

**DIGITAL OPPORTUNITIES TO ENSURE THE
TRANSPARENCY OF FINANCIAL RELATIONS IN
ENTREPRENEURSHIP**

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INTRODUCTION

Digitalization of the economy opens up new opportunities and prospects for business. The use of digital technologies allows business entities to reduce costs, increase the efficiency and competitiveness of the enterprise, to produce new types of goods, occupying certain niches in the market of digital goods and services. Along with the prospects, there are also new problems associated not only with the search for investments, but also with the formation of new competencies of small business entities that allow them to successfully navigate the conditions of digital transformation. In addition, the use of digital technologies leads to increased competition not only from domestic, but also from foreign market participants.

The introduction and effective use of digital technologies will allow companies to automate routine processes, minimize their own costs and maximize business profitability. Conducting an analysis of the enterprise's digital security, identifying weak areas, "bottlenecks" and developing innovative projects to improve the effectiveness of digital technologies is extremely important in today's realities. Analysis of the modern business environment has shown that digital technologies have a significant impact on the modern business sphere. They allow businesses to use resources more efficiently, attract new customers, and accelerate decision-making processes. Digital products and platforms act as a catalyst for the digital transformation of enterprises.

Modern digital technologies provide new opportunities for implementing the principles of transparency of financial relations at all levels of the economic system. Such transparency, first of all, is necessary for the business itself, because it opens up additional opportunities for highlighting information about business activities, which increases its investment attractiveness and public value. Innovations in digital solutions that promote transparency should always be the result of cooperation between people, business and the state, looking at problems and solutions from different angles. To solve as many problems as possible, enable as much data as possible, and incorporate know-how and experience, innovators must systematically use digital forms of collaboration, including users' knowledge of problems and solutions. In a global marketplace, firms must be able to identify new opportunities and reconfigure technologies and competencies to achieve sustainable competitive advantage through transparency.

In the business environment, the digitalization of finances helps to provide greater transparency in the management of financial assets and operations. Electronic accounting systems, online platforms and digital tools allow compa-

nies to more accurately track financial flows, analyze data and draw conclusions for strategic decision-making. In addition, digital technologies can improve interactions with banks, financial institutions and other partners, enabling faster exchange of financial information.

Digitization also promotes the development of new financial instruments and services that increase transparency. For example, blockchain technology can ensure the inaccessibility of financial information and prevent its further manipulation. In addition, digital platforms for financial transactions can ensure transparent registration and tracking of each transaction.

Overall, digitalization of finance helps create a more efficient and transparent financial system that fosters public, stakeholder and investor confidence. This is an important step in the direction of more sustainable and economically stable development.

The monograph contains the results of research conducted within the scope of scientific research work «Digitalization and transparency of public, corporate and personal finance: the impact on innovation development and national security») (state registration number – 0122U000774).

The monograph was prepared by a team of authors:

- Ph.D. in Economics Liudmyla Zakharkina (general edition, introduction, conclusions, sections 1, 2, 3, 4);
- Student Denys Shevchenko (subsection 1.1, 1.3);
- Student Anastasiia Mykhailovych (subsection 1.2);
- Student Maksym Hnenyk (section 2);
- Student Ruslana Chukhno (section 3);
- Student Yelyzaveta Masiuk (section 4).

1 THE ROLE AND PLACE OF DIGITALIZATION PROCESSES IN MODERN ECONOMIC SYSTEMS

1.1 Trends in digitization of the economy: world experience and Ukrainian realities

The instability and variability of the external environment, the high speed and continuity of technological changes, new scientific discoveries that seemed impossible in the 20th century, have become part of the everyday life of society and business, regardless of its scale, sphere of activity and territorial location. Starting from 2010, the main driving force of the most important technological, socio-economic and environmental transformations in the world is the Fourth Industrial Revolution and related technologies. The topic of digital transformation has entered the strategic order of most large corporations, and the pandemic of the COVID-19 coronavirus infection has given additional impetus to digitization projects in the segment of medium and small businesses.

On the way to the transition to the digital economy, domestic business must find answers to the following questions: how to start the transformation process and effectively manage it; which technological solutions will be able to ensure the growth of operational efficiency; when the investment will pay off; what competencies need to be developed in the staff; how to keep the team and its readiness for continuous change? At the same time, enterprises and organizations must be ready, on the one hand, to manage emerging risks, and on the other hand, to use the opportunities and prospects of Industry 4.0.

The process of development of innovative digital technologies of the 21st century is a stimulus for economic growth thanks to automation, accuracy and other opportunities to improve the efficiency of business management. Digital transformation and artificial intelligence algorithms are a modern direction of increasing the efficiency of business processes, as they contribute to the elimination of some systemic contradictions and conflicts through the purposeful use of specific individual resources. This provides grounds for sustainable economic development, increased labor productivity, and further optimization of business processes.

According to the Economic Strategy of Ukraine 2030, developed by the Ukrainian Institute for the Future, "The digital economy is a type of economy where the key factors (means) of production are digital data: numerical, textual, etc. Their use as a resource makes it possible to significantly increase the efficiency, productivity, value of services and goods, to build a digital society.

The digital economy covers business in all sectors of economic activity, that is, not only in the information and telecommunications sector, but also in basic industries, agriculture, construction, etc. [134].

The digital economy refers to the economic activity that results from the billions of daily online connections between people, companies, devices, data and processes. It covers the production, distribution and consumption of goods and services through the Internet and other digital technologies.

At its core, the digital economy is based on the use of digital technologies such as the Internet, cloud computing, artificial intelligence, blockchain, and the Internet of Things (IoT) to create new products and services, optimize business processes, and connect people and companies around the world. in new and innovative ways. It is characterized by rapid innovation, the destruction of traditional business models and the creation of new markets and opportunities.

The digital economy has transformed many industries, including retail, finance, entertainment and healthcare, and created new business models such as e-commerce, sharing economy platforms and subscription-based services. It has also created new challenges such as cyber security risks, data privacy issues and the need to retrain and upskill the workforce to adapt to new technologies and roles.

Business development in the digital economy is based on the integration of digital technologies in all its aspects, starting with production and ending with sales. This includes the automation of processes, the use of artificial intelligence, the Internet of Things, and other modern technologies that improve business efficiency and productivity.

More and more domestic and foreign scientists and practitioners are devoting their work to the study of business development processes in the digital economy. For example, Y. Nikitin and O. Kulchytsky, based on the generalization of approaches to the definition of the concepts of "digital business", "digital enterprise", clarify the definition of "digital transformation" as a necessary prerequisite for business development within the framework of Industry 4.0 technologies [97]. The consequences of the influence of digital technologies on various types of business activity of companies and changes in their business models are considered by R. Lisova in his work [78]. The influence of digital transformations on indicators of the market value of companies is investigated by H. Dergacheva and Ya. Koleshnya [32]. They also pay considerable attention to the description of key technologies, the use of which is the basis for the digital transformation of business. K. Bagatska and A. Heydor analyze [7]. The authors conclude on the need for synergistic interaction between the state and business in the digitalization of business processes. M. Kulynych [71], O. Gudz,

S. Fedyunin [53], L. Lazebnyk [75], M. Ustenko, A. Ruskikh [135], K. Fomichev [47] and other researchers.

Digitalization offers businesses more opportunities to improve their processes and increase profits. In particular, digital technologies can help businesses:

- to automate routine tasks, which allows employees to use their time effectively and increases the accuracy and speed of work;
- to improve interaction with clients, providing them with a more convenient and personalized service;
- optimize business processes and increase productivity;
- to improve risk management, reduce costs and improve the quality of products or services;
- to increase the competitiveness of the enterprise on the market.

However, to implement digital technologies in a business, it is necessary to invest in the appropriate infrastructure, processes and personnel. You may need to change your business model to adapt to new technologies. In addition, digitalization can cause a change in the requirements for personnel policies, for example, the hiring of IT specialists and developers. Overall, business digitalization can lead to significant improvements in productivity, management and competitiveness. However, successful digitalization requires an integrated approach and strong leadership to make the transition to the new digital economy.

"There are two scenarios for the development of Ukraine's digital economy, depending on the assessment of criticality and the need for rapid and profound changes in the traditional economic system: inertial (evolutionary) and targeted (forced). If the inertial scenario is implemented, the Ukrainian economy will remain inefficient, labor migration and "brain drain" will continue, and Ukrainian products will lose competition on foreign markets. Ukraine will remain on the outskirts of civilization. The target (forced) scenario envisages the transition of the Ukrainian economy to a digital one in 3–5 years. Under the implementation of the forced scenario, Ukraine will become a European leader in the field of innovations and new technologies by 2030E, will turn into an intellectual hub, where the most attractive conditions for the development of people's potential will be created in the region" [134].

The most important component is the motivation and goals of investing in modern digital technologies. The main purpose of business existence is to make a profit, as well as to create additional value, thus, the logical conclusion of the motivation for investing in digital technologies is profit maximization.

Digitization has been actively introduced in the life of our society and business in recent years. Currently, there are few professions that are associated with the use of information and communication technologies. Personnel are

being actively trained to work under new conditions. Portals are appearing that make it possible to issue documents in electronic form, and electronic trade is developing. Of course, in different countries, the digital economy is developed to a greater or lesser extent. For a comprehensive characterization of its development, various international organizations calculate and publish indices that allow comparisons to be made at the global level.

One of these indicators that allows you to assess the level of digitalization is the Digital Economy and Society Index (DESI), which is determined annually by the European Commission for EU countries [43] (Fig. 1).

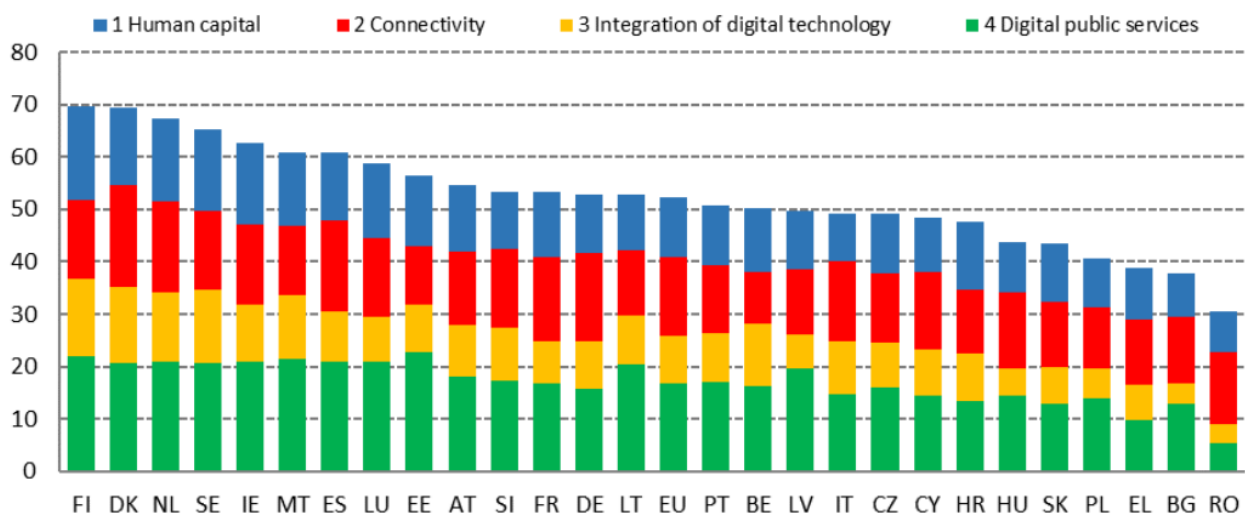


Figure 1. Digital Economy and Society Index (DESI) 2022. [43]

The definition of this index takes into account four components: the level of digital skills, the level of digital infrastructure, the integration of digital technologies and the level of public digital services, which have the same specific weight in the overall result.

In terms of digital skills, the research found that only 54% of people have basic digital skills, while 87% of people use the internet at least once a week, which is 1% more than the previous year). At the same time, the goal of the "Path to the Digital Decade" assumes that in 2030 at least 80% of citizens should have such digital skills. The expectation that increased use of digital tools during the pandemic will promote digital literacy has not yet materialized. Research shows that access to the Internet does not guarantee the acquisition of appropriate digital skills and benefits from the use of digital technologies and tools. Finland, the Netherlands, Ireland and Sweden have the highest level of digital skills, while Romania and Bulgaria are the least equipped with digital skills. It should be noted that most modern workplaces require specialists with such skills.

An analysis of digital infrastructure development shows that while the EU has full coverage of basic broadband infrastructure, only 70% of households can benefit from fixed Very High Capacity Networks (VHCN), which have the potential to offer gigabit speeds, an increase of 10 percentage points compared to a year earlier. 50% are now covered by fiber optic networks (FTTP), compared to 43% last year. Despite some overall progress in 2021, the urban-rural divide remains significant in many Member States. While Malta, Luxembourg, Denmark, Spain, Latvia, the Netherlands and Portugal are the most advanced Member States in terms of overall VHCN coverage (all with more than 90% of homes covered), in contrast, in Greece only 1 in 5 households have access to VHCN. Residential 5G coverage increased significantly to 66% in 2021, up from 14% the previous year, reaching very high levels in countries such as Italy, Denmark, the Netherlands and Germany. However, depending on the spectrum bands used, performance levels differ in terms of speed and capacity. The Roadmap to the Digital Decade sets a target that by 2030 all end-users at a fixed location (such as households and businesses) should be covered by gigabit network and all populated areas by next-generation high-speed wireless networks. at least equivalent performance to 5G.

As regards digital integration, recent data show that in 2021 only 55% of SMEs have at least a basic level of digital adoption, with significant differences between Member States (86% in Sweden and 82% in Finland), to 25 % in Bulgaria and 22% in Romania). To achieve the Digital Decade goal, at least 90% of small and medium-sized enterprises in the EU must have a basic level of digital intensity by 2030. Basic digital intensity means that the enterprise uses at least 4 of the 12 selected digital technologies (eg cloud use, enterprise resource planning software, artificial intelligence, social media and online sales).

