The Main Barriers and Drivers of the Digital Transformation of Ukraine Business Structures

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Abstract. The global economy has undergone changes over the past ten years to such an extent and at a rate as never before. The European Union literally digitizes its economy, anticipating an increase in the global impact of cutting-edge technologies and increasing profits from e-commerce, data exchange and services. The realities of the global world dictate precisely the following conditions for the modernization of economies and the creation of clear rules of a new era of innovation. Adapting and transforming business through digital technology is a major challenge in meeting world market challenges. Information technology enables any company to change its own business model to differentiate itself from the entire world market. Digital transformation itself is an imperative for the innovative development of business structures. In view of the relevance of this issue, the article considers the main barriers and drivers of the transformation of the "data economy" in Ukraine. The external and internal prerequisites and challenges of digital transformation of domestic business structures are analyzed. The main tasks of the integration of our country into the Single Digital Market of the EU (according to the Digital Agenda of Ukraine 2020) are outlined and the results of their implementation are analyzed.

Keywords: Digital transformation, Single Digital Market, Digital Agenda of Ukraine 2020, Industry 4.0, digital technologies.

1 Introduction

Digital technologies have become the basis for creating new products, values, properties and, accordingly, they lay the foundations for obtaining competitive advantages in most markets. Nowadays, there is a "digital transition" from a kind of "analog" systems and processes of industrial economy and information society to the "digital" economy and "digital" society. Such a transformation leads to the emergence of new, unique systems and processes that make up their new value entity (e.g. Uber, Airbnb, digital banking, etc.). Most of the usual citizens' activities are prone to digital transformations.

Domestic business structures have tremendous potential in the direction of digital transformation, companies are open to everything new, entrepreneurs are looking for new business opportunities. Small and medium-sized businesses are of particular interest. Adapting to market challenges and building a competitive business model in

these companies is much faster than in giant ones that are considered to be leaders in the industry, as it is a matter of survival in market conditions.

Digital transformation is the transformation of business through the review of a business strategy or digital strategy, models, operations, products, marketing approach, goals, etc., through the use of digital technologies [1].

Transformation is always about opportunities, challenges and problems. That is why, when planning digital transformation, organizations must take into account all the barriers and challenges they will face. Such radical transformations require from people to have new knowledge, skills and effective adaptation.

The problem of the development of digital economy and the transformational processes taking place in a society under the influence of digitization was considered by many foreign authors: Douglas Carl Engelbart, Joseph Carl Robnett Licklider, Richard Lipsey, Joseph Stiglitz, etc. Reasonable ideas for digitalization of economy were expressed by Western journalists and practitioners – Walter Isaacson, Jimmy Wales, Bill Gates, Saul J. Berman, Edward Giesen. Among the domestic scientists, the problem was being addressed by Vyshnevs'kyy O.S., Lyashenko V.I., Karcheva G.T., Kolydenko S.V., Kraus N.M., Ogorodnya D.V., Fishchuk T.N., Tushkanov I.M., Rudenko M.V.

The objective of this article is to reveal the content and attempt to structure the main external and internal prerequisites and challenges for the digital transformation of domestic business structures, to identify the main tasks of integration into a single digital market of the EU (according to the Digital Program of Ukraine 2020) and to analyze the results of their implementation.

2 Basic Prerequisites and Challenges of Digital Transformation of Domestic Business Structures

A. The first prerequisite of the external level which caused significant challenges for the digital transformation of domestic business structures is "Development and transition of the world economy to the era of Industry 4.0".

At the time when information society is being developed in various sectors of the economy, an enormous amount of diverse data is created and accumulated. Information flow necessary for enterprise management is constantly growing and information is mounting up in the industry and business. If in the past the most important factor of competitiveness and value creation for enterprises was the state of cost management and the quality of products (services), today and in the future, along with the physical product, data gained from digital marketing and intelligent analytics will become more and more valuable. In order to move on to a reasonable management of business processes, optimizing the use of labor and increasing the efficiency of doing business, Ukrainian business structures must proceed to the broadest implementation of the Concept of the Fourth Industrial Revolution ("Industry 4.0"), maximizing its potential as soon as possible. Challenges for the digital transformation of domestic business structures caused by external conditions are presented in Table 1.

Table 1. Main External and Internal Preconditions and Challenges for the Digital Transformation of Domestic Business Structures.

