

# The analysis of the digital transformation trends in the Ukrainian economy

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## Abstract

The consistent evolution of technology around the world creates new production tools and opportunities for different economic agents. As a result, new economic structures are emerging as a result of industrial revolutions. Today, the digital economy is seen as the backbone of the fourth industrial revolution, as there is a clear shift in the underlying technology and signs of a technological and economic paradigm shift. The current stage of the industrial revolution is associated with the Internet communication technologies development, which has significantly changed the technology of business processes and has been called "digitalisation". Thus, the fourth industrial revolution and the third wave of globalisation are based on the digital economy. The article explores trends in the development of the Ukrainian economy under the influence of ubiquitous digitalisation. Digital transformation changes traditional business models of organisations, allowing them to occupy profitable niches in global markets, raising the prestige of business and the state as a whole. In today's environment, the level of digitalisation illustrates the degree of companies' competitiveness and is a determining factor in development strategy. To analyse the processes of digitalisation and determine the place of Ukraine in the digital world, the article identifies and describes four zones of digital transformation, which are particular to the world economies. It is determined that Ukraine has fallen into a zone of prospective economies, where digital infrastructure is limited. Still, digital development is accelerating, indicating the potential for digitalisation to flourish, which will benefit economic recovery from the COVID-19 pandemic and long-term transformation. Ukraine's integral digital transformation index score is placed at 2.81 out of a possible 5 in 2021. It was determined that the main barriers to the digital transformation development in Ukrainian business include ineffective legislation, insufficient funding and low digital literacy of the population. However, the highest score among the index components was given to companies' overall level of digital transformation. A positive result of the survey is confirmation of increased investment in the digital technologies development in Ukraine: priority investments in this area include customer interaction, data analytics and HR management.

**Keywords:** digitalisation, digital economy, digital transformation, digital transformation index, HR management, digitalisation of the HR function.

## Introduction

Digital transformation is one of the most important trends of our time. In the context of pandemic business transformation at all levels, readiness to switch to new modern technologies is becoming the basis for survival in the market.

Previously, a priority for individual innovative companies was supported; however, digital transformation has become a mass phenomenon, and related projects have become key challenges for success. It is true not only for individual

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companies but also for regions and countries. In essence, a digital revolution is gradually bridging the distance and creating optimal combinations between people and technology.

The digital economy focuses on socio-economic systems at micro-, meso- and macrolevels which

will be developed in the long term. This direction calls for research and comprehensive analysis of digital transformation trends and processes and their impact on personnel management and business process renewal.

## Material and methods

The article is based on the papers of Ukrainian and foreign scientists who study current issues of transformation processes in the economy under the influence of digital technology development (Blix M., 2015; Elding C., Morris R., 2018; Krysovaty A., Sokhatska O.,

2018; Pyschulina O., 2020; Strohmeier S., 2020; Solokha D., Tanchyk O., Bieliakova O., 2021). During the study, general scientific and unique methods were used: analysis, comparative analysis, dialectical, abstract-logical.

## Results and discussion

Scholars call the Fourth Industrial Revolution (Schwab K., 2015), characterised by a fundamental transformation of business, the economy and society. However, the main characteristic of the new time is not the change, but accelerated transformation, which results in new rules of doing business and working with personnel (Deloitte, 2017).

In the context of the Fourth Industrial Revolution, the concept of industrial development "Industry 4.0", which concerns the digitalisation of production processes in the industry, energy, transport, infrastructure and logistics, is taking place. In the sphere of human resource

management in the conditions of the fourth industrial revolution, there are changes in requirements for key personnel competencies; implementation of the concept of digital jobs; radical changes in the professional structure of hired personnel; modification of HR departments' activities, technologies and tools for personnel selection and performance assessment; transition to flexible team-building (Shevchenko L., 2020).

In general, the fourth technological paradigm significantly impacts the relationship between society, human biological existence, and surrounding technologies (figure 1).