Evidence suggests that businesses are becoming more and more digital, but adoption of advanced digital technologies remains low and varies by technology. While the use of cloud computing reached 34% of EU enterprises in 2021, the use of big data analytics and artificial intelligence technologies remains much more limited, with only 8% of EU enterprises using artificial intelligence (in 2021) and 14% of big data (in 2020). According to the political agreement on the "Road to the Digital Decade", at least 75% of companies must switch to AI, cloud or big data technologies by 2030.

DESI monitors public online services, scoring member states on whether each step of key services can be delivered fully online. In 2021, quality scores reached 75 out of 100 for digital government services for citizens and 82 out of 100 for businesses. Estonia, Finland, Malta and the Netherlands have the highest scores for digital public services in the DESI, while Romania and Greece have the lowest. The Roadmap to the Digital Decade proposal sets a target for

all key government services for citizens and businesses to be fully online by 2030.

The leading direction of digitalization of the economy around the world is the introduction of innovative business models. Innovative business models are constantly appearing in various fields: education, health care, energy, the banking system, the labor market, logistics, etc. Accordingly, in the digital economy, the barriers to entering the market of new players are significantly reduced and the costs of opening a new business are reduced due to the absence of the need for financial investments in physical objects. However, one should take into account the challenges of creating innovative startups necessary for the development of the digital economy, including the lack of private investment capital and the high cost of competent personnel.

One of the most frequently used integral indicators in the field of digitalization of public administration is the Digital Government Development Index (EGDI), which is calculated by the UN every 2 years for all 193 member countries of the organization. The Index was first calculated in 2001. The index is based on the use of both indicators based on the assessment of national websites and statistical indicators characterizing the country's participation in the information society, without which the effect of e-government development would be limited. The composition of the index with equal specific weight includes three components:

- Index of online services (online service);
- Telecommunication infrastructure index;
- Human capital index.

The composition of the indicators used in the calculation of each of the presented indices changes over time in order to ensure the accounting of modern digital technologies. Table 1 shows the list of leading countries by the value of the digital government development index (EGDI) according to the data of 2022 [37].

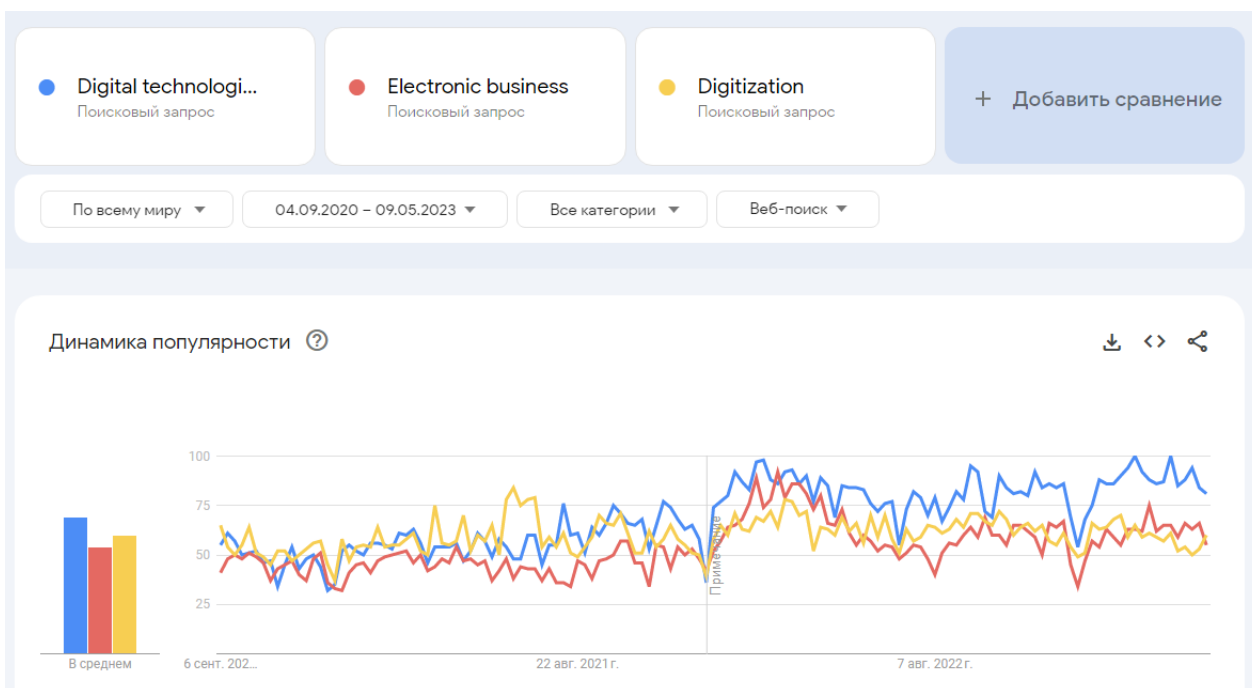
Data from the 2022 survey show that all 15 countries in the rating class have a national strategy for the development of digitalization of society. Governments publish information on how people's voices are taken into account in policy-making, with specific e-participation measures in place for vulnerable groups. Countries with a higher rating class either empower their citizens through investment in digital literacy and skills, or drive inclusive practices by setting standards for how government and public, private and voluntary sector partners should maximize the availability of digital services.

The presence of global interest in the problems of digitalization of economic processes can be analyzed with the help of the Google Trends software

product , which determines the level of search activity on the Internet in relation to these issues. The phrases "Digital technologies", "Electronic business", "Digitization of business" were set as search criteria . These phrases are key words on the topic of digitalization of economic processes. The result of the analysis is shown in fig. 2.

Table 1. Leading countries by the value of the EGDI index [37]

Country name	Rating class	Region	OSI	HCI	TII	EGDI (2022)	EGDI (2020)
Denmark	VH	Europe	0.9797	0.9559	0.9795	0.9717	0.9758
Finland	VH	Europe	0.9833	0.9640	0.9127	0.9533	0.9452
Republic of Korea	VH	Asia	0.9826	0.9087	0.9674	0.9529	0.9560
New Zealand	VH	Oceania	0.9579	0.9823	0.8896	0.9432	0.9339
Sweden	VH	Europe	0.9002	0.9649	0.9580	0.9410	0.9365
Iceland	VH	Europe	0.8867	0.9657	0.9705	0.9410	0.9101
Australia	VH	Oceania	0.9380	1.0000	0.8836	0.9405	0.9432
Estonia	VH	Europe	1.0000	0.9231	0.8949	0.9393	0.9473
Netherlands	VH	Europe	0.9026	0.9506	0.9620	0.9384	0.9228
United States of America	VH	Americas	0.9304	0.9276	0.8874	0.9151	0.9297
United Kingdom of Great Britain and Northern Ireland	VH	Europe	0.8859	0.9369	0.9186	0.9138	0.9358
Singapore	VH	Asia	0.9620	0.9021	0.8758	0.9133	0.9150
United Arab Emirates	VH	Asia	0.9014	0.8711	0.9306	0.9010	0.8555
Japan	VH	Asia	0.9094	0.8765	0.9147	0.9002	0.8989
Malta	VH	Europe	0.8849	0.8734	0.9245	0.8943	0.8547



Source: compiled by the authors

Figure 2. Analysis of the level of search queries

Thus, it can be seen from the figure that the level of scientific interest in issues of digitization of the economy and the application of digital information technologies in business is quite significant and has a growing tendency.

The digitization of the economy is a fast-growing field that is transforming the way businesses operate and how people interact with the economy. As an AI language modeler, I have no personal interests or opinions, but I can provide you with some insights into the issues surrounding the digitalization of the economy.

One of the main challenges of digitalization is the need to adapt business to new technologies and business models. This requires significant investment in new infrastructure, software and employee training, which can be difficult for small businesses or businesses with limited resources. In addition, the rapid pace of technological change can make it difficult for businesses to keep up with them and remain competitive.

Another challenge is the issue of data security and privacy. As more data is collected and stored digitally, the risk of data breaches and cyber attacks increases. This can cause significant financial and reputational damage to businesses and can undermine consumer confidence in digital services.

The digitalization of the economy can also have implications for employment. Automation and artificial intelligence are replacing some jobs while creating new opportunities in other areas. However, this can create uncertainty and anxiety for workers who may need to retrain or acquire new skills to stay relevant in the workforce.

Finally, there is a risk that digitization may exacerbate existing inequalities. Access to digital services and infrastructure is not universal, and those who are already disadvantaged may be further marginalized if they are unable to fully participate in the digital economy.

In general, digitalization of the economy creates both opportunities and challenges. While it has the potential to drive innovation and economic growth, it also requires careful consideration of the social and economic implications, as well as investment in infrastructure, skills and security.

1.2 Theoretical and practical foundations of business management in conditions of digitalization

Digitization (digital transformation) is changing people's lives in various spheres of life, be it everyday concerns of citizens or business. Business leaders

in almost all industries are using digital transformation, including various platforms, analytics to improve productivity and gather more customers to grow their business. Using such technologies at the right time and in the right place allows companies to improve competitiveness, quality of customer service and identify new opportunities for development.

Digitization is like a modern stage of economic development, which is based, as a rule, on physical and digital resources in the spheres of production and consumption. This stage can be characterized as new methods of generating, processing, storing or transmitting data in all spheres of activity. Previously, digital transformation was a priority for most innovative companies, now it is an everyday phenomenon that helps to achieve success not only for individual enterprises, but also for entire regions or countries. The new economic reality puts forward new requirements for the formation of competitive advantages of enterprises and the initiation of a new effective concept of functioning as a whole.

The events of recent years related to the COVID-19 pandemic and the full-scale invasion of Ukraine have convinced everyone of the benefits of using electronic technologies in all spheres of business and social life. Enterprises or companies that have previously implemented e-business have only increased momentum. But those companies that postponed this decision for later, as practice has shown, only suffered losses. However, digital transformation in each industry takes place in its own way, according to the level of its capabilities.

The relevance of issues related to the peculiarities of business management of various categories in the conditions of digitalization is gaining special importance. Taking into account the peculiarities of the transition to new rules of the digital economy and increased requirements for the activities of economic organizations, the identification of new possible problems and threats, the development of new solutions or proposals for minimal negative consequences and strengthening the results of the enterprises. Significant competitive advantages can be provided by a system of effective management of available resources and other enterprise processes based on the latest technologies and methods of improving business processes, which become an important management tool.

Today, digital transformation is taking place not only at the level of various companies and enterprises, but also at the global level. Studying the process of digitization is quite relevant nowadays, as most domestic and international companies are implementing the latest technologies and discovering new technologies and taking their business to a new level. When a company transforms its own processes, it first of all changes its position on the market and creates new technological barriers that can be overwhelming for competitors.

At the moment, digitalization is an integral part of the functioning of not only companies of all types, but also entire countries, as norms and models for competition are changing.

According to a BCG (Boston Consulting Group) study, B2C industries have historically led the way in the adoption of digital technologies: first, mass media, which have apparently revolutionized their approach by almost completely switching to a digital operating model ; Retail; insurance. Banking and telecommunications are also quite advanced in terms of digitalization. Media and telecommunications companies have made significant breakthroughs in the field of success due to their ease of reorganization of their business models and flexibility, since processes occurring inside and outside the company can be transformed very quickly and, unlike traditional business, do not require large costs [9] .

Both foreign and domestic scientists paid attention to the topic of digitization (digital transformation) of enterprises. Among them are such scientists as: D. Bonne, D. Bowersox, J. Westerman, D. Eder, K. Dalham, P. Krey, S. Shable, S. Shaible, S. Voitka, S. Volosovych, M. Tarasyuk and other.

Digitization and digital transformation are used interchangeably, so let's see how audit and reporting experts explain these concepts (table 2).

Table 2. Definition of the concept of digitization (digital transformation) according to various experts

Author	Definition
Federal Ministry of Economy and Energy of Germany [17]	"Digitalization is a definition that covers all sectors of economic and social activity, that is, actions aimed at analyzing, collecting and processing information and further changing business processes."
Donald Bowersox	"Digital business transformation is a process by which companies review their internal operations and form advanced supply chains. The main task is to establish processes that will be able to fully authorize the process and accelerate the company's potential."
George Westerman	"Digital transformation is the application of new technologies to improve business operations and operations."
Dominic Mazzone [89]	"Digitalization is a purposeful and long-term digital evolution of the company, its business processes and models."
Charles-Edouard Bouee and Stefan Schaible [20]	"Digital transformation is continuous changes in all sectors of the economy and the adaptation of their subjects to the new realities of the digital world."
Scott Brennen and Daniel Kreiss [23]	"Digitization is the process of converting analog data into its digital copy."

Thomas Ochs and Ute Riemann [98]	"Digital transformation is the digitization of everything that can be digitized and the integration of digital technologies and tools into everyday life."
Carl Dahlman [30]	"Digitalization is the integration of technologies with economic and social activities using digitalization tools. Digitization combines physical infrastructure, access devices and information systems."

Source: grouped based on [17, 89, 20, 23, 98, 30, 121, 34]

So, based on these definitions, we can state that digitalization (or digital transformation) is a process of transition from the traditional industrial era to an era characterized by digital technologies and digital business innovations to change business processes in companies and provide new perspectives for increasing profits and development of the company as a whole.

The processes of digitization and digital transformation have brought changes to almost all spheres and industries, and also provide an opportunity for the introduction of new technologies and the development of new business models. So, the impact of digitalization on business processes and the corporate model changes mainly in three ways :

- optimization of existing business models;
- business model transformation (business expansion or business repositioning);
- development of new business processes (new technologies, products or services).

The above-mentioned steps can be summarized as the digital transformation of goods and services and the digital decision-making process in view of the development of Industry 4.0 in Ukraine.