#	Preconditions	Drivers of development (technologies, bills, etc.)	Challenges for domestic business structures and economics	Effects of using the appropriate drivers
External Preconditions and Challenges Connected with Them				
A	Transfer of World Economy to Industry 4.0	Emergence of Big Data, Business Intelligence (BI) and Artificial Intelligence	Low level understanding of the essence and opportunities of using Big Data, Business Intelligence (BI) and Artificial Intelligence to optimize business processes and business models of the organization. Low or no digital literacy of management and / or staff. The need to increase digital literacy	Increase profits, collect and analyze data in real time, increase the base of loyal customers and increase the efficiency of operating activities
		ERP, CRM systems		
		BPM-systems		
		Digital marketing		
		Other technologies of Industries 3.0 and 4.0		
B	Digital Agenda for Europe 2020	Digital Single Market Strategy	The lack of awareness of most of the medium and small businesses with modern tools and digital transformation capabilities. Obstacles when entering external markets. Necessity of digital information business	The emergence of new business models and corresponding digital infrastructure, increased competition, growth in the quality of goods / services, the possibility of entering the business to foreign markets
Internal Preconditions and Challenges Connected with Them				
C	Digital development of individual business structures	Independent local launch of digital transformation in IT companies, individual agrobusinesses, business structures (without corresponding infrastructure in the country)	The lack of awareness of most of the medium and small businesses with the potential and benefits of digital transformation. Necessity of digital information business	The rapid growth of business efficiency using digital technologies, encourages rivals to quickly implement digital technologies.
D	Digital Agenda for Ukraine – 2020	Developed in 2016 and approved by the government in January 2018, the Digital Agenda Ukraine-2020 action plan on digital transformation	The need for digital transformation in all spheres of business, the most comprehensive coverage and fast access to the global network, the creation of a training and advisory network for staff training	The emergence of new business models and corresponding digital infrastructure, increased competition, growth in the quality of goods / services, the possibility of entering the business to foreign markets

The economy of Ukraine is at the stage of completing the third digital revolution (Industry 3.0). Its characteristic features are the development of information and communication technologies, automation and rotation of production processes, digitalization of all spheres of activity of business structures (see Fig. 1).

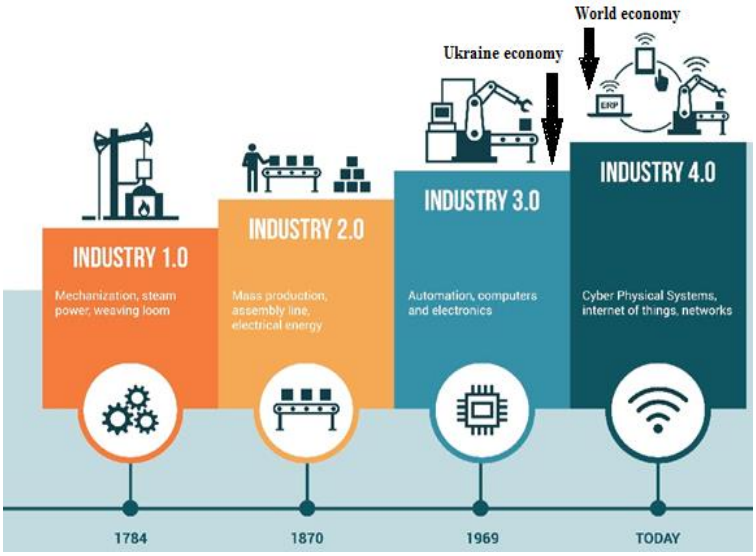

Fig. 1. The stages of the development of economies in the world and in Ukraine Source: adapted by authors on the basis of [2].

In 2016 associations of companies in the sphere of information technologies and industrial automation which created the "Industry 4.0 in Ukraine", were formed in Ukraine. However, the interpretation of the definitions of "Industry 4.0" caused a wave of misunderstandings in Ukrainian society. In the global sense, Industry 4.0 is the penetration of new technologies and their impact on the entire economy and the social sphere: smart homes and cities, agriculture, energy, infrastructure, finance, public administration, health, education and more. Thus, the term "industry" is used in its broadest sense as "field, realm" and is relevant to any field of management. In other words, technology generates changes in various spheres of human activity, and these changes give rise to a new stage in the development of society as a whole. In contrast, the Ukrainian business community interpreted the term "industrial" in its narrow meaning as industrial production which is not.