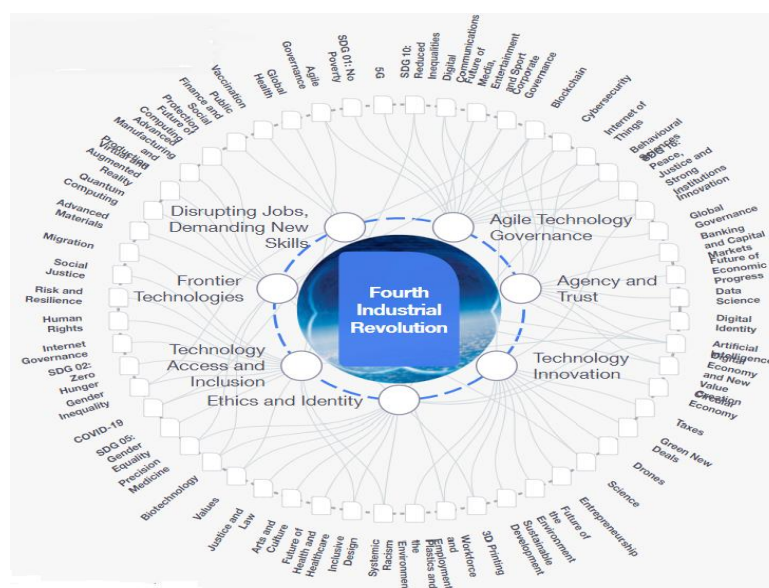


Figure 1 – The main components of the fourth industrial revolution

\*Compiled according to data World Economic Forum

In turn, the transformation of digital economies has been undeniably affected by the COVID-19 pandemic. The rapid spread of the delta strain and the threat of new variants of the virus have increased uncertainty, and policy choices have become more difficult due to significant challenges in a number of areas: slowed job growth, rising inflation, food insecurity, delays in human capital formation and climate change.

Currently, in the context of the global pandemic, countries are declaring lockdowns, closing educational institutions and entire industries. On the other hand, digital sectors such as distance education, online commerce or services ensuring teleworking are becoming especially important, which entails analysing the manifestation of this trend in different countries, including Ukraine.

Based on the results of the Fletcher School at Tufts University research, it is necessary to consider Ukraine in the scope of the Digital Evolution Scorecard. The rating assessed economies according to two indicators: the current state of digitalisation and its speed (measured as the increase in rating scores over

12 years - from 2008 to 2019). The ranking of the world's 90 economies is based on 160 indicators tracking four main factors: supply, demand, institutions and innovation.

1. Proposal: How developed is the digital environment and physical infrastructure to accommodate the digital ecosystem?

2. Demand: Are consumers willing and able to participate in the digital economy? Do they have the necessary tools and skills to connect to it?

3. Institutions: Do a country's laws (and government actions) facilitate or hinder digital development? Are the authorities investing in digitalisation? Government regulations: Are they pushing or impeding the use and storage of data?

4. innovation: How developed are the main components of the innovation ecosystem: a) access to talent and capital, b) processes (e.g., university-business cooperation), and c) access to the consumer (new digital, scalable products and services)?

The graph below demonstrates (Figure 2), the resulting "map" divides economies into four zones: leaders, slow-movers, up-and-comers and challengers.



**Figure 2 – A comprehensive picture of the digital world**

\*Compiled according to data Digital Intelligence Index

To further analyse the digitalisation processes and Ukraine's place in the digital world, it is necessary to describe these zones.

1. Leaders. This zone includes economies distinguished by both a high initial level of digitalisation and a strong pace of

development in this area. Three countries, in particular, stand out here: South Korea, Singapore and Hong Kong. Along with several other economies, such as Estonia, Taiwan and the UAE, they have consistently been among the leaders in these indexes, demonstrating both adaptability and institutional support for innovation. Interestingly, the US ranks second in digital evolution after Singapore. The latter has demonstrated an outstanding growth rate for an economy of this size and complexity.

Some peculiarities distinguish every country. Of course, each case is unique, but this analysis suggests that the most successful ones have chosen the following priorities:

- supporting the adoption of digital consumer tools (e-commerce, digital payments, entertainment, etc.)
- attracting, training and retaining IT talent;
- encouraging digital start-ups;
- providing fast and universally accessible access to the Internet, both terrestrial (e.g., fibre-optic) and mobile;
- specialisation in the export of digital goods, services or media;
- a coordinated innovation process: universities, businesses and ministries responsible for digital development.

2. Slow-movers. This zone includes countries with mature digital systems but a low rate of further development and is part of the European Union. This is partly due to the natural slowdown that comes with progress. Moreover, many countries in the area have deliberately chosen to sacrifice growth rates for responsible and inclusive development. To regain the growth momentum (while at the same time not abandoning their values), these countries ought to focus on:

- protecting against digital plateaus: further investing in sustainable institutional supports, regulatory environments and capital markets to support further innovation;
- continuing to use policy instruments and regulation to ensure equitable access to digital opportunities and to protect all consumers from privacy breaches, cyberattacks and other

threats (while at the same time maintaining data availability for new digital applications);

- attracting, training and retaining professionals with digital skills often through immigration policy reforms;
- identifying new technology niches and creating ecosystems that foster innovation in these areas.