According to a recent study by Ernst & Young, digitization has had the greatest impact on business process components such as internal infrastructure management, value propositions and customer interactions. New offers, changes in the form of products and services with elements of the digital process are in most cases very effective factors in the process of digital business transformation [78]. Digital restructuring of companies is carried out with the aim of introducing the latest technologies that lead to increased income and reduced costs. The main elements of digital transformation of business processes are [132]:

- implementation (to ensure a successful strategy, the organization must clearly understand how things are happening or changing in its field of activity. It is necessary to study competitors, conduct market analysis);
- the result (the result of this stage will determine whether digital transformation should be carried out);

- analysis (it is necessary to deeply analyze where the organization can do better in current business processes. It is necessary to carefully study the existing processes and understand the technological advantages they have at the moment. Based on this information, it is necessary to determine that technological advances can be used to provide positive changes in business);

- definition (during digital transformation, organizations need to identify changes they can make to processes to make them better. These changes include actions, approvals, documents, interactions, messages, reminders, status updates, etc.);

- prioritization (the organization must review identified changes, conduct a cost-benefit analysis, assess opportunities, resources, budget, and then, accordingly, determine priorities);

- implementation (this phase deals with the implementation of changes. It includes obtaining the necessary budget, identifying the team responsible for the implementation, re-planning the process based on the identified changes and performing the technical implementation using the identified technologies and technical products);

- deployment (the last stage of infrastructure is to prepare the new system for use. It also includes the development of a clear implementation plan with clearly defined roles, responsibilities and time frames).

The process of business digitization includes separate interrelated elements, so it is important to pay attention to very important areas of the business. According to a study conducted by scientists from the Center for Digital Business Transformation [51], digital transformation occurs in three key areas: working with customers, operational processes, and the company's business model. Each of these three elements is divided into three components that form a series of building blocks for the digital business transformation process.

Therefore, the digital transformation of business is necessary and relevant, especially in our time, changing the needs of customers, the actions of competitors and serves to develop new technologies and services.

The definition of "Industry 4.0" is relatively new for the whole world, as it is a transition to more modern and progressive business models. It dates back to 2011, when an industrial exhibition was held in Hanover. At it, the German government presented the goal of expanding the use of information technologies in production and spoke for the first time about the large-scale digitization of business processes [138, 116].

Industry 4.0 is almost the most massive structural change in the last 100 years, because it changes and rebuilds every part of the functioning of any structure. New business rules include modern digital production technologies

to create a fully digitized enterprise or companies that will be leaders in their field and have a high chance of taking the lead [146].

Oleksandr Yurchak notes that the term Industry 4.0 is often confused with the Fourth Industrial Revolution. But these are slightly different concepts. Industry 4.0 is part of the fourth industrial era and refers to the digitization of industrial production processes, which also includes energy, transport, infrastructure and logistics. On the other hand, there are other economic and social areas in Industry 4.0 – banking, retail and distribution, telecommunications, health care, education, e-government, etc., all of which have their advantages for full digitalization [147146].

Industry 4.0 is a trend of the fourth industrial revolution. We are currently living at the end of the third digital revolution, which began in the middle of the last century, which is characterized by the development of information and communication processes and the robotization of production business processes. Industry 4.0 is characterized by full digitization of the company's activities.

Industry 4.0 is a continuation of Industry 3.0, which is also based on information technologies and processes, which is why some scientists see them as the next stages of the third industrial revolution. Industry 3.0 provided automation and computerization, and then Industry 4.0 provided new important elements - IoT platforms, Big data, artificial intelligence, 3D printing and others. It is also related to the evolution of the company's business model, as Industry 4.0 allows to increase productivity, speed and quality in the production of goods and the provision of services. [141].

Based on the forecast of the World Economic Forum, most of the technologies of Industry 4.0 will be everyday in people's lives by 2027. This means that the introduction of digital technologies and services of Industry 4.0 should be a priority in the activities of enterprises (companies) and state governments.

As Oleksandr Yurchak states: "We started implementing Industry 4.0 standards in Ukraine [146]:

- in 2016, the national campaign "Industry 4.0 in Ukraine" was launched. The "Association of Industrial Automation Enterprises of Ukraine" (APPAU), the initiator of the above-mentioned movement, carried out a great deal of work on the implementation of the latest standards of digital transformation of enterprises and the coordination of the actions of market players in accordance with common development priorities. Since 2018, the association began to develop a network of Industry 4.0 Centers based in the country's leading technical universities, including KPI named after Igor Sikorskyi", Kyiv;

- in 2017, the national program Digital Agenda Ukraine was approved in Ukraine, which includes the concept of Industry 4.0;

– in 2018, the project "National strategy of Industry 4.0" was developed;

– April 17, 2018 at KPI named after Igor Sikorsky opened the "National Center of Industry 4.0", which has its own field of activity, but can be integrated into the Sikorsky Challenge Innovation Ecosystem, created in the Science Park "Kyiv Polytechnic". During the opening of the National Industry 4.0 Center, a Memorandum of Cooperation was signed between the "Association of Industrial Automation Enterprises of Ukraine" (APPAU) and the National Technical University of Ukraine "Ihor Sikorsky Kyiv Polytechnic Institute" [96];

– December 17, 2019 at KPI named after Igor Sikorskyi, the All-Ukrainian scientific and practical conference "Higher education institutions - the market: cooperation in the 4.0 era" [15], which presented the features of a new form of cooperation between higher education institutions and market structures, reflected the results of the "aCampus" project as a new format of cooperation, which confirms the defined role of universities in the conditions of Industry 4.0 development, etc.;

– according to the results of the analysis of the scientific activity of the units of KPI named after Igor Sikorskyi [29] for the period 2014–2018, 228 research works were recorded, among them 36 (15.8%) have signs of Industry 4.0, i.e. related to such concepts as: Big Data, drones, cloud technologies, information- communication technologies, artificial Internet, digital doubles, cobots, "smart" factories, 3D printing, etc. [116].

Ukraine has every chance of a fairly quick transition to Industry 4.0. But still, the Ukrainian government should pay more attention to this category, and companies should review their own business models, find more ways to attract investments, cooperate with educational institutions, in particular with universities, as well as research institutions, and properly manage their own funds.

1.3 Modern information technologies as a driver of business process implementation

The adoption of plans for the development of information technologies, the use of interactive management systems, the spread of expert participation in the exchange of information, the creation of official websites, the formation of communication channels (social networks) and the connection of services affect the development of business digitization. The latest technologies make it possible to create structured and complete information about the activities of companies, to spread marketplaces and social networks, to accelerate the payment of online payments and much more.

Currently, the main factors in the development of digitization processes are:

- the emergence of new digital technologies, as well as the formation of new user needs and requests;
- creation of new, more modern products;
- change in the conditions of the competitive environment due to the popularization of digital technologies.

Such transformations require changes in policy and the development of certain types of activities from the states. Conditions are being created in Ukraine to promote the development of digitalization at the state level. One of the main documents is: Decree of the Cabinet of Ministers of Ukraine "On the Concept of Development of the Digital Economy and Society of Ukraine for 2018-2020", Law of Ukraine "On the Concept of the National Informatization Program", Law of Ukraine "On the National Informatization Program", etc. [101; 102].

Changes occurring in the information environment include various aspects: technological, social, economic environment, labor market and others. Digital transformation of all types of information ensures economic viability and consumer appeal.

The components of digitization are cyber-physical systems, IoT platforms, Big Data, robotics, and 3D printing (Table 3).

Table 3. Constituent elements of business digitalization

List of elements	Scope of application
Cyber physical systems	– computers, touch screens, microphones, light sensors
Internet of things	– built-in information providers: Ethernet, Wi-Fi, Bluetooth, WB (UltraWide Band) – software: programs for automating operational activities (OSS, Operation Support System), information security programs, business process management programs (BPM, Business Process Management)
Big data	– social networks, personal data, commercial transactions, site content
Robotics	– promo robot, telepresence robot, robot promoter, robot waiter
3D printing	– design of new services, visualization of geoinformation; – creation of animated videos, interactive panoramas and augmented reality

Source: grouped based on [70]

Cyber-physical systems (CFS) are an integral part of business digitalization, which is a mechanism based on the work of computer algorithms connected to the Internet and users. The main idea of CFS is to develop ways to receive and provide various information, communicate with other devices through Internet access, and distribute software using mobile applications.

The Internet of Things (IoT) is a network of interconnected objects (things) with embedded sensors and software that transmit and exchange data between the physical world and computer systems over personal or Internet networks.

Big Data – large volumes of structured and unstructured data processed by scalable software tools: big data management methods (SQL, NoSQL, Hadoop); intelligent data analysis (Data Mining, Web Mining); machine learning; construction of data warehouses and use.

Robotics is a robotic system designed for the automation of technical processes aimed at the design, development, construction, operation and use of robots, control, feedback, information processing of automated technical systems (robots) implemented by computer systems [70].

3D printing is a technology that applies successive layers of material to create three-dimensional objects based on data from a digital model. This technology is implemented with the help of 3D printers, which provide the process of modeling projects using visual and graphic means.

The listed components of digitization are most typical for companies, but can be applied to various sectors of the economy, including: chemical, food, processing, automobile industry, shipbuilding, metallurgical engineering, agriculture.

Understanding the perspective from which companies implement information technology can speed up the selection of new business models based on the Fourth Industrial Revolution. In this context, it becomes important to analyze and evaluate the characteristics of the market environment in which digital companies operate (Table 4).

The spread of new technologies and management systems has a good effect on the quality of service, the customer service system, etc. But modern enterprises face many problems: issues regarding the optimality of network technical equipment, economic principles, management decisions regarding the creation of a unified digital infrastructure, etc. remain unresolved. The main problem for manufacturing companies is defining the boundary between production and service. In management systems, there is a problem of overcoming the ambiguity of generation and unification of data systems.

Table 4. Features of the functioning of companies focused on digitization (digital transformation)

Type of companies	Level of implementation	Characteristic features of the market environment	Implementation measures for business digitalization
"Newcomer"	First	<ul style="list-style-type: none"> – increased competition; – the emergence of the latest technologies; – increasing the importance of cloud platforms for conducting business 	<ul style="list-style-type: none"> – conducting research on the needs of digital technologies; – revision of management systems taking into account market trends
"Beginner"	Second	<ul style="list-style-type: none"> – formation of quality customer service; – improvement of the service provision process; – application of information technologies for the promotion of goods and services 	<ul style="list-style-type: none"> – implementation of projects aimed at digitization; – attracting qualified personnel; – development of "digital" skills and the ability to work with Industry 4.0 tools
"Specialist"	Third	<ul style="list-style-type: none"> – reducing the share of manual labor; – increasing the speed of operations when providing services; – emergence of the possibility of massive data processing 	<ul style="list-style-type: none"> – implementation of digitization projects based on intellectual capital; – use of cryptographic protection means; – introduction of blockchain technology
"Leader"	Fourth	<ul style="list-style-type: none"> – access to services that previously required more time; – reducing the cost of customer service; – expansion of the client base regardless of geographical location; – provision of services using digital products 	<ul style="list-style-type: none"> – implementation of business digitization; – prompt response to business processes in online mode; – implementation of commercial Internet projects, expansion of product and service markets

Source: compiled on the basis of [60]

Information digital technologies play an important role in modern business, allowing to improve business efficiency and increase the competitiveness of companies. "Digital technologies (according to analytical reports of the Davos Economic Forum): Internet of Things, robotics and cyber systems, artificial intelligence, big data, paperless technologies, additive technologies (3D printing), cloud and fog computing, unmanned and mobile technologies, biometric technologies, quantum technologies, identification technologies, blockchain

(the list is not exhaustive and is being supplemented)" [134]. In fig. 3 shows the range of classic (3.0) and the latest (4.0) digital technologies that are used in modern entrepreneurship.

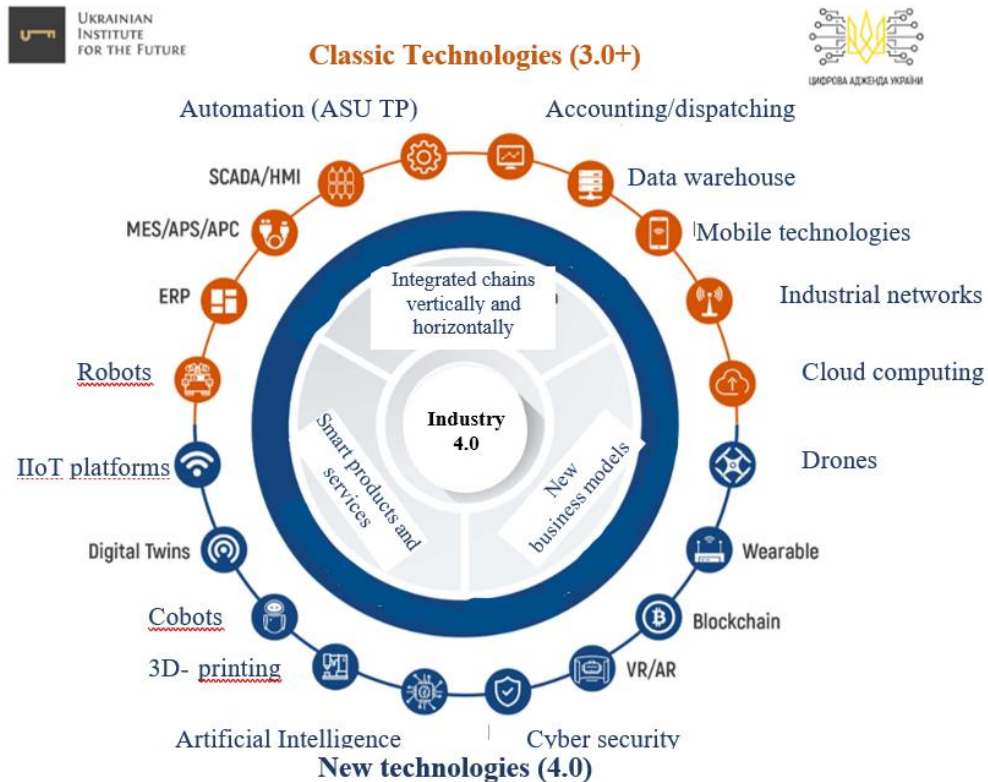


Figure 3. Classical and modern digital technologies [134]

Below are some examples of the application of information digital technologies in entrepreneurship:

1. E-commerce: The Internet allows entrepreneurs to sell their goods and services through websites and mobile applications, which provides the opportunity to attract more customers, reduce advertising costs and expand the geography of sales.