That is why the term "Industry 4.0" in its broad sense has been used in this research and the impact of Industry 4.0 technologies on the digital transformation of small and medium enterprises (SMEs) of Ukraine has been analyzed.

The features of Industry 4.0 are fully automated production with real-time control, with the ability to react to external conditions [3]. Cyber-physical systems create virtual copies of objects of the physical world, control physical processes and take decentralized decisions. They are able to integrate into one network, interact in real time, self-adjust and self-learn. An important role is played by Internet technologies that provide communication between staff and machines.

The rapid development of digital technologies, their implementation and application, on the one hand, is a serious challenge. On the other hand, this promises new opportunities, powerful advantages for business. Undeniably, nowadays in Ukraine

there is a large-scale digitization of all branches of the economy and basic spheres of life, strengthening of investments in the development of digital infrastructure, innovations and modern technologies. Because digital technology reduces barriers to entering new markets, it allows you to automate a huge amount of mechanical work, upgrade equipment and to optimize management processes and business processes.

The introduction of the digital economy in Ukraine "globalizes" small and medium-sized businesses, opening up new prospects for development. Ukrainian companies can integrate into international value added networks, increase export and production volumes, improve the quality of goods and services, react instantly to market needs, and become more competitive.

The discovery of the interconnections of the Industry 3.0 and 4.0, their manifestations of significance will make it possible to develop a strategy for the transition and integration of domestic business to the introduction of industry technologies 4.0 (see Fig. 2). An analysis of the characteristics of the two industries shows that the transition to Industry 4.0 is impossible without the implementation of the basic principles and requirements of Industry 3.0.

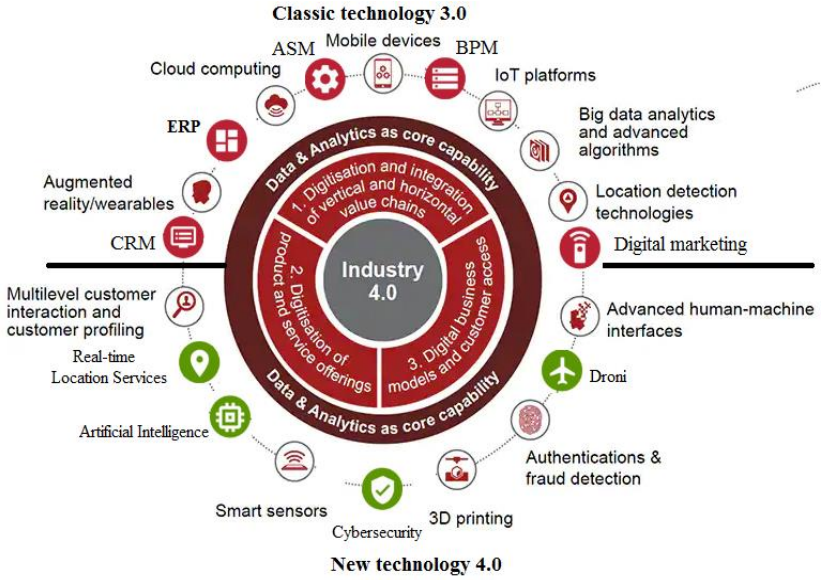

Fig. 2. Symbiosis of the characteristics and technologies of the Industry 3.0 and 4.0. Source: adapted by authors on the basis of [4].

For example, the introduction of technologies 4.0 – and especially those related to large data and artificial intelligence – is based on the fact that the data itself is already digitized. That is, the automation of business processes has already been set up at enterprises, accounting and analysis of the collected data (industry technologies 3.0) are underway.

Basic drivers development. The use of Big Data, Business Intelligence (BI) and Artificial Intelligence for SMEs.

The main barrier to the effective use of Big Data, Business Intelligence (BI) and Artificial Intelligence for SMEs is the low level, or lack of understanding of the essence of these concepts and the possibilities of using appropriate technologies to optimize business processes and business models of the organization.

The need for Big Data is not determined by individual companies, it is a requirement of the era of global computerization. The amount of data accumulated around the world has approached 300 exabytes and continues to grow by about 50% per year. Moreover, analysts IDC - an international research and consulting company - predicted an increase in data volumes around the world to 35 thousand exabytes by 2020 [5].