3. Up-and-comers. This zone is characterised by economies that still have the limited digital infrastructure but are rapidly digitalising. China stands out as it is well ahead of all other countries in its digital evolution, primarily due to a combination of fast-growing demand and innovation. Indonesia and India are the other two notable group members, with the world's third- and fourth-fastest growing economies. In addition to these large developing countries, several mid-sized economies - such as Ukraine, Kenya, Vietnam, Bangladesh, Rwanda and Argentina - are also experiencing accelerated digital development, pointing to the potential for digitalisation to flourish, which will benefit both economic recoveries from the COVID-19 pandemic and long-term transformation.

The results of the authors' analysis indicate that the successful breakthrough economies focus on the following challenges:

- improving mobile internet access, accessibility and quality, for a wider diffusion of innovation;
- strengthening the institutional environment and developing digital legislation;
- promoting investment in digital enterprises, financing digital R&D, training IT personnel and using applications to create jobs;
- measures to reduce inequalities in access to digital tools across gender, class, ethnicity and geography (although access remains largely unequal).

4. Challengers. Finally, the last zone, which includes countries from Africa, Asia, Latin America and Southern Europe, is characterised by problems in the existing digital ecosystem

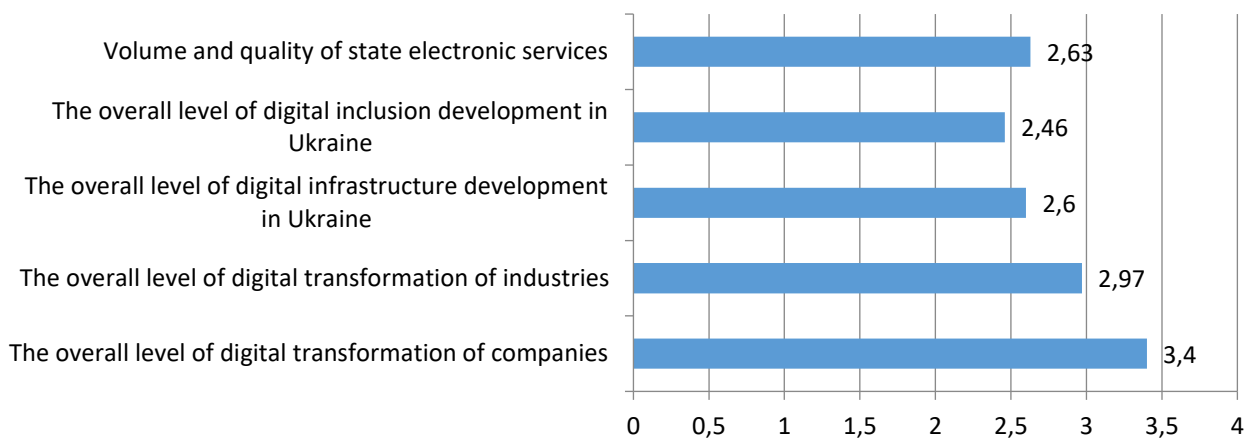
and low growth rates. Therefore, countries in this zone have to look to prospective economies to use digital growth as a tool for economic sustainability.

Given that Ukraine has fallen into the prospective zone and the digital trajectory of the Ukrainian economy depends on two factors, such as the current state and the pace of digitalisation over time, it is essential to refer to the study of the European Business Association. It was first conducted in April 2021 as an expert study of the current state of digital transformation in the private and public sectors of Ukraine to assess the effectiveness of digital processes at various levels and identify key drivers and barriers to digital transformation. The result of the study was

the calculated index of the digital transformation of Ukraine. The integral index indicator consists of five equally important components:

- the overall level of digital transformation of companies;
- the overall level of digital transformation of industries;
- the overall level of digital infrastructure development;
- the overall level of digital inclusion;
- volume and quality of public e-services.

Unfortunately, the integral indicator of Ukraine's digital transformation index in 2021 was 2.81 points out of a possible five and was in the opposing plane (Figure 3).