2. Business Process Management: Information technology can help entrepreneurs optimize business processes such as inventory management, financial accounting, and production management. This allows you to reduce the cost of resources and increase the efficiency of the company's work.

3. Cloud technologies: Cloud services allow entrepreneurs to reduce infrastructure and software costs, as well as increase business flexibility and scalability. In addition, cloud technologies ensure the security of data storage and improve their accessibility.

4. Big data and analytics: Big data and analytics help businesses analyze large amounts of data, identify trends and predict future changes in the market.

It helps to make informed business decisions, improve the quality of products and services, and increase customer satisfaction.

5. Internet of Things: The Internet of Things (IoT) enables the collection of data about the operation of equipment and production processes, which helps entrepreneurs manage resources more efficiently, reduce costs and improve product quality.

6. Mobile technologies: Mobile applications allow entrepreneurs to improve interaction with customers, simplify sales processes and increase the level of communication in business processes.

The use of digital platforms is an important factor in the successful development of business in the modern world. Digital platforms are websites or mobile applications that allow users to exchange information, make purchases and other transactions online. Below are examples of digital platforms that can be used for commercial purposes:

Electronic commerce (E-commerce) - online stores and trading platforms that allow companies to sell their goods and services over the Internet.

Delivery services - applications and websites that allow you to order delivery of goods and services to your home or office.

Cloud platforms are services that allow companies to store, process and exchange data in cloud storage.

Social networks are platforms that allow companies to create communities of users and promote their products and services through social media.

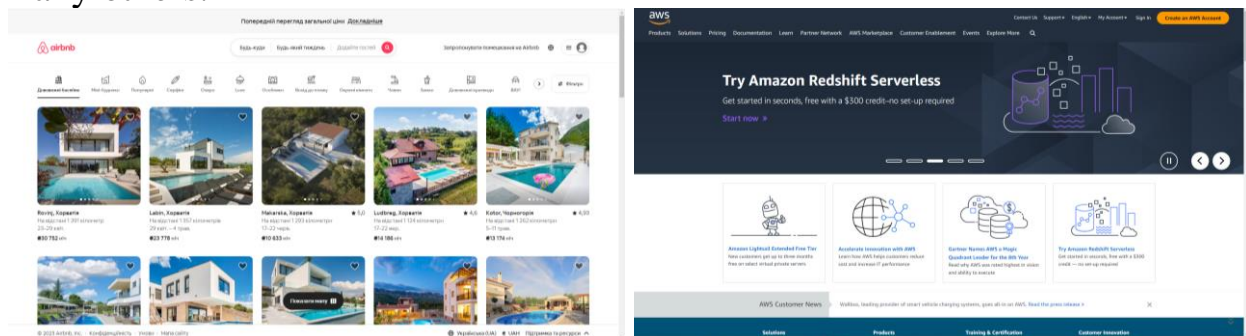
Payment systems - services that allow you to make online transactions and accept payments via the Internet.

Online booking services - applications and websites that allow companies to sell tickets and book hotel rooms, restaurant seats and other services.

The use of digital platforms allows companies to effectively manage business processes, improve the convenience of customer service, as well as expand the audience and increase revenue

Digital platforms ensure the interaction of a set of variables and determine business models based on digital data (data-driven business models). The constant development and implementation of new digital platforms is aimed at filling another segment of the market and obtaining competitive advantages. Digital platforms are divided into two main groups: commercial and non-commercial. Non-commercial platforms are not profit-oriented and are aimed at solving various social problems. These include charitable platforms (UNITED24, Newkraine), free courses of educational platforms (Prometheus, EdEra, VUM online), social platforms (yeDopomaga).

Among the commercial digital platforms, the most common platforms are electronic trading of goods, both through intermediary platforms and directly from the manufacturer. Transactional digital platforms have become a key way of doing business for digital corporations. In addition, social digital platforms, electronic payment systems, educational and investment platforms have developed significantly. It should be noted that with the development of the digital space and the emergence of new startups, platforms for electronic trade in services are also expanding, including companies offering subscriptions, taxi and transportation services (Uber), hotel reservation and tour services (Booking.com, Airbnb), cloud services (Amazon Web Services) and many others.



Source: compiled by the authors

Figure 4. Digital services in business

"On December 4, 2019, the Government approved the resolution "Issues of the Unified State Web Portal of Electronic Services and the Unified State Portal of Administrative Services" and the corresponding Regulation. In this way, the Government created the conditions to send to the past outdated interfaces, inconvenient mechanisms, overlapping functions, duplication of services, which are inherent in numerous service portals of state bodies.

The only web portal of state services "Diia" is:

- the possibility of receiving public services, submitting appeals, complaints, citizen petitions, conducting electronic correspondence with authorities, conducting surveys, etc.;
- implementation of the mobile application "Action";
- use of a personal account and access to information from registers;
- creation of a modern registry of administrative services" [99].

In February 2020, the Ministry of Digital Transformation launched a large-scale digital project to support entrepreneurship, small and medium-sized businesses - Diia.Business. Diia.Business is an online platform that was created to simplify business procedures and facilitate interaction between entrepreneurs and government bodies. Currently, this digital platform provides a wide

range of consulting and support services, both for budding entrepreneurs and for those who have been in business for a long time and want to scale and develop their business. The start page of the platform is shown in fig. 5.

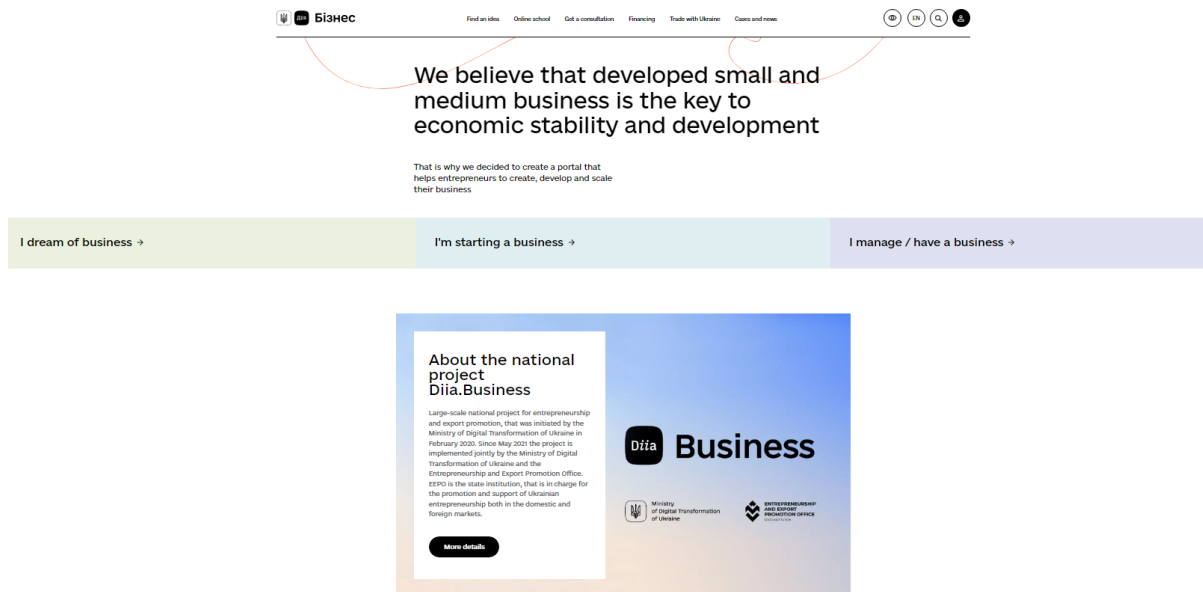


Figure 5. Diia.Business platform [99]

On the Diia.Business platform, entrepreneurs can register their enterprise, get information about their tax and financial obligations, make electronic payments, participate in auctions and tenders, get access to small and medium-sized business support programs, and much more.

The Diia.Business platform is part of the state initiative "Diia", which aims to help citizens and businesses receive high-quality and efficient services from the state. This is an important initiative to improve the business climate in Ukraine and stimulate the development of entrepreneurship.

The Internet of Things (IoT) is a technology that allows devices to interact with each other over the Internet without human intervention. This allows you to improve and automate various processes in people's lives and in business.

IoT devices can be very diverse, ranging from household devices, such as smart thermostats and lighting, to industrial monitoring and control systems, such as smart sensors, air and water quality monitoring, automatic production process control systems, etc. (Figure 6).

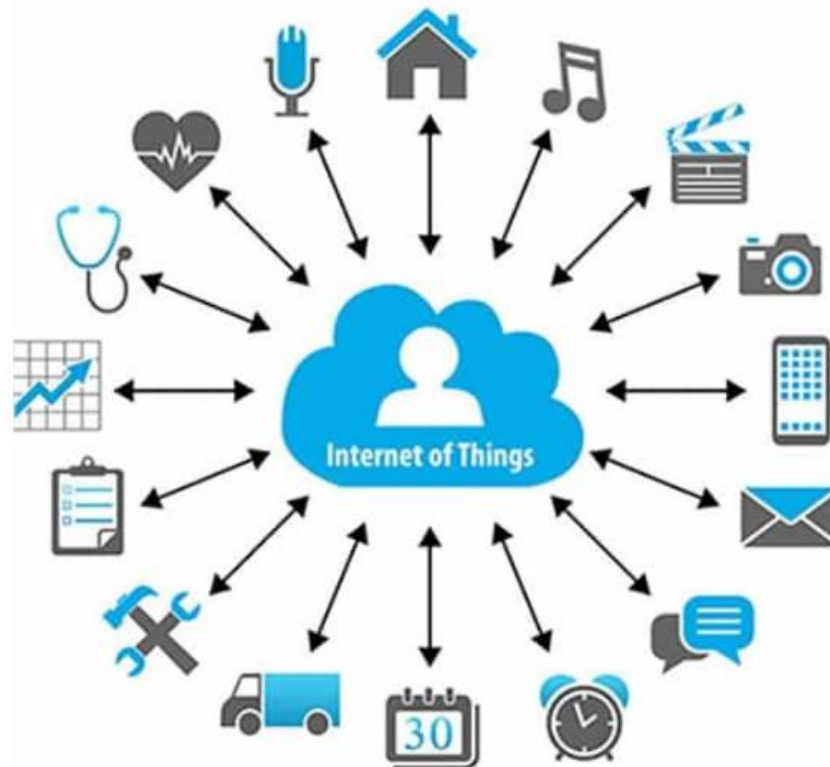


Figure 6. Structure of the Internet of Things (IoT) technology [47]

IoT benefits include:

- increasing business efficiency and its automation: IoT allows automating many processes and reducing the need to manually manage devices, which reduces the impact of the human factor;
 - cost reduction: IoT can help reduce energy costs and reduce the amount of maintenance required;
- better implementation of monitoring and control functions: IoT can provide more accurate data for analysis and decision-making.
- improving business security: IoT can be used to monitor and manage security systems, helping to prevent theft and intrusion.
 - Usability: IoT can provide a more user-friendly and intuitive interface for managing devices.

However, IoT can also pose data security and privacy risks. This can be especially problematic if IoT devices are connected to sensitive information, such as health or bank account information. Therefore, data security must be taken into account when designing and implementing IoT systems.

Internet of Things (IoT) technology can be applied to various business processes to improve efficiency, productivity and overall productivity. Here are some examples of how IoT can be used in business.

1. Inventory Management: IoT sensors can be used to track inventory levels, monitor expiration dates, and optimize supply chain management. This can help reduce waste and improve inventory accuracy, ensuring businesses always have the products they need in stock.

2. Asset Management: IoT sensors can be used to track the location and condition of assets such as machines and vehicles. This can help prevent theft, reduce maintenance costs and optimize asset utilization.

3. Predictive maintenance: IoT sensors can be used to monitor the performance and health of equipment, and to notify maintenance teams when repairs or maintenance are required. This can help reduce downtime and extend equipment life.

4. Energy management: IoT sensors can be used to monitor energy consumption and identify areas where energy is being wasted. This can help businesses reduce energy costs and improve their environmental footprint.

5. Customer Engagement: IoT devices such as beacons can be used to personalize the customer experience by providing personalized offers and recommendations based on the customer's location and preferences.

Supply chain management: IoT sensors can be used to track the movement of goods throughout the supply chain, providing real-time visibility into inventory levels, delivery times and order status. This can help businesses optimize their supply chain operations and improve customer satisfaction.

In general, IoT presents a huge potential to improve the lives of people and businesses, but requires a responsible approach to security and data protection. Overall, applying IoT technology to business processes can provide valuable information and data that can help organizations make informed decisions, reduce costs, improve efficiency, and improve the overall customer experience.

It should be noted that at the moment the Internet of Things technology has many different computer networks that have their own purpose. These networks have different transmission protocols and are poorly interconnected. In this regard, we can say that in the future the development of IoT technology will take place in the direction of combining existing networks into a single network with the creation of a standardized protocol for their interaction.

Artificial intelligence (AI) and machine learning (ML) are revolutionizing the way business works. A study by consulting company Accenture shows that failure to scale artificial intelligence could lead to bankruptcy of 75% of companies. Companies that move from AI experimentation to execution achieve lasting ROI and competitiveness.

Three-quarters of senior executives believe that unless they move beyond experimentation and aggressively deploy artificial intelligence (AI) in their organizations, they risk bankruptcy by 2025, according to a newly released study.

The study found that 84% of senior executives believe they will not achieve their business strategy without scaling AI, but only 16% have made the transition from simple experiments to building an organization based on robust AI capabilities. As a result, this small group of top performers achieves nearly three times the return on investment in AI than their less-performing counterparts [44].

Here are some examples of how AI and ML can be applied to business processes.

1. Customer Service: AI-powered chatbots can be used for 24/7 customer service, answering frequently asked questions and providing personalized support. This can help reduce response times and improve customer satisfaction.