There are constantly new services based on the use of information and communication technologies. As a result of the development of social networks, video, audio and geolocation services, there is a continuous increase in the need for information products and services, as business moves to the online platform. Such a transformation of business leads to the formation of new relationships with all contractors of business (consumers, suppliers, partners, etc.), business becomes more personalized. Companies have to accumulate and analyze large amounts of data from a variety of sources for making the right business decisions. Thus, companies oriented towards success are simply obliged to adapt to the new market conditions. Business has entered into a period of digital transformation.

Using large data can have a great competitive advantage. To do this, their collection, processing and analysis should be accompanied by an appropriate smart strategy and business readiness for change. Nowadays, large data is becoming open and accessible not only to large and informational companies, but also to small and medium-sized businesses.

The availability of online and cloud platforms, such as Google Analytics and Tableau, enables small and medium-sized enterprises (SMEs) to take "large data" information without significant capital investments. Not burdened with large outdated systems, these enterprises can begin to transform business directly from the use of "large data". The business potential of using these technologies for SMEs is huge: increased profits, a growing base of loyal customers and increased operational efficiency. Introduction of Big Data changes the familiar IT environment of companies, allows you to automate some of the business processes and increase the efficiency of the company's employees.

From the point of view of information security, Big Data technology allows you to get a more detailed, yet at the same time, integrated security picture, to respond more quickly and effectively to attacks and threats in cyberspace, using the entire amount of data on the company's work - from the state of the equipment to the analysis of network traffic.

An in-depth understanding of Big Data technologies, namely collection, processing and analysis, requires the use of Business Intelligence technology.

The most effective tools are Business Intelligence: Data Mining, OLAP, Dashboard, Visual Mining, Video Mining, Web Mining, and Text Mining, Opinion Mining and Sentiment Analysis (Table 2) [6].

Table 2. The most effective tools of Business Intelligence.

#	Tools of Business Intelligence	Features
1	Data Mining	Intelligent data analysis is an automated search for data of non-obvious relationships and properties, based on the analysis of large arrays of information through special software products
2	Visual Mining	Visual data analysis
3	Video Mining	Intelligent video data analysis
4	Web Mining	Detecting web documents and services, retrieving information from web resources, and discovering general patterns on the Internet.
5	Text Mining, including Opinion Mining and Sentiment analysis	Obtaining information from collections of text documents by methods of machine learning and processing of natural language. It deals not with repositories and databases, but with electronic libraries and text boxes. Opinion Mining or Sentiment analysis - analysis of the tone of the text. Intelligent automatic removal of so-called "subjective" information (thoughts, evaluative judgments, emotions, feelings, etc.) from text information
6	OLAP	Online analytical processing (real-time analytical processing) is an interactive system that allows you to view different results on multidimensional data. New results obtained in seconds, without waiting long for the result of the inquery, allow you to answer a lot of questions (follow a key performance indicator, get predictions for particular culture or in another field, economy, region, generate reports of any kind no matter what complexity is implied in different sections, etc.). The basis of the concept of OLAP is the idea of constructing a virtual multidimensional OLAP cube that allows for rapid, varied analysis of data. Demanding management of enterprises, organizations, on the basis of them are built decision support systems.
7	Business intelligence dashboard	Data Visualization Tool that displays the status of business intelligence, key performance metrics (KPIs) and important data for an organization, department, team, or process on one screen.

The purpose of using BI technology is to interpret a large amount of data with an emphasis on key performance factors, modeling the result of different action options, monitoring the decision-making results. BI supports many business decisions – from operational to strategic. Basic operating decisions include product positioning or pricing. Strategic business solutions contain priorities, goals, and directions in the broadest sense.

Big Data Analytics (BDA) is one of the most popular and needed services in today's business. According to Frost & Sullivan, in 2021 the global data analytics market will grow more than 2.5 times over the 2016 figure and will be $ 67.2 billion, with an annual growth rate of CAGR of 35.9 % At the same time, the largest segments of the market will be the manufacturing sector, finance, healthcare, environmental protection and retail trade (according to TAdviser (Frost & Sullivan, January 28, 2019).