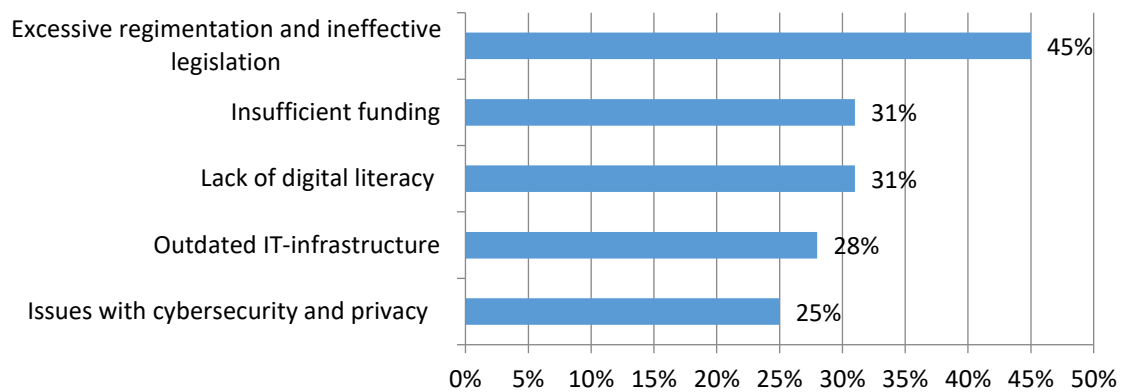
**Figure 3 – Components of the Digital Transformation Index in Ukraine**

\*Compiled according to data European business association

It is worth noting that the highest value among the index components was the overall level of digital transformation of companies. Thus, 47% of directors rated the level of digital development of their business as moderate, 39% said it was high, and another 5% said it was very high. Only 9% of respondents believe that their companies' level of digital transformation is low. At the same time, the vast majority, namely 89%, admitted that their company's corporate strategy contains digital transformation goals. 41% of directors rate their employees' level of digital literacy as moderate, 13% rate it as low, and 46% rate it as high.

At a slightly slower pace, digital transformation is occurring in the industries in which they are involved. 55% of respondents consider the level of digital transformation of their industries to be moderate, 16% consider it high, and another 6% as very high. At the same time, 23% consider it low or very low.

The main barriers to the digital transformation development in Ukrainian business include ineffective legislation, insufficient funding and low digital literacy. For example, 41% of company directors assess their employees' level of digital literacy as moderate, while 13% consider it inadequate. The remaining 46% rated their team's digital literacy as high (Figure 4).

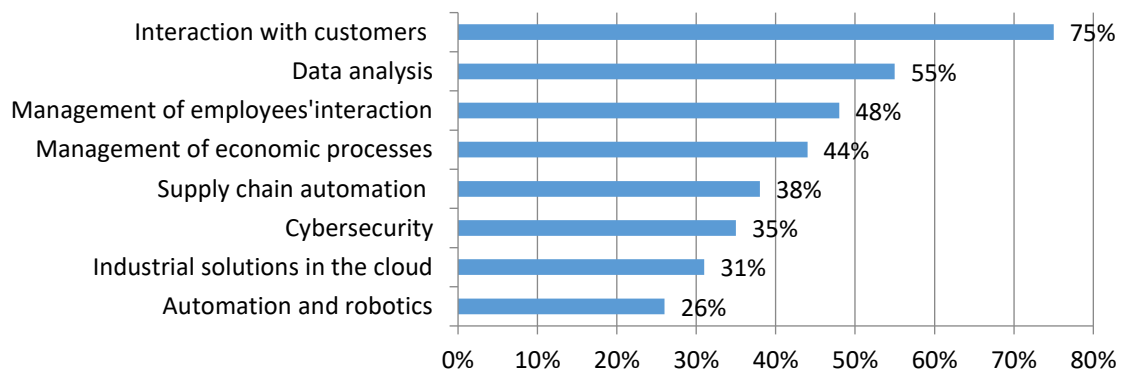


**Figure 4 – Barriers to digital transformation development in Ukrainian business**

\*Compiled according to data European business association

The authors conclude that a positive result of the survey is confirmation of increased investment in the digital technologies development in Ukraine. According to the survey results, the priority investments in this area are customer interaction

(CRM, e-commerce, marketing automation) - 85% of companies, data analysis - 55%, employee interaction management (basic HR processes, talent management, digital workplace) - 48% (Figure 5).



**Figure 5 – Priority investments in digital technologies**

\*Compiled according to data European business association.