2. Marketing: AI algorithms can be used to analyze customer data and predict which marketing campaigns will be most effective. This can help businesses optimize their marketing strategies and increase ROI.

3. Sales: AI and machine learning algorithms can be used to analyze customer data and predict which products or services are most likely to be purchased. This can help sales teams prioritize their efforts and increase conversion rates.

4. Fraud detection: AI and ML can be used to identify patterns and anomalies in financial transactions, helping companies detect and prevent fraud.

5. Supply chain management: AI and ML can be used to optimize inventory levels, forecast demand and identify areas of the supply chain that can be improved. This can help businesses reduce costs and increase efficiency.

6. Predictive maintenance: AI and ML can be used to analyze data from equipment sensors, predict the need for maintenance and reduce downtime.

In general, applying artificial intelligence and machine learning to business processes can help organizations make better decisions, improve efficiency, and improve customer interactions. However, it is important to remember that these technologies are not perfect and require careful planning, implementation and monitoring to ensure the desired results are achieved.

This trend is also activating the field of sales, creating completely new ways of selling. For example, procurement is shifting to automated bots, with 15-20% of total spend already coming through electronic platforms. By 2020, customers will manage 85% of their business relationships without human interaction. Leading companies are experimenting with what these technologies can do for them, typically around transactional processes early in the customer journey.

For example, AI applications can perform the time-consuming tasks of initiating contact with a potential customer and then qualifying, following up, and maintaining the lead. For example, Amelia, a "cognitive agent" developed

by IPsoft, can analyze natural language to understand customer questions, processing up to 27,000 conversations simultaneously in multiple languages. And because "she" is connected to all relevant systems, Amelia delivers results faster than a human operator. Of course, there will be times when even the AI is confused, but Amelia is smart enough to know when to bring in a human agent.

AI is not intended to completely replace humans in decision-making. Its goal is to find, structure and optimize sets of big data to solve specific tasks, which expands human capabilities, making AI a valuable business resource. The development and application of big data and artificial intelligence technologies ensure the implementation of business digital transformation programs. The use of digital technologies, including artificial intelligence and machine learning, will focus on greater automation of processes and increasing the number of solvable tasks that today involve human resources.

The main factor holding back the full-scale use of artificial intelligence technologies in business is the imperfection, and in some cases, the absence of a regulatory framework. Economic consequences, shifts in the structure of labor resources, inequality and technological unemployment must be taken into account by businesses in the process of digital transformation. Such principles as general benefit and equality in the distribution of business results, as well as the control of the delegation of system decisions should move from the debatable stage to the normative stage. Accountability of players, as well as transparency and clarity of tasks and decisions should stimulate investment in this sector. A well-developed regulatory and technical base that regulates the development, testing and application of digital technologies (primarily artificial intelligence) should ensure the quality of the result of their application and, accordingly, obtaining an economic effect.

"The use of cloud data storage is becoming a fairly popular IT solution for modern enterprises. The "cloud data storage" model provides the client with services for storing the necessary information. At the same time, the resource with which the client directly interacts appears to him as a virtual server regardless of the real organization scheme of the software and computing system from the provider's side and its geographical location. Physically, data can be stored on server computers located on different continents (Fig. 7). The economic benefits for the user of cloud storage consist in the absence of costs for maintaining the infrastructure of the data storage system. Backup and data integrity functions are outsourced to a professional provider. The user pays only for actually used file resources" [27].

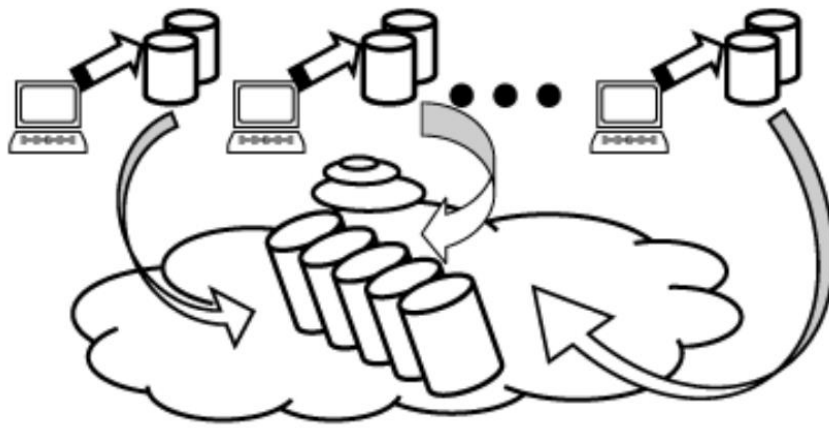


Figure 7. Schematic diagram of cloud data storage [27]

Cloud technologies have revolutionized the way businesses operate and have become an integral part of modern business. Let's look at some of the key applications of cloud technology in business.

Data storage and backup: Cloud storage allows companies to store and back up their data on remote servers, reducing the need for physical storage devices and associated costs. Cloud storage also provides improved security and disaster recovery options.

Cooperation and communication. Cloud-based collaboration tools like Google Drive, Microsoft Teams, and Dropbox allow teams to work together on projects from anywhere and on any device. Cloud-based communication tools like Zoom and Slack also enable real-time communication and collaboration.

Software as a Service (SaaS): Cloud-based SaaS applications give businesses access to powerful software applications that would otherwise be too expensive or difficult to implement on-premise. SaaS programs are typically subscription-based and provide businesses with flexibility and scalability.

Infrastructure as a Service (IaaS): Cloud IaaS provides businesses with on-demand access to computing resources, such as servers, cloud storage, and mesh networks, without the need for physical infrastructure. IaaS allows companies to quickly scale up or down as needed without corresponding capital expenditure.

Big data analytics. Cloud-based big data analytics platforms like Amazon Web Services and Microsoft Azure enable companies to process and analyze large volumes of data quickly and efficiently without the need for expensive on-premise infrastructure.

Disaster Recovery and Business Continuity: Cloud-based disaster recovery solutions allow companies to replicate their mission-critical systems and data to remote servers, providing enhanced redundancy and protection against data loss or system failure.

In general, cloud technologies have changed the way companies operate, providing them with increased flexibility, scalability and cost-effectiveness.

In the era of Internet communications, concepts such as Big Data, business intelligence, cloud computing, data mining, and business intelligence systems play a significant role in the management process of various organizations. These industries greatly influence the level of innovation existing in companies and are an indispensable factor in the development of entrepreneurship. Currently, the volume of information generated by various IT systems and transmitted over the Internet is growing day by day. Such large amounts of data can be the basis for preparing and conducting various analyzes useful for enterprise management purposes.

Big data and business analytics are becoming increasingly important for business development. Here are some ways to apply these technologies:

Market research: Big data can help businesses better understand their target market by providing insights into customer behavior, preferences and trends. This information can help entrepreneurs develop more effective marketing strategies, improve product offerings, and make better business decisions.

Operational efficiency: Business intelligence can help businesses optimize their operations by identifying inefficiencies and areas for improvement. By analyzing data from multiple sources, businesses can identify opportunities to reduce costs, improve productivity, and improve overall efficiency.

Risk management: Big data can help businesses identify potential risks and mitigate them before they become a serious problem. By analyzing historical data and identifying patterns, entrepreneurs can make more informed decisions about risk management and develop strategies to minimize potential losses.

Predictive analytics: Business analytics can help entrepreneurs predict future trends and identify new opportunities. By analyzing data from multiple sources, entrepreneurs can identify patterns and make more informed decisions about where to invest their resources.

Personalization: Big data can help businesses personalize their offerings and services to better meet the needs of individual customers. By analyzing data about customer behavior and preferences, businesses can develop targeted marketing campaigns and tailor their products and services to the specific needs of their customers.

Overall, big data and business analytics have become critical tools for entrepreneurs looking to grow and develop their businesses. Using these technologies, entrepreneurs can gain valuable insights, improve operational efficiency, manage risks, and identify new opportunities for growth.

Technologies such as Big Data are changing the perception of modern analytics. Huge volumes of data allow various analyzes to be carried out for the purpose of managing the organization. The key advantages of such solutions are the ability to transform and optimize business processes, as well as support the decision-making process. In addition to the mentioned advantages, Big Data processing solutions allow the organization that applies them to gain a competitive advantage. Each sector of the economy requires different types of analysis, which are available thanks to the development of modern IT technologies, such as high-speed fiber optic data transmission on the Internet, cloud or network computing solutions. Big Data can also be an innovation tool for many organizations, as presented in the case study.

2 DIGITAL PLATFORMS AND PRODUCTS AS A TOOL FOR ENSURING TRANSPARENCY IN BUSINESS

2.1 Digital technologies of modern entrepreneurship

In today's digital world, digital products have become an integral part of our daily lives. They cover a wide range of products, from software to electronic devices, and play an important role in our economy and society. The essence of digital products lies in their interaction with the user, the ability to process and transmit information, as well as in the creation of new digital environments. In the modern business environment, digital platforms and products occupy an increasingly important place, becoming a necessary tool for the effective operation of enterprises. Rapid technological changes and the constant evolution of the Internet have led to the emergence of new digital solutions that affect all aspects of business - from marketing and sales to management and logistics.

One of the main aspects of digital products is their interaction with the user. Digital products allow users to interact with them through interfaces that may be graphical, voice-based, or touch-based. Interaction with digital products has become more intuitive and convenient thanks to the development of artificial intelligence, machine learning and natural language processing technologies. Users can interact with digital products by inputting commands by voice, clicking, or gestures, which provides ease of use and expands their scope of application [77].

Another important aspect of digital products is their ability to process and transmit information. Digital products can process large amounts of data quickly and efficiently. Thanks to this, they are able to analyze data, make predictions, recommendations and automate processes. Digital products can also transmit information using the Internet, which opens up many opportunities for communication and collaboration. For example, digital products can be used to communicate at a distance, share data between users, and collaborate on projects.

Creating new digital environments is another important aspect of digital products. Digital products can create virtual or augmented reality environments that change the way we perceive the world around us. For example, virtual reality allows users to immerse themselves in and interact with another reality. Augmented reality, for its part, adds virtual objects to the real world, which opens up new opportunities for education, entertainment and advertising [118].

Here are the opinions of several scientists regarding the essence of digital products and their main aspects:

John McCarthy, professor of computer science: "Digital products are the evolution of traditional products, combining technology, interfaces and data processing capabilities. They create new ways of interaction and change the way we work, learn and communicate." [93]

Maria Smith, information technology researcher: "Digital products turn modern technologies into useful and convenient tools that help us achieve our goals and solve tasks more efficiently. They allow us to open up new opportunities and innovations." [127]

Emily Young, professor of media technology: "The essence of digital products is their ability to combine technology, design and interaction with the user. They create new ways of communication, entertainment and learning, making our environment interactive and changing our perception of the world." [38]. The main aspects of digital products are presented in Table 5.

Table 5. Main aspects of digital products

Aspects	Description
Interaction	Interfaces for convenient and intuitive interaction with the user, including voice and touch control
Data Processing	Ability to process and analyze large amounts of data to generate predictions and recommendations
Data transfer	Ability to transfer and exchange information via the Internet
Virtuality	Creating virtual or augmented reality environments to change the way we perceive the world
Innovations	Development of new technologies, ideas and solutions to improve functionality and ease of use

Source: compiled by the authors

All these aspects allow digital products to influence our lives, speeding up processes, improving communication and creating new opportunities. They are important components of the modern world and contribute to the development of society in the digital age.

Digital products also help in business and economic development. They create new opportunities for enterprises in the form of e-commerce, online services and other digital platforms. This allows companies to reach a larger audience, improve sales and customer service processes, and increase efficiency and profitability [124].

In addition, digital products are a source of new jobs and stimulate innovation. The development and implementation of digital products requires technical knowledge, programmers, designers and other specialists, which contributes to the creation of new jobs and the development of the industry. In addition, digital products encourage innovation and the search for new solutions, which

accelerates technological progress and leads to the emergence of new ideas and inventions.

However, along with all the benefits, digital products also come with challenges and challenges. One of them is the issue of privacy and security. The collection and processing of large volumes of data may endanger the privacy of users' personal information. Therefore, it is important to develop and implement effective data protection and privacy mechanisms.

In addition, there is the issue of digital equality, where a segment of the population has limited access to digital products and technologies. This may be due to information gaps, financial constraints, or lack of education. To overcome this unbalanced state, it is necessary to promote wide access to digital products and ensure the development of digital literacy among all segments of the population [79].

In summary, digital products play an important role in our lives and society. They are changing the way we work, communicate, learn and play. Their essence lies in their interaction with the user, their ability to process and transmit information and create new digital environments. Digital products drive business growth, drive innovation and create new jobs, but also require attention to privacy, security and digital equality issues. Ensuring broad access to digital products and developing digital literacy is an important task for creating a fair and equal digital society.

Digital platforms have become key players in today's economy and society. They represent online ecosystems that unite users, suppliers and various services in one digital space. Digital platforms have their own characteristics, characteristics, goals, tasks and functions, which make them important components of the modern economy and technological development.

Digital platforms can be of various types, including marketplaces, social networks, cloud services, financial platforms, and many others. However, they have common characteristics that determine their essence and functionality [24]:

- openness and engagement: Digital platforms typically offer open access and engagement for users and providers. They create an environment where different parties can interact, exchange information and services.

- network structure: Digital platforms are based on a network structure where multiple parties interact with each other. They facilitate the creation of connections, data exchange and cooperation between participants.

- a wide range of services: Digital platforms provide a variety of services including communication, commerce, financial services, content hosting, transport services and many others. They create an ecosystem where users can access many services in one place.

Digital platforms have certain goals that are aimed at achieving certain results and meeting the needs of ecosystem participants. The main goals of digital platforms include [144]:

- creating efficient markets: digital platforms aim to create a market where buyers and sellers can meet, exchange goods and services, make deals and ensure mutual benefit for all participants.

- improving access to services: digital platforms simplify the process of obtaining services and products, providing quick and convenient access to them through online interfaces.