Trends in the development of the market for analytics of large data will depend heavily on the trends of the "Industry 4.0" and the integration of business into the relevant processes. There is a business challenge associated with this: the need for skilled personnel and digital literacy of the business leadership itself. Obviously, for work with a large analyst, an employee needs integrated knowledge from two areas,

i.e. information technology and business domains. That is why Gartner recommends training specialists in data analysis within the organization [7], since engaging in large data without an in-depth understanding of a particular business and the specifics of a particular company is simply impossible.

On the other hand, in order to understand the functioning of the great analytics, it is necessary to have knowledge of the tools of business analytics and skills of working with them, as well as understanding of the possibilities and advantages of different tools for managing one or another business process (see Fig. 3).

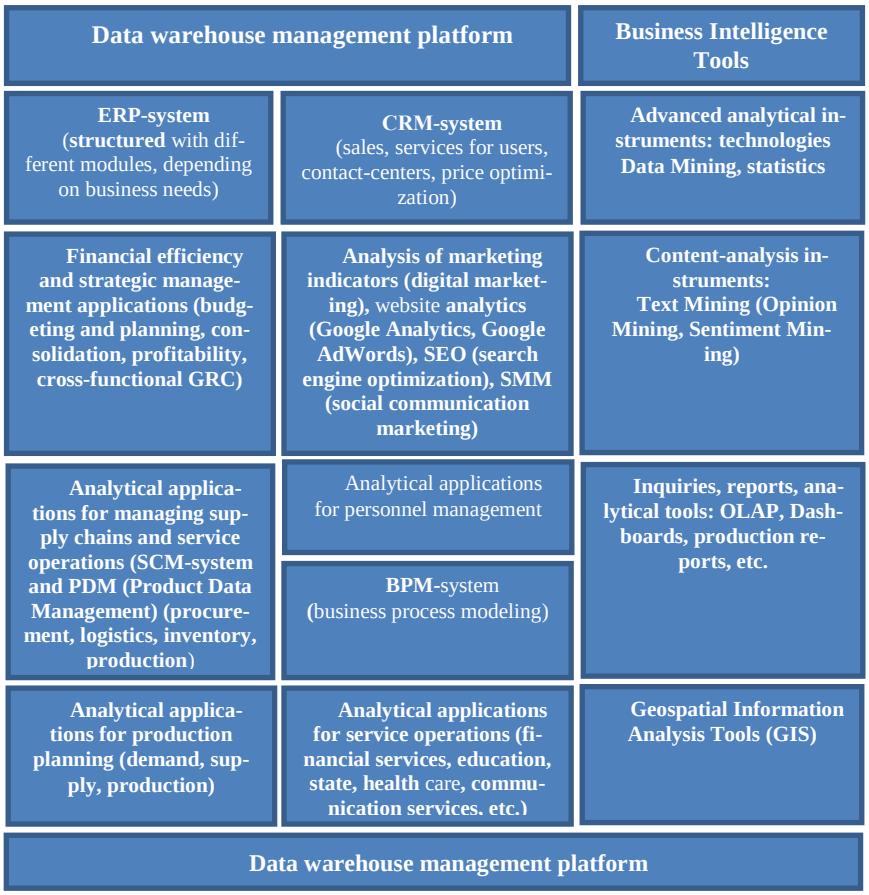

Fig. 3. IDC's Business Analytics Software Market Taxonomy 2013-2018. Source: adapted on the basis of International Data Corporation (IDC), Gartner, Forrester [7].

According to the APICS dictionary, the term ERP-system is used in two meanings: 1) an information system for identifying and planning all enterprise resources necessary for the sale, production, procurement and accounting in the process of performing client orders; 2) the methodology of effective planning and management of all the resources of the enterprise which are necessary for the sale, production, procurement

and accounting in the execution of customers' orders in the areas of production, distribution and provision of services.

The ERP system other than the core implementing the MRP II standard should include the following modules: a logistics system (for example, an SCM system); Sales Management and Customer Relationship Management (CRM); Internet components for access to databases and information resources, service services; business process modeling systems; Corporate Workflow Automation System and Workflow Management System (WorkFlow); systems of analytical processing of information (expert systems, decision support systems, etc.) based on data warehouses, OLAP technologies, data mining, etc.; Management ICs for submission to the management (MIS); software and hardware security systems; service communication applications (e-mail, software for providing remote access, etc.); corporate portals and e-commerce systems (e-commerce); office software – text editor, spreadsheets, database desktops, etc.; special purpose systems: CAD – CAD / CAM systems, automated control systems (SCADA); project management systems; specialized products or systems for the implementation of specific tasks (for example, GIS – geographic information systems); etc.