It is worth noting that the positive effects of digital transformation are evident at all levels of

the socio-economic system, from the individual consumer to the country as a whole (Table 1).

**Table 1 – Positive effects and benefits of digital transformation in socio-economic systems**

THE EFFECTS OF DIGITAL TRANSFORMATION ON THE COUNTRY AS A WHOLE		
A new source of GDP growth		
Positive net impact on jobs		
Increased efficiency in the exploitation of the resources		
EFFECTS ON THE PUBLIC SECTOR	EFFECTS ON BUSINESSES AND COMPANIES	EFFECTS ON CONSUMER
Increased efficiency of processes	Easier expansion into other markets, higher revenues	The opportunity to buy the best products and services at the best prices

Reduced opportunities for fraud and abuse in obtaining public services	Increased efficiency of internal processes (e.g., supply chain management)	The possibility of using previously unavailable products
Better communication with citizens and private sector	Internal processes (e.g., supply chain management)	Getting information about the most interesting employment opportunities
Identification and analysis of social trends using big data	Access to a better workforce through the use of digital tools	Easier access to public services through digital portals

\*Compiled by (Gribanov Yu, 2019).

Thus, the study results prove that the digitalisation of processes is not only relevant at the level of individual companies because industries are choosing this path of development as the only opportunity to meet the rapidly changing conditions of the world around them. As a result, the digital transformation of industry, retail, public, and other sectors is already changing companies' business strategies. Therefore, it necessitates

the study of digital transformation issues from a systemic approach to all socio-economic structures and social areas.

In line with this trend, HR departments are also affected by digitalisation. Thus, it is worth focusing on the digital transformation of the HR function, especially on the HR components necessary for a successful digital transformation (Table 2).

**Table 2 – Components of the digital transformation of the HR function**

Components	Description
Strategy and guidance	An overarching digital (HR) strategy has to help guide the organisation into the digital realm. This strategy is necessary because it helps to link all HR digital activities with an integral vision embedded in leadership. HR leaders should regularly emphasise the importance of digitalisation, and lead by example and encourage innovation.
HR Technology	The extent to which HR technology supports business priorities is directly related to HR digital transformation. It's much more effective to achieve goals by working together.
Innovation	A culture of innovation is a significant part of digital transformation. It includes a flexible HR function, a thoughtful plan for acquiring and developing digital solutions, and a culture that fosters innovation.
HR processes	An essential part of the digitalisation of HR is the automatization of standard processes. This means that all processes are digitally supported, people-oriented, integrated, aimed at reducing complexity and improving employee experience.
People	Even during automation through machine learning, the most crucial component of HR is people. They can help or hinder digital maturity. Therefore, the team must be made up of the right people capable of interacting effectively under strong leadership.

Data & analytics	A key element in the success of a digital HR strategy is using data for reporting and advanced analytics. Using HR data to deliver information is essential to making informed decisions about the company and its employees.
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\* Compiled by (Rob van Dijk, 2021).

Thus, as organisations transform from survival to prosperity models, they emphasise the creation of teams and super-teams that use modern technology complementing traditional human work methods. The deliberate application of high technology is changing the very nature of work, making it possible to

perform activities previously the people's responsibility. From creating collaborative mechanisms to strengthen bonds within teams to applying artificial intelligence to help people make decisions, integrating high technology into human teams can help them get very different and better results faster and to a greater extent.

## Conclusions

According to the study, the development of the digital economy and society is unquestionable, and the experience of the world's leading countries and companies is proof of the global digital transformation. Furthermore, regulation, infrastructure, cybersecurity, skilled professionals and established partnerships create technology platforms that perform as the main components of the digital economy development. It stipulates the next stage in forming a modern model of the production, technological and social system of society based on the results of the Fourth Industrial Revolution.

In Ukraine, the processes mentioned above are progressing rather slowly, as evidenced by studies of the current state of digital transformation development in the private and

public sectors in Ukraine.

For a qualitative breakthrough in the direction of the Ukrainian economy digitalisation, it is necessary to use the best practices of leading countries and focus on the following tasks:

- improve mobile Internet access, its accessibility and quality, for a wider diffusion of innovations;
- strengthen the institutional environment and development of digital legislation;
- encourage investment in digital enterprises, finance digital R&D, train IT personnel and use corresponding applications to create jobs.

By addressing these priorities, the digital transformation of the Ukrainian economy will be an essential source of long-term economic growth.

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