Stimulating innovation: digital platforms promote the development of innovation by creating favorable conditions for the meeting of ideas, exchange of experiences and cooperation between ecosystem participants.

Digital platforms have certain tasks that are performed in order to support their goals and ensure the efficient functioning of the ecosystem. The main tasks of digital platforms include [140]:

- enabling interaction: digital platforms create conditions for interaction between different parts of the ecosystem, providing convenient and efficient channels of communication and collaboration.

Transaction Management: Digital platforms provide mechanisms to manage and secure transactions between users, including payments, product delivery and other processes.

Maintaining and developing the ecosystem: Digital platforms have the task of maintaining and developing their ecosystem, attracting new participants, creating conditions for innovation and ensuring mutual benefit for all participants.

Digital platforms perform a variety of functions that help them deliver their work and achieve their goals. The main functions of digital platforms include [120]:

Aggregation and curation. Digital platforms aggregate various resources, services and data from different sources, providing convenient access to them for users.

Mediation and coordination. Digital platforms act as intermediaries between buyers and sellers, coordinating and facilitating trade, order placement and other services.

Community support and communication. Digital platforms provide tools for communication, sharing experiences and interaction between users, creating an environment conducive to community development.

Digital platforms have their own characteristics that make them different from traditional business models and contribute to their success. Some of the main features of digital platforms include [145]:

Scalability. Digital platforms have the potential to scale widely and engage a large number of users, providers and services;

Ecosystem approach. Digital platforms seek to develop an ecosystem, including various parties that interact with each other and create mutual benefits;

Personalization and recommendations. Digital platforms are able to analyze user data and provide personalized recommendations and services.

Here are the opinions of several scientists regarding the characteristics of digital platforms:

Ahmad Assadullah, scientist: "Digital platforms have a unique ability to attract a large number of users and services in one place. Their scalability and ecosystem approach open up new opportunities for efficient trade and collaboration." [4]

Carsten Sørensen, innovation researcher: "Digital platforms demonstrate a unique ability to personalize and provide recommendations based on user data analysis. This helps platforms to create a personalized experience for each user and increase their satisfaction." [87]

Carla Bonina, social network researcher: "The special feature of digital platforms is their ecosystem approach, where different parties interact and cooperate with each other. This stimulates innovation and ensures mutual benefit for all participants." [19]

Therefore, digital platforms are important components of modern economic and technological development. They differ in their characteristics, goals, tasks and functions, which makes them unique from traditional business models. Key characteristics of digital platforms include openness, engagement and network structure. Digital platforms have goals such as creating efficient markets, improving access to services and stimulating innovation. Their tasks include enabling interoperability, managing transactions, and supporting ecosystem development. Functions of digital platforms include aggregation and curation, mediation and coordination, and community support and communication.

Digital platforms have features such as scalability, an ecosystem approach, and the ability to personalize and provide recommendations. They create new opportunities to engage a large number of users and services in one place, facilitate efficient commerce and collaboration, and provide personalized services and recommendations.

Scholars also give their opinions on the characteristics of digital platforms. They emphasize the scalability and ecosystem approach of these platforms, as well as their ability to personalize and provide recommendations based on the analysis of user data. They believe that these features contribute to the success of digital platforms and increase user satisfaction.

Understanding the essence, characteristics and features of digital platforms is important for understanding current trends in the economy and technological development. The use of digital platforms can have a significant impact on business, society and innovation. However, it is also important to consider issues of privacy, security and digital equality to ensure a fair and equal digital society.

In today's world, digital technologies affect all aspects of our lives, including the business sphere. Thanks to the rapid development of information technologies, new opportunities have appeared for enterprises in conducting business, attracting customers and optimizing processes.

Before considering the impact of digital technologies on business, it is important to analyze the current business environment. Technological progress and digital innovation are revolutionizing the way companies operate, compete and interact with customers. Here are some key aspects of the modern business environment [143]:

Changing consumer habits. Today's consumers are becoming more digitally oriented and expect convenience, personalized service and speed. They actively use mobile devices, social networks and online platforms to search for information and make purchases.

Increasing competition. Digital technologies allow start-ups and small businesses to quickly occupy their positions in the market, which leads to increased competition. Large companies are also using digital tools to improve their competitiveness.

Change of communication channels. Technology is changing the way companies communicate with their customers. Traditional communication channels such as phone calls and e-mail are being supplemented by chatbots, social networks and messengers.

Large volumes of data. Digital technologies create large volumes of data that can be analyzed and used to make strategic decisions. Data analysis helps companies understand their customers, predict market trends, and improve their products and services.

Globalization. Digital technologies have made the world more connected and accessible. Companies can effectively conduct business at the international level, cooperate with partners from all over the world and attract customers from different countries.

Digital technologies have a significant impact on the modern business sphere, changing the way business is conducted and providing new opportunities for development. Let us consider some of them [77]:

E-commerce: The development of the Internet and digital platforms has allowed companies to expand their market and sell their goods and services

online. E-commerce has become a popular way of selling, allowing customers to conveniently shop from anywhere and anytime.

Social Media Marketing: Social media has become a powerful tool for marketing and advertising. Businesses can create targeted advertising campaigns, engage with their customers, build their brand and expand their audience.

Cloud technology: The use of cloud technology allows businesses to store and process large amounts of data without the need for their own physical servers. This ensures a reduction in costs and an increase in work efficiency.

Analytics and Artificial Intelligence: Using data analytics and artificial intelligence helps companies understand market trends, forecast demand, improve products and services, and make informed decisions.

Internet of Things: Connecting various devices and objects via the Internet allows businesses to monitor and control processes, automate routine tasks, and increase work efficiency.

Scientists consider the impact of digital technologies on the business sphere from different points of view. Here are the opinions of several scientists:

John McAfee, Programmer: "Digital technologies are creating new opportunities for businesses to do business and communicate with customers. They are changing the way we work, compete and communicate, and this requires companies to adapt and innovate." [63]

Sheryl Sandberg, Facebook CEO: "Digital technologies help businesses connect with their customers and build relationships based on trust and understanding. They enable us to move forward and innovate." [122]

Ben Gomez, vice president of Google: "Digital technologies are transforming the business world, creating new opportunities for development and growth. They help businesses save costs, manage more efficiently and attract customers." [10]

In general, scholars agree that digital technologies have a great impact on the modern business sphere. They create new opportunities for effective business management, customer interaction, data analysis and strategic decision-making.

Therefore, digital technologies are significantly transforming the modern business sphere. They are changing the way we do business, interact with customers, market and analyze data. E-commerce, social media marketing, cloud technology, data analytics and artificial intelligence are just a few examples of digital technologies that are changing the business world.

Consequently, it is extremely important for enterprises in today's business environment to use digital technologies to achieve competitive advantage, attract customers and improve processes. Understanding the impact of digital

technologies and using them correctly can pave the way for success in today's business world.

In today's digital world, there are many digital platforms that have changed the way we communicate, work and spend our free time. Next, we will conduct a detailed review of several well-known digital platforms and analyze their activities and capabilities.

Facebook is one of the most popular digital platforms in the world. Founded in 2004 by Mark Zuckerberg, Facebook provides communication, content sharing, community building and advertising.

Table 6. Facebook platform

Characteristics	Description
Founder	Mark Zuckerberg
Year of establishment	2004
Platform type	Social network
The number of active users every month	As of 2021, Facebook has about 2.8 billion monthly active users and over 1.8 billion daily active users
Basic capabilities	Communication, messaging, content publishing, group and event creation, advertising and brand promotion

Facebook enables people to communicate, exchange messages, share photos and videos, create groups and events. For businesses, it is a platform for advertising, brand promotion, target audience engagement and customer interaction.

Amazon is the largest e-commerce platform in the world. Founded in 1994 by Jeff Bezos, Amazon started as an online bookstore and has grown into a large marketplace where you can buy almost anything.

Table 7. Amazon platform

Characteristics	Description
Founder	Jeff Bezos
Year of establishment	1994
Platform type	Electronic commercial platform
The number of active users every month	As of 2021, Amazon has over 200 million paid Prime subscribers and over 150 million monthly active users
Basic capabilities	Online shopping for goods, e-books, digital media, cloud storage, streaming service

Amazon enables users to shop online quickly and conveniently, including merchandise, e-books, music, movies, and more. They also provide cloud storage and streaming services.

Airbnb is a platform that enables users to find and book accommodations while traveling. Founded in 2008 by Brian Chesky and Joe Gebbia, Airbnb has changed the way people travel and find accommodation.

Table 8. Airbnb platform

Characteristics	Description
The founders	Brian Chesky, Joe Gebbia, Nathan Blecharzyk
Year of establishment	2008
Platform type	Platform for booking accommodation
The number of active users every month	As of 2021, Airbnb has more than 4 million home owners and more than 800 million monthly guests
Basic capabilities	Search and reservation of apartments, reviews, platform for renting your own home

Airbnb allows property owners to rent out to tourists and users to find unique and convenient places to stay while traveling. It creates opportunities for earning and new tourist experiences.

Uber is a platform for providing transportation services. Founded in 2009 by Harry Campbell, Gareth Campbell, Oscar Salazar and Travis Kalanick, Uber has revolutionized the way transportation is ordered and delivered.

Table 9. Uber platform

Characteristics	Description
The founders	Harry Campbell, Gareth Campbell, Oscar Salazar, Travis Kalanick
Year of establishment	2009
Platform type	Platform for ordering transportation services
The number of active users every month	As of 2021, Uber has more than 110 million active users and about 3.5 million active drivers
Basic capabilities	Ordering and paying for transportation services, driver evaluation, transparent pricing, shared trips

Uber provides an opportunity to order and pay for transportation services using a mobile application. It also offers driver ratings and transparent pricing.

Netflix is a streaming video provider that allows users to watch movies, series, and TV shows over the Internet. Founded in 1997 by Reed Gustin and Mark Randolph, Netflix has become one of the most popular platforms for viewing video content.

Netflix provides access to a wide selection of movies, series and TV shows, including original content. It also uses algorithms to recommend personalized content.

Analyzing these five famous digital platforms, you can see that each of them provides unique opportunities to its users. Facebook is a network for communication and content sharing, Amazon is a platform for online shopping, Airbnb is a service for booking apartments, Uber is a transportation service, and Netflix is a streaming service for watching videos.

Table 10. Netflix platform

Characteristics	Description
The founders	Reed Gustin, Mark Randolph
Year of establishment	1997
Platform type	Streaming service for watching movies, series and TV shows
The number of active users every month	As of 2021, Netflix has over 209 million subscribers in over 190 countries
Basic capabilities	Watch movies, series and TV shows, original content, personalized recommendations

Statistics for 2021 show that these platforms have a large base of active users, which indicates their popularity and influence on modern society. They have become an integral part of our digital lives, providing us with convenience, access to information and services, as well as new ways of communication, entertainment and business.

Facebook has many positive effects on people. It provides an opportunity to communicate and find old and new friends, exchange information and ideas. At the same time, Facebook also faces criticism regarding the problem of misuse of users' personal information and the spread of false information.

Amazon impacts people by making online shopping convenient and affordable. It allows you to order various goods and services with delivery to your door. On the one hand, this is convenient for users, but at the same time, it also creates competition and excludes some traditional retail stores.

Airbnb enables travelers to find unique and affordable accommodations while traveling. This creates new opportunities for owners who can earn money by renting out their homes. On the other hand, some countries and cities have placed restrictions on the use of Airbnb due to safety issues and the impact on the housing market.

Uber has revolutionized the traditional taxi industry by providing people with a convenient and affordable transportation service. It provides an opportunity to order transport with one click of a button on a smartphone. Uber also has an impact on traditional taxi drivers, who are facing competition and a changing market.

Netflix has become one of the most popular platforms for streaming video and watching video content. It provides a wide selection of movies, serials and TV shows that can be viewed at any time convenient for the user. Netflix is also impacting traditional cinema and television by changing the way people consume video content.

The role of these digital platforms in shaping business models:

Involvement of users and communities. Digital platforms such as Facebook and Instagram allow businesses to engage and engage with their target audience, creating communities and spaces for sharing information, feedback and ideas.

Electronic commerce. Amazon gives businesses the opportunity to sell their products through an online store and use its logistics and delivery to provide fast and convenient customer service.

Collective economy. Platforms like Airbnb and Uber allow individuals to earn money by sharing resources such as accommodation or vehicles.

Distribution of content. Netflix and other video streaming platforms enable content producers to distribute their movies, series and TV shows directly to audiences without intermediaries.

Consequently, digital platforms such as Facebook, Amazon, Airbnb, Uber, and Netflix have a significant impact on today's society and business. They provide users with new opportunities for communication, shopping, travel, transportation and entertainment.

Features of the operation of these platforms include their scalability, ecosystem creation, convenience and accessibility, personalization and innovation. Each of the platforms has its own competitive advantages that allow them to stand out in the market and attract a large audience of users.

Digital platforms play an important role in shaping business models. They create new opportunities for customer engagement and interaction, e-commerce, resource sharing and content distribution. These platforms are changing traditional business models and contributing to the development of the collective economy.

The given examples of well-known digital platforms demonstrate their success and great popularity among users. However, it is important to consider that these platforms also face challenges and criticisms related to privacy, security and competition issues.

In general, digital platforms play a significant role in today's business sphere and society. They provide new opportunities for convenience, accessibility and communication, accelerate innovation and change traditional business models. However, it is important to consider the ethical and social aspects

of digital platforms, ensure the protection of user privacy and encourage healthy competition in the market.

Digital products have become an integral part of our everyday life. They provide us with convenience, entertainment, connectivity and new opportunities. In today's world, the market for digital products is constantly growing, and developers are faced with the challenge of developing competitive products that meet the demands of consumers.

Social networks such as Facebook, Instagram and Twitter remain among the most popular digital products. They enable communication, information and video sharing, community building and collaboration. These products have become the basis for personal branding, advertising and marketing.

Messaging applications such as WhatsApp, Messenger, Viber have become an integral part of our communication. They provide a fast and free way to communicate through text messages, voice and video calls.