With regard to statistics on the use of ERP-systems, the largest share belongs to big business (80%), because the first systems were targeted specifically for this type of business. However, there are already ERP-systems that can be implemented by small and medium-sized businesses. The main barriers to the implementation of these systems by domestic SMEs are the cost of these software solutions, as well as the lack of qualified specialists who would effectively integrate data systems into existing business models of organizations.

SMEs basically independently adapt their existing ERP systems to their own needs (use separate modules (systems) or use stand-alone business analytical solutions (Fig. **3**) .The four most commonly used:

1) financial management systems and strategic management (budgeting and planning, consolidation, profitability, cross-functional GRC) for SMEs, for example, 1C and Medoc systems.

2) Customer Relationship Management (CRM) - Customer Relationship Management) is a concept that embraces concepts used by companies to manage customer relationships, including collecting, storing and analyzing consumer information, suppliers, partners and information about relationships with them. Using CRM-system at the enterprise allows you not only to automate the processes of working with clients, but also analyze and segment the client base, carry out sales analysis at each stage, evaluate the effectiveness of marketing activities [8]. CRM solutions today are needed to form a client-oriented company.

3) Marketing indicators analysis (digital marketing). Systems of analysis of marketing indicators allow conducting an analysis of behavior of consumers on the site, social networks, etc. For real-time website analytics, data used by Google Analytics and Google AdWords is used. With the help of Google Analytics tools you can find out everything about your visitors. Google Analytics Key Indicators: Visitors; average length of stay on the site; bounce rates; conversions; traffic source top pages; visitor location; devices that visitors use for the access to the Internet.

Google Ads (earlier known as AdWords) is an online advertising service that allows advertisers to compete for displaying short ad texts for web users, partly based on the keywords given by advertisers who may link, copy the content of web pages that is displayed to users. Google AdWords account statistics are displayed in reports on ad group, keyword, or site level. The following analytical data can be obtained from the relevant resource: the number of clicks (clicks); displays (impressions); click-through rate (CTR); Average CPC or CPM (average CPC or CPM) cost; average position; conversion rate; as well as cost-per-conversion.

These business analytical tools provide businesses with the ability to collect, process and analyze a large number of data that were not known in the past and thus have not been used to build business capacity. Working with large data as an information category has one feature that differs from working with material resources: their application requires a truly high level of organization of business processes of the company.

4) BPM-systems (business process management) is the concept of process management of an organization that considers business processes as a special enterprise resource that continuously adapts to constant changes [9]. The basic principles of this concept are the clarity and transparency of business processes. This is achieved through their simulation using formal notations, the use of software for simulation, monitoring, modeling and analysis of business processes, the dynamic rebuilding of business process models by personnel and software systems tools.

After reengineering business processes, namely modeling of the business process model "AS IS" which allows to see "bottlenecks" in business and modify the current model into the "TO BE" model (“as it should be”) The use of BPM systems allows you to structure and automate the organization’s business processes.

Only after a high level of organization of all business processes there is a clear understanding of the functioning of the business model of the relevant business and a decision is taken on the application of certain technologies Industry 3.0 and 4.0.

B. The second prerequisite for the external level, which caused significant challenges for the digital transformation of domestic business structures "Digital Agenda for Europe 2020" Digital Agenda 2020.

The next macro prerequisite for the external level of digital transformation for Ukrainian business structures is the EU's 2010 Digital Agenda for Europe 2020 (Table 1). The document reflects one of Europe's strategic development benchmarks under the Europe 2020 strategy and contains a list of 100 specific actions and defines a European strategy for the digital economy to flourish in 2020 [10].

The document has been partially modified since in 2015 some countries began to review and update the main goals of digital transformation. Technological changes simultaneously provided new opportunities for effective business development and overall economic system of the country. During this period, citizens and enterprises of the EU felt all the disadvantages of the separate development of digital economies and digital markets of the EU countries, as they often encountered barriers when using online tools and services. These barriers prevented consumers from accessing goods

and services, businesses could not take full advantage of digitization, and governments and citizens could not fully benefit from a separate digital transformation.

