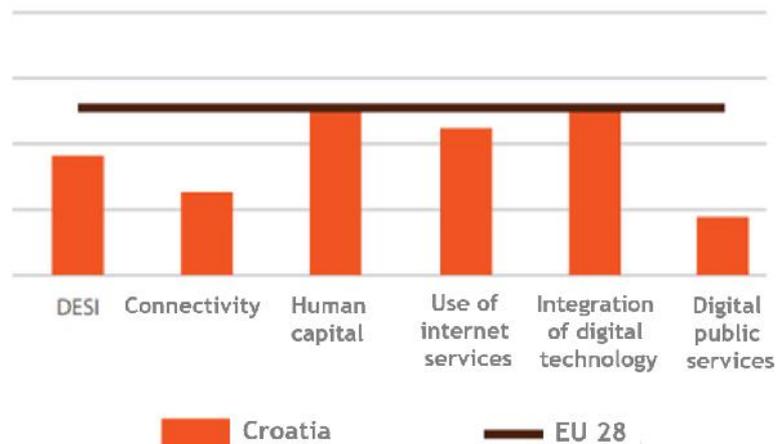


Figure 7: Five Key Areas of DESI in the Context of the Average DESI in the EU [5].

In the area of human capital, Croatia's average is almost equal to the EU average. According to DESI, the number of information and communication technology experts in Croatia is growing and the demand for them on the labour market is growing. Croatia is slightly below the EU average in the use of Internet services. As many as a fifth of Croats do not use the Internet. In the field of digital technology integration, Croatia is on the EU average. According to DESI, companies in Croatia are increasingly selling online and these sales cover 18% compared to the EU average of 17%. Social networks are used by 16% of companies, cloud by 22% and electronic information exchange by 26% of companies, which is all below the EU average. Nevertheless, Croatia is investing in digital technologies through EU programs. Despite the high-quality portal of unified services e-Citizens as the basis for the implementation of the e-Government project and the quality health information system CEZIH, Croatia is significantly below the EU average in the use of digital public services. According to DESI, good results have been achieved in e-recipes services (CEZIH) and in the interaction between governing bodies and the public on the Internet (e-Citizens). Regarding the use of e-government services, they are used by 75% of Internet users, and Croatia achieved a much better result compared to last year in creating pre-filled forms. In the field of health, Croatia ranks 10th in the EU in providing e-health services. [3, 4, 5]

CONCLUSIONS

Almost all aspects of our lives have changed in just one year. In addition to the pandemic, Croatia was hit by earthquakes in 2019 and 2020 with very severe consequences. Although this additional factor comes out of the context of the pandemic impact on DT in the EU and the world, it fits into the active trend of DT progress in Croatia and resulted in a number of very useful software and communication solutions, resulting from ideas and efforts of advanced individuals and small start-ups. Practice then showed which of these solutions are practical and applicable, and which are not. Today, we are heavily dependent on digital tools, whether it is trade, education, work from home, or something else. Businesses are aware that most of these changes will be long-lasting and are already investing resources to stay competitive in the new business and economic environment. Investment in digitalization has increased more than anything else - more than the increase in costs, the number of people in technology roles and the number of customers. The strategic importance of technology as a

critical component of business, and not just as a source of cost efficiency, has been recognized. For example, the model of working from home opens up great opportunities for economic growth, global employment of talent, job creation and, ultimately, improving human prosperity and well-being.

After 2020, it is difficult to imagine the possibility of a complete return to the previous, now old-fashioned, way of doing business. A big change is inevitable, and it is up to companies to accept it as soon as possible and thus ensure a brighter future. The key to success in such a world is accelerated development based on constant innovation, following trends and investing in the DT of business. Digital transformation means connecting all factors of production processes into one connected, networked value chain. In doing so, it collects and analyzes data in order to improve and enhance production processes, optimize costs, increase competitive advantage in the market, all in order to achieve maximum benefit for the customer and fulfil all his wishes. On our European soil, fostering DT is on the EU's political agenda more than ever and is recognized as a priority for fostering future growth in Europe.

The COVID19 crisis, which we are still going through, convinced us of the importance of digital readiness. Organizations that have invested in DT have faced the crisis digitally ready - with digitized processes and tools, an adaptable corporate culture taught to change quickly. Only organizations with a well-designed system and good partner relations can withstand the crisis without significant market losses. The development of the digital future in Croatia is greatly influenced by the state administration and civil society, which through political and social measures can influence infrastructure, education, active participation, entrepreneurship and system development. Initiatives for the introduction of digital solutions in the business of public administration make it easier for all entities, both business and private, to meet their obligations. One of the key recommendations for small and medium enterprises is a systematic approach to DT, which means monitoring all elements that may be subject to change, including not only the introduction of complementary and interoperable digital technologies, but also audits of business processes and management structures as well as investment in digital skills and competencies of its employees. Now, at the end of 2021, as we pass the fourth wave of the pandemic, the entire economy has partially recovered thanks to a fairly good tourist season, industry and commerce are recovering aware that DT is imperative, and investment in information and communication infrastructure is still growing. But we don't know what the new tomorrow brings.

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