E-commerce platforms such as Amazon, Alibaba, eBay provide consumers with convenient access to a variety of products and services. They offer a wide selection of products, convenient delivery and payment security.

Streaming platforms such as Netflix, Spotify, YouTube are becoming increasingly popular for consuming music, videos and other content. They provide a wide selection of materials, the ability to customize personalized content and the convenience of viewing or listening on different devices.

Evaluation of functionality and user experience of digital products:

Functionality. Most popular digital products provide a wide range of features to meet the needs of users. They allow you to communicate, exchange information, buy goods, listen to music, watch movies, etc. However, it is important that the functionality is simple and understandable for the user.

User experience. The success of digital products often depends on their user experience. This encompasses usability, intuitiveness and attractive design. Products that offer a convenient and satisfying user experience usually have a competitive advantage in the market.

Trends and innovations in digital product development:

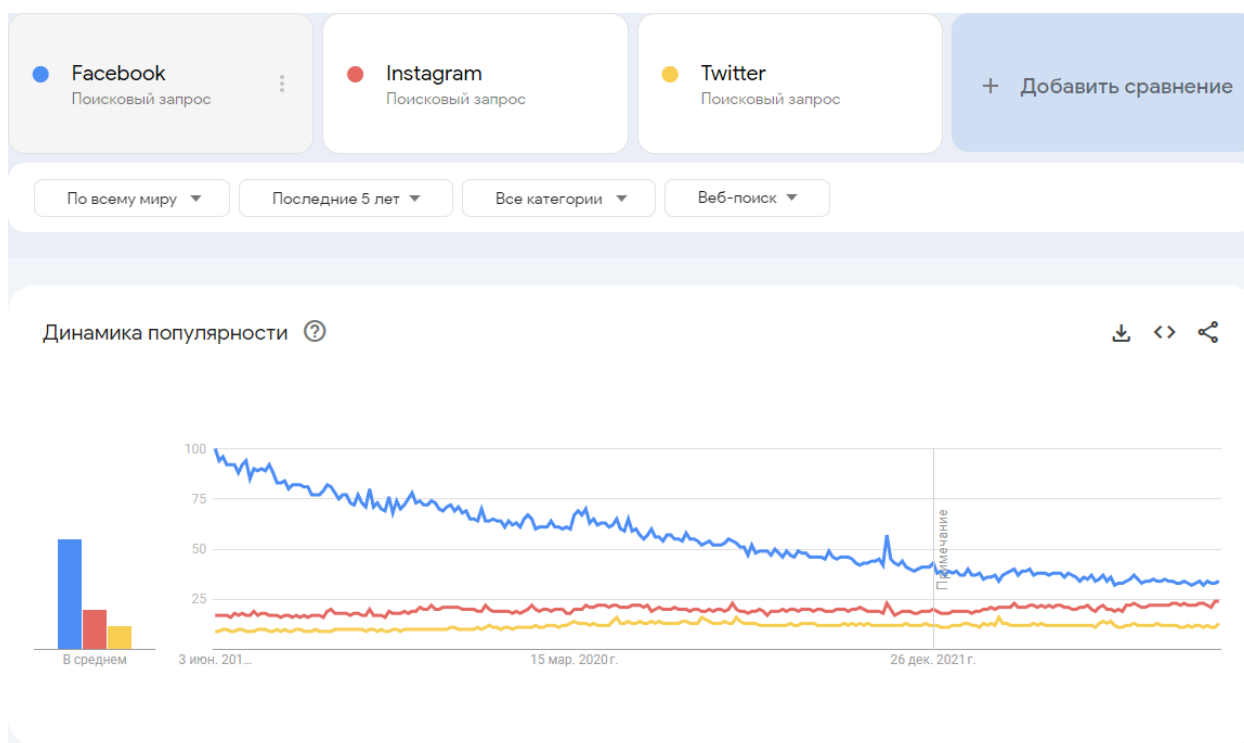
Artificial intelligence (AI). The use of artificial intelligence is becoming increasingly common in the development of digital products. AI is used to improve personalization, predict user behavior, automate processes and solve problem situations.

Augmented Reality (AR) and Virtual Reality (VR): AR and VR technologies provide new opportunities for interaction with digital products. They are used in industries such as gaming, tourism, education and marketing, allowing users to experience interactive and realistic experiences.

Internet of Things (IoT). IoT opens up new opportunities for connecting different devices and exchanging data. It enables the creation of smart systems and simplifies the interaction between digital products and physical devices.

To analyze trends among popular digital products, we will use Google Trends - an online tool that provides data on the popularity of search queries in certain regions and time periods.

With the help of Google Trends, we can investigate the popularity of various social networks over the past years. For example, we can compare changes in the popularity of Facebook, Instagram, and Twitter over the past five years (Fig. 8).



Source: compiled by the authors

Figure 8. Comparison of the popularity of Facebook, Instagram, Twitter

In today's world, digital platforms and products play a significant role in the business environment. Their impact on business processes, the way of interacting with customers and the competitiveness of companies is unpredictable.

Digital products are significantly changing the business environment, creating new opportunities and challenges for enterprises. Here are some significant impacts of digital products on the business environment [69]:

Changing the way you interact with customers. Digital platforms and products enable companies to interact with their customers in new ways. They allow you to attract, retain and connect with customers through email, social

networks, messengers and more. This expands the global reach of companies and provides convenience for customers in interacting with the brand.

Improving the efficiency of business processes. Digital products allow you to automate and optimize business processes, reducing manual labor and ensuring speed and accuracy of tasks. For example, the use of cloud services allows companies to store and process data in safe and accessible places, and automated resource management systems (ERP) facilitate the control of inventory, finances and other aspects of the company's activities.

Expansion of market opportunities. Digital platforms and products enable companies to expand their geographic presence and reach new markets without physical expansion. For example, e-commerce allows companies to sell their goods and services online, attracting customers from different parts of the world.

Personalization and customization. Digital products enable the personalization and adaptation of products and services to the individual needs of customers. They collect and analyze data about customer behavior and preferences, which allows for the creation of personalized offers, recommendations and services.

Using digital platforms and products has its advantages and disadvantages. We consider them in more detail in Table 11 and Table 12 [52; 124].

Table 11. Advantages of using digital platforms and products in the business environment

Advantages	Description
Increasing reach	The ability to reach a wide audience and attract customers from different regions of the world.
Cost reduction	Ability to reduce costs for marketing, advertising, data storage, logistics, etc.
Improving the user experience	Ability to create user-friendly, intuitive and personalized interfaces for customers.
Speed and efficiency	The ability to conduct operations quickly and efficiently, ensuring prompt processing of data and interaction with customers.

Table 12. Disadvantages of using digital platforms and products in the business environment

Disadvantages	Description
High competition	The increasing popularity of digital platforms is causing increased competition in the market.
Data security issues	The use of digital platforms requires paying special attention to data security.

Dependence on technology	The use of digital platforms requires the availability of technological infrastructure.
Constant update	Digital platforms are evolving rapidly, so knowledge and infrastructure need to be constantly updated.

Digital platforms and products have a significant impact on business strategy. Here are some aspects to consider [69]:

Transformation of the business model. Digital platforms can help companies transform their business model by providing new opportunities for revenue generation. For example, moving from traditional retail to e-commerce, or from buying products to subscribing to services.

Interaction with consumers. Digital platforms allow companies to collect data about their customers and analyze them to understand their needs and preferences. It helps to improve the interaction with consumers by offering personalized solutions and services.

Development of new products and services. Digital platforms drive innovation by enabling companies to develop and launch new products and services based on market analysis and customer needs.

Optimization of business processes. The use of digital platforms allows you to optimize business processes, reducing costs, improving efficiency and ensuring a quick response to changes in the environment.

Digital platforms and products are a source of innovation and competitiveness for businesses. They contribute [69; 79; 118]:

Rapid implementation of new ideas. Digital platforms allow you to quickly test and introduce new ideas and products to the market. This allows companies to be flexible and adaptable to changing customer needs.

Involvement of external innovators. Digital platforms can foster collaboration with third-party developers, startups, and other innovators. This allows companies to use external talent and ideas to create new products and grow their business.

Improving competitiveness. The use of digital platforms and products helps companies remain competitive by providing them with the means to innovate, improve user experience and adapt to changes in market conditions.

Developers of new business models. Digital platforms give companies the opportunity to experiment with new business models, such as a subscription, resource sharing or sharing model, which opens up new revenue streams and market opportunities.

Digital platforms and products have a significant impact on the business environment. They change the way companies interact with consumers, improve the efficiency of business processes, stimulate innovation and increase

competitiveness. However, the use of digital platforms and products also comes with its own challenges and risks, such as high competition and data security issues. It is important for a business to be a conscious and skillful user of digital platforms, understand their advantages and disadvantages, integrate them into their strategy and develop according to the requirements of today's digital environment.

2.2 Strategies for the development and use of digital platforms and products in order to increase their transparency

In today's business environment, the use of digital platforms and products is becoming increasingly important for companies, regardless of their size and industry. Digital platforms and products provide companies with new opportunities to interact with customers, optimize business processes and develop competitive advantages. However, successful use of digital platforms requires a strategic approach and careful planning.

First of all, it is necessary to determine the purpose of using digital platforms and products. The goal may be different for each company, for example [24; 143]:

Improving the customer experience. The goal is to create convenient and personalized digital products that meet the needs and preferences of customers.

Increase in income. The goal may be to attract new customers, increase sales, or create new revenue streams through digital platforms and products.

Optimizing business processes: The goal is to automate and optimize the company's internal processes using digital platforms and products.

Expanding market presence: The goal may be to expand geographic reach, reach new markets, or attract customers from different countries through digital platforms.

After determining the goal, it is necessary to formulate the task of using digital platforms and products that will help achieve this goal. Tasks may include [144; 145]:

Choosing the best digital platforms and products: You need to analyze the different digital platforms and products in the market and choose the ones that best suit your company's needs and intended use.

Development of an implementation and monetization plan: A detailed implementation plan for digital platforms and products should be developed, including development, testing, marketing efforts, and a monetization strategy.

Establish metrics and success indicators: It is important to define metrics and success indicators that will allow you to evaluate the results of the use of digital platforms and products and make the necessary adjustments.

Calculation analysis and performance evaluation: During strategy development, calculations must be performed, including forecast sales, development and maintenance costs, expected profits, and evaluation of the overall effectiveness of the use of digital platforms and products.

When choosing the optimal digital platforms and products to achieve the goal, the following factors must be taken into account [77; 120]:

Compliance with functionality. Platforms and products must meet the needs and objectives of the company. It is important to evaluate their capabilities and functionality to ensure that they meet the needs of the business.

Stability and reliability. The chosen platforms and products must be stable and reliable, ensuring smooth operation and protection of data of the company and its customers.

Scalability. It is important to ensure that the platforms and products chosen have the potential to scale so that they can evolve with the growth of the business.

Pricing policy. The cost of implementation and support of the chosen platforms and products must be considered. The cost must be within the company's budget and justified by the expected benefits.

Developing a plan to implement and monetize digital platforms and products is a critical step in the strategy. The plan may include the following stages [69; 79; 124]:

Product development. Development and testing of digital platforms and products taking into account customer requirements and market conditions.

Marketing activities. Development of marketing and sales strategy to attract attention and promote products in the market.

Implementation and support. Development of a product implementation plan, including staff training, customer support and product updates.

Monetization: Defining the product monetization strategy, including pricing policies, service packages, and revenue models.

When developing a plan for the implementation and monetization of digital platforms and products, it is necessary to take into account indicators, calculations and perform performance analysis. Some indicators that can be used include [24; 120]:

Profitability: Calculation of the expected profitability of the project by comparing the expected income and costs.

ROI (Return on Investment): Calculation of the profit-to-cost ratio, which indicates the effectiveness of investing in a project.

LTV (Customer Lifetime Value): Calculating the value of a customer during his life cycle, which allows you to estimate the potential revenue from the customer.

CAC (Customer Acquisition Cost): Calculation of the cost of attracting a new customer, which helps determine the effectiveness of marketing costs.

After the calculations, it is necessary to analyze the results and evaluate the effectiveness of the strategy of using digital platforms and products. It is important to consider the risks and adjust the strategy if necessary to achieve maximum results.

Therefore, developing a strategy for the use of digital platforms and products is a complex but important task for companies in today's business environment. Defining the goal, choosing the optimal platforms and products, developing an implementation and monetization plan, as well as analyzing the calculations are key stages of the process. Only a strategic approach and careful planning will help companies succeed in the digital world and ensure sustainable development and competitiveness.

The development of digital products is a complex and multi-stage process that requires attention to the needs and requirements of users. To achieve success and competitiveness in the market, it is important to have a clear plan and practical recommendations for improving digital products.

First of all, the needs and requirements of the users must be carefully studied before developing digital products. This can be done using the following methods [69; 77]:

Market research. Analyzing market trends, competitors and user behavior will help you understand their needs and expectations.

User surveys and observations. Interaction with potential users through surveys, interviews and observations will allow you to gather valuable information about their needs, desires and problems.

Analysis of user data: The use of analytical tools will allow the collection and analysis of data about the behavior of users, which will help to understand their requirements and passions.

An example of a successful analysis of user needs is the company Airbnb, which, through market research and user observation, realized that people are looking for more than just accommodation, but unforgettable experiences and interaction with local residents. This has enabled them to create a unique travel platform that meets the needs of users and meets their requirements.

One of the effective approaches to the development of digital products is the use of design thinking. This approach is based on collaboration between designers, developers and marketing specialists to create products that meet the needs of users. Design thinking includes the following stages [52]:

Stage of observation and understanding. Thorough study of users and their needs, which allows you to understand their context and motivation.

The stage of problem definition. Articulating the problem that the digital product should solve.

Decision generation stage. A creative process during which various ideas and options for solving a problem are generated.

Prototyping stage. Creating digital product prototypes for testing and gathering feedback.

Testing and iteration stage: Testing prototypes with users, collecting feedback and making necessary changes to improve the product.