That is why on May 6, 2015, in the framework of the Digital Order of the EU, the Digital Single Market strategy was developed, which meant the integration of 28 national digital markets of the EU countries into a single digital space.

The single digital market opens up new opportunities as it eliminates the key differences between online and offline worlds, eliminating barriers to cross-border online activities. Due to the unification of all the important moments and the common objective, the following is ensured:

1) improving access to digital goods and services. A single digital market strategy aims to ensure better access for consumers and businesses to online products and services in Europe, for example by removing barriers to cross-border e-commerce and access to online content while enhancing consumer protection;

2) a prevailing environment where digital networks and services can develop effectively. High-speed, secure and reliable infrastructures and services supported on transparent online platforms;

3) digitalization as a driver for growth. The digital single market strategy aims to maximize the growth potential of the European digital economy, so that every European citizen can fully benefit from their benefits, particularly through the expansion of digital skills that are important for an inclusive digital society.

Today, DSM (Digital Single Market) is considered to be the main asset of Europe, aimed at adapting European society and business environment to new conditions for doing business on the international arena. Europeans are keen to ensure the efficient development of various sectors of the economy that use digital technologies for innovation so that they remain competitive globally.

What is happening now (2015-2018) with Ukrainian business and the economy in general?

C. The first prerequisite of the internal level that caused significant challenges for the digital transformation of domestic business structures "Digital development of individual business structures".

The most active players, namely IT companies and agricultural holding companies working with foreign capital, began to independently transform their own business models, taking as their basis the world experience and trends of technological development of the countries of the world. However, with positive shifts, the business faced many obstacles caused by the unreadiness of our economy for digital transformations, the lack of legislative, technical, etc. infrastructure.

D. The second prerequisite of the internal level which caused significant challenges for digital transformation - "Digital Agenda of Ukraine - 2020".

By choosing the direction of the European Union, Ukraine has to fulfill many tasks to become a full member of the European digital market. So, in 2016, the global leaders of the digital market - Cisco, IBM, Intel, Oracle, Deloitte, SAP, Ericsson, Master-

Card, Vodafone, Kyivstar, Lifecell, International Data Corporation, domestic consultants and experts supported by the Ministry of Economic Development and Trade and The Hi-Tech Office has developed the Digital Agenda for Ukraine 2020, a document that identifies key areas, priority areas, initiatives and projects for the "digitization" of Ukraine over the next three years [11]. This document became the internal driver of the digital transformation of business and economy of Ukraine.

However, the long-awaited "Concept of the digital economy and society for 2018-2020" was approved by the Cabinet of Ministers only in January 2018. According to this document there are three strategic directions of harmonization of Digital Agenda of Ukraine with the Digital Single Market of the European Union.

The direction of cooperation #1. Interoperability and eServices. Accession of Ukraine to the EU Interoperability Solutions for European Public Administrations 2 (ISA2), e-CODEX projects, e-Invoicing, and the Single Digital Gateway Initiative. In fact, every state institution (reform or project) faces the need for access to a particular state register or database. For example, Prozorro's electronic purchases, electronic declaration systems, a single customs window, etc., for their full functioning, need to be integrated with external government registers and databases. Accession to these EU programs will contribute to the European integration of Ukraine, as it will enable the development of interoperability and electronic services in accordance with the requirements and modern EU trends (formats, standards, regulations, technical decisions, etc.).

The direction of cooperation #2. EID eID. Implementation of eIDAS regulations in Ukraine, including the introduction of cross-border e-identification and authentication, as well as accession to the EU Stork 2.0 project. The development of convenient, secure and affordable electronic identification is a prerequisite for the introduction of e-services, e-commerce, and will contribute to the development of the "digital" economy. Joining these projects will promote the development of e-identification in accordance with the requirements of the EU and European integration of Ukraine.

The direction of cooperation #3. Open Data (Open Data). Integration of the state web portal of open data of Ukraine data.gov.ua into the central European open source portal europeandataportal.eu and data.europa.eu. The development of open government data in Ukraine is to increase the openness, transparency and efficiency of public institutions and the way to the development of a new "digital" industry for Ukraine – an open source industry [12].

In order to develop its own digital market and to harmonize it with the Digital Single Market, in the same year 2018, the CMU approved a plan for implementation of the "Concept of the Digital Economy and Society for 2018-2020" [13]. The plan contains 34 tasks for execution. Most of them should have been achieved in 2018.