In addition to design thinking, there are other digital product development methods such as Agile and Lean. Agile allows you to develop a product through iterations and a pragmatic approach, allowing you to quickly respond to the ever-changing needs of users. Lean methodology is aimed at minimizing costs and optimizing the development process by using experiments and minimal functionality.

Testing and gathering feedback is an important part of digital product development. This allows you to get full feedback from users and identify possible problems and shortcomings of the product. Some examples of feedback collection tools [120]:

Analysis of product usage. The use of analytical tools, such as Google Analytics, allows you to obtain data about the behavior of users in the product, their interactions and the problems they face [19].

Testing with users. Organizing testing sessions with real users allows you to get direct feedback on the product, its functionality and user experience.

Surveys and questionnaires: Collecting user opinions and ratings through surveys and questionnaires helps to understand their satisfaction with the product and identify potential problems.

An example of effective implementation of testing and feedback collection is Dropbox, which uses early access to the product and active communication with users to improve its product and take into account their needs and suggestions.

We will describe in detail how these recommendations can help in practice in the development and improvement of digital products.

Analysis of user needs and requirements. By working with potential users and studying their needs, you can understand what functionality and product features are important to them. Based on the collected information, you can develop personas (images of typical users) and determine their priorities and goals, which will help focus on the most important aspects of the product.

Use of design thinking and other development methods. Applying design thinking allows you to create products that meet the needs and requirements of users. The stages of observation, problem definition, solution generation, prototyping and testing allow you to quickly respond to changes and improve the product.

Implementation of testing and feedback collection. Testing with real users allows you to get direct feedback on the product, identify its strengths and weaknesses and make the necessary changes. The use of analytical tools and surveys helps to collect data about product usage, user satisfaction and identify potential problems.

Continuous improvement and adaptation. Digital product development is an ongoing process. Taking into account the feedback received from users, you can make the necessary changes and improvements to the product, ensuring its development and compliance with market needs.

These guidelines for developing and improving digital products are used by many companies in various industries. Let's consider examples of several companies that use these recommendations and compare the results before and after their implementation.

Netflix.

Before: Before recommendations were implemented, Netflix users had a hard time finding the right content because the large selection of movies and TV shows was confusing.

After: Netflix implemented a system of personalized recommendations based on data analysis of views, likes and other user interactions. As a result, they were able to choose recommendations that better correspond to the tastes and interests of users.

Statistics: According to Netflix, more than 75% of the content that users watch is the result of personalized recommendations. This has led to an increase in the duration of use of the platform and an increase in the number of subscribers.

Amazon.

Before: In the past, it was difficult for Amazon users to find the products they needed due to the large assortment and distributed structure of the site.

After: The implementation of a recommendation system based on the analysis of data on purchases, views and other user interactions made it possible to make an individual selection of products and improve the user experience.

Stats: According to Amazon, over 35% of sales on their platform are the result of personalized recommendations, helping to increase conversions and the average purchase receipt.

YouTube.

To: Users have often faced the problem of finding the videos they are interested in due to the large amount of content and the distributed structure of the site.

After: Using recommendation algorithms based on analysis of views, likes, and other interactions helped suggest videos to users that match their interests and increase engagement.

Statistics: According to YouTube, more than 70% of video watch time on the platform is a result of recommendations, which shows their important role in attracting and retaining users.

Spotify.

Q: In the past, users had a hard time finding new music that matched their preferences.

After: With the introduction of recommendation algorithms, Spotify provides users with personalized recommendations of playlists and tracks based on their listening and preferences.

Statistics: According to Spotify, more than 60% of the tracks that users listen to are the result of personalized recommendations, which positively affects user satisfaction and engagement.

LinkedIn.

Q: In the past, it was difficult for LinkedIn users to find relevant contacts and career opportunities.

After: Implementation of recommendation algorithms helps users find relevant contacts, jobs and materials for career development.

Statistics: According to LinkedIn, users who use personalized recommendations are 2.6 times more likely to find new career opportunities.

These examples demonstrate how the implementation of recommendations has a positive impact on the results of companies, such as increased number of followers, increased duration of use of the platform, improved conversion and user engagement. However, a more detailed analysis of specific data and indicators of the implementation of recommendations requires additional research and access to internal information of companies.

In practice, a detailed analysis of users' needs and requirements helps to build a product that meets their expectations, which promotes satisfaction and loyalty. Using design thinking and other development methods provides a systematic and structured approach to product development, allowing you to focus on key elements and achieve better results. Implementing testing and collecting feedback allows you to identify potential problems and quickly respond to them, improving product quality and user experience.

Guidelines for the development and improvement of digital products help in practice to create products that meet the needs and requirements of users.

Analyzing needs, using design thinking, testing, and gathering feedback are important steps in product development to achieve success and user satisfaction. The practical application of these recommendations requires a systematic approach and continuous improvement of the product taking into account changes in the needs of the market and users.

Therefore, the development and improvement of digital products requires a systematic and focused approach. Analyzing user needs and requirements, using design thinking, implementing testing and gathering feedback are important steps in this process. It is important to remember that the development of digital products is an ongoing process, and requires constant improvement and adaptation to changes in user and market needs. Applying recommendations and best practices in digital product development will help achieve success and user satisfaction.

In today's digital world, where technological progress is changing rapidly, the implementation of digital platforms and products plays a key role in business. Successful implementation of digital projects requires effective project management that allows you to manage resources, time and quality, ensure collaboration between teams and achieve set goals.

The development of digital platforms and products is a complex process that requires a systematic and structured approach. Project management provides the necessary framework to manage all stages of digital project development. Several project management methodologies that can be applied to the implementation of digital platforms and products include [52]:

Agile (Flexible) approach. Agile methodology provides an opportunity to quickly adapt to changing requirements and introduce new functionality in the development process. Scrum, Kanban, and Lean are popular Agile approaches to effectively manage digital projects.

Waterfall (Cascade) approach. Waterfall methodology is based on the sequential execution of development stages, including analysis, design, implementation and testing. This approach can be useful for projects with clear requirements and defined boundaries.

Hybrid (Mixed) approach. Hybrid methodology combines elements of Agile and Waterfall to take advantage of both approaches. This approach allows the team to quickly respond to changes while providing structure and control.

Examples of digital platforms and products include:

Amazon Web Services (AWS). AWS is a cloud platform that provides a wide range of services such as computing, storage and analytics. An AWS implementation may require the use of an Agile methodology to rapidly deploy and change infrastructure.

Google Analytics: Google Analytics is a digital analytics platform that allows web owners to analyze and measure the performance of their websites and marketing campaigns. Project management can be used to implement new features and ensure the smooth operation of the platform.

Risk management is a necessary component of the successful implementation of digital platforms and products. Risks can arise at various stages of a project, including planning, development and implementation. Detailed risk management allows you to reduce the probability of negative consequences and minimize the impact of risks on the project.

One approach to risk management is to conduct a thorough risk analysis at the initial stages of the project. For this, methods such as SWOT analysis (analysis of strengths and weaknesses, opportunities and threats) and scenario planning can be used.

To demonstrate the impact of risk management, consider the following examples of digital platforms and products:

Facebook. When implementing new features on the Facebook platform, such as augmented reality or new privacy features, risk management can play an important role in ensuring the safety and quality of the product.

Uber. When expanding into new markets and introducing new features, such as Uber Eats, risk management is necessary to ensure the smooth functioning of the platform and the protection of user data.

Team organization and effective communication are critical factors in implementing digital platforms and products. The team should consist of various specialists, such as a project manager, developers, testers, designers, and marketing specialists.

The organization of the team can be presented in the form of a matrix structure, where each specialist has his own correspondence and responsibilities. In addition, Agile techniques such as Scrum can be used, where the team is divided into small self-organized groups that work on specific tasks.

Regarding communication, it is necessary to establish effective channels of communication between team members. This can be done through project management using specialized collaboration tools such as Asana, Trello or Slack. It is important to hold regular team meetings, update all process participants on the current status of the project and discuss possible problems and challenges [52].

In this scheme, the project manager is the primary project manager and interacts with various specialists depending on their responsibilities and project stages. Through effective communication and the use of specialized collaboration tools, the team can ensure the successful implementation of digital platforms and products.

Therefore, project management plays a crucial role in the implementation of digital platforms and products, enabling the achievement of project objectives and ensuring the successful completion of the project within the defined constraints. Applying appropriate project management methodologies, such as Agile, Waterfall or Hybrid, depending on the needs of the project, allows for effective planning, execution and control of work on digital platforms and products.

Risk management is an integral part of the successful implementation of digital platforms and products. Identifying, analyzing and managing risks allows you to prevent possible problems, reduce their impact on the project and ensure stable and uninterrupted operation of the platform or product. Proper risk management can help ensure quality, security, and timely adoption of digital platforms and products.

Team organization and effective communication play a key role in implementing digital platforms and products. Creating a balanced team with different specialists and effective interaction between them helps to ensure the successful implementation of the project. The use of specialized collaboration tools and regular team meetings help improve communication and help achieve goals.

In general, project management in the implementation of digital platforms and products is a necessary element for achieving success in the digital environment. Effective project management allows you to ensure high quality, efficiency and timeliness of the implementation of digital platforms and products, which are key factors for gaining a competitive advantage and meeting the needs of users.

3 TRANSPARENCY OF FINANCIAL RELATIONS AS A TOOL FOR ENSURING THE EFFICIENT OPERATION OF ENTERPRISES

3.1 Transparency as a necessary prerequisite for the effective operation of the enterprise

Growing competition in markets, changes in legislation, risks and uncertainties associated with globalization and economic instability make transparency one of the key components of successful economic activity. Insufficient transparency can cause a decrease in trust in the enterprise, reduce the attraction of investment and lead to possible legal problems. At the same time, ensuring openness, accessibility and comprehensibility of information about the company's activities, financial condition and other aspects of its functioning can become a factor in increasing its attractiveness for investors and customers. In this context, transparency is the main success factor capable of turning an organization into a confident leader in its field. The huge volume of available information, rapid technological changes and growing consumer awareness challenge businesses to ensure a high level of transparency.

Both foreign and domestic scientists paid attention to the study of the issue of transparency, in particular, Derii Zh.V., Zavhorodnia N.V., Halina V.Yu., Sirovatskyi O.A., Lyakhovich O.O., Skakovska S.S., Krechko M. Yu. and other. At the same time, dynamic changes in financial ecosystems require additional research in the field of transparency implementation.

The concept of transparency is very relevant in today's world. It reflects the degree of transparency and availability of information about the activities of a certain organization, company, government or other institution.

Transparency in the financial activities of an enterprise means that its financial information is available and understandable to all interested parties, such as investors, partners, customers, employees, regulatory authorities and the public in general. Such availability of information contributes to openness and transparency in the company's activities, the trust of consumers and other interested parties, and also contributes to the resolution of possible conflicts.

In order to fully consider the essence and role of transparency, it is necessary to pay attention to the concept of "transparency" (Table 1.1). As a result of the use of various theoretical and methodological approaches to its research, the essence and meaning of the term "transparency" in the scientific literature is interpreted quite widely and in different ways.

Table 13. Approaches to defining the essence of the concept of "transparency" (compiled by the author)

Author	Definition
Derii Zh.V., Zavhorodnia N.V. [33, p.264].	"Transparency - information transparency or glasnost, publicity of the environment in which the subject is located and provides all interested parties with the information they need to make rational decisions in an open, complete and understandable form"
Kuzina R.V. [72, p.93]	"Transparency is the degree to which investors have free access to any necessary financial information about companies, such as price levels, market depths, and the degree of exposure of financial statements."
Halina V.Yu., Sirovatskyi O.A. [56]	Transparency is a social phenomenon, which, on the one hand, is a functional phenomenon that contributes to the optimization of regulatory processes in society, and, on the other hand, a tool for forming the reputational components of a business entity, a determinant of establishing trusting relations with its stakeholders and improving its own image and , as a result, strengthening of competitive advantages.
Lyakhovich O.O., S.S. Skakovska, Krechko M.Yu. [83]	Transparency is the level of openness of the enterprise, which includes reliable, accessible and unbiased information about its activities. The transparent activity of the enterprise should be understood as the disclosure in public access of reliable information and explanations regarding the objective representation of the financial and non-financial indicators of the enterprise.

Transparency is a quality that allows a public organization, company, government institution or other structure to be transparent and open in its actions and decisions.

Based on the above approaches to the study of the term transparency, it is possible to single out a number of features that are inherent in this category and are its integral components. They include:

- completeness of information. Indicates that the information must contain all the facts, data, details, and other necessary information needed to investigate, understand, and solve the problem or task. Maintaining the completeness of information is important for businesses, institutions and organizations, because its insufficient completeness can lead to incorrect decision-making, incomplete understanding of the situation or even serious mistakes;

- the priority of transparency over closedness. Openness and transparency are more valuable than secrecy and limited access to information. In today's world, where information is an important resource, transparency is a priority because it promotes the development of trust between people, institutions and

states. Thanks to transparency, it is possible to verify actions and make objective decisions, which in turn helps to reduce corruption, because it is possible to monitor how the public budget and other resources are used. On the other hand, limited or closed information can cause mistrust and suspicion, which can affect the efficiency and reputation of institutions or the state;

- timeliness of receiving information. Receiving information in a timely manner can help reduce risks, ensure more constructive decisions and increase operational efficiency;

- an integral relationship between transparency and the rule of law. Transparency and the rule of law are integral components of a healthy and democratic society, which ensures the development of trust between the authorities and citizens, because if the authorities act without ensuring the publicity of their decisions, then there is no way to check whether the laws are followed and whether there is the rule of law, which should ensure equality of all before the law;

- integrity of information. Data or information must be stored, transmitted and processed in a secure and secure manner that will ensure its accuracy and integrity. The integrity of information can be compromised due to various factors: errors in data processing, hardware failure, malicious programs and viruses, and other malicious activities. Maintaining the integrity of information is an important task for many organizations and companies, because integrity violations can lead to data loss, privacy violations, leakage of important information, and other serious consequences;