The official reports of the State Agency for Electronic Government of Ukraine declare such successes in the direction of digital transformation (the information is received October 10, 2018:

- implementation of about 70 e-services in the following areas: social protection; construction and real estate; land and ecology; registration and doing business; citizenship and migration; fire safety;

- the launch of the digital service of transportation for carriers on August, 30;
- creation of a network of service centers;
- e-government,
- digital services in education, medicine, public sector,
- Public ProZorro Procurement System;
- allocation of about UAH 1 billion in the budget of 2019 for the digitalization of schools in Ukraine.

But many of the planned tasks could not be realized, which is why their implementation was postponed until 2019-2020.

In order to effectively carry out the tasks of the Concept and, in general, the digital transformation of our country's economy, it is necessary to solve certain problems (to remove barriers) and to implement a number of measures:

1) There is no understanding of the essence of the generally accepted terms in the EU. It is necessary to introduce the use of modern terminology in accordance with European practices: digital transformation, digital economy, digital industry, digital infrastructure, digital society, digital identity, digital skills, digital competences, digital divide, digital dividends, digital leap, digital added value, digital trends, digital critical technologies, digital currency, etc.

2) There are no clear developments regarding the introduction of statistical methodology and methodology for calculating the digital index of the economy and all its components. It is necessary to create a national system of digital statistics and to set up national models for calculating digital economy indicators, etc.

It is important to go in accordance with global digital indices, such as Digital Economy and Society Index (DESI).

3) There is no public understanding of their digital rights. Thus, there is a need to define digital human rights (equal access to digital infrastructure, digital technologies (EU, UN Recommendations); develop packets of universal (standard) digital services, i.e. standard digital services packages in education, medicine, ecology, security, social and other areas that have to be available in digital mode for each citizen.

4) Lack of legislative infrastructure. It is worth developing and approving bills on eliminating legislative, institutional and other barriers to the development of the digital economy, creating the appropriate conditions, incentives, motivations, demands and needs for the use of digital technologies by business and citizens, for example, the Bill "On the Digital Economy". A good idea is to develop road maps of digital transformations and models of digital development of basic and prospective industries of Ukraine.

5) Businesses are not aware of business opportunities of the Industry 4.0. It is important to develop models for introducing the technology concept of Industry 4.0 in the sectors of the economy. In 2018, the strategy of Industry 4.0 was developed where specific projects were declared for execution in 2019. There a good point in developing a system for stimulating Industry 4.0, including the adaptation of international standards in this area, mechanisms for the creation of branch technology transfer centers, engineering clusters, the creation of road maps for the digital transformation of individual industries and so-called digital industrial platforms.

6) The existence of barriers to doing business with EU countries and the rational functioning of e-commerce, etc. It is worth developing proposals for the development of the digital industry, simplification of foreign economic activity, improvement of the tax sphere, going in accordance with the norms of European legislation in the field of cashless payments and settlements, etc.

7) Low digital literacy of the population. In this direction it is the only way to work towards increasing digital literacy and develop a comprehensive educational program for acquiring digital competences and skills. Digital skills in pre-school, general secondary, extra-curricular, vocational (vocational), higher education and adult education systems are to be developed.

8) Challenges of the market and the emergence of new professions. Making changes in the register of professions and developing programs for the implementation of digital specialties in relevant curricula of specialized educational institutions are the steps to be taken in order to bridge the digital divide.

3 Conclusion

In this paper we have structured the main external and internal prerequisites for the digital transformation of domestic business structures. An attempt was also made to highlight the barriers to digitalisation and the drivers of digital transformation (mainly for small and medium-sized businesses). The article analyzes the state of implementation of the measures envisaged by the "Concept of the Digital Economy and Society for 2018-2020". The main tasks to be performed in order to eliminate the factors (reasons) that restrain the effective shift in the issue of digital transformation of both business and the economy as a whole are determined.

In a future version of this article, we consider it is necessary to carry out research on the basis of collection and analysis of real statistics of digital transformation of business structures for a separate region and to develop a methodology for determining the index of digital business transformation. The results of this scientific study will help understand the issues more profoundly and develop specific recommendations for implementation that will contribute to the growth of the digital transformation index on the micro and macro levels.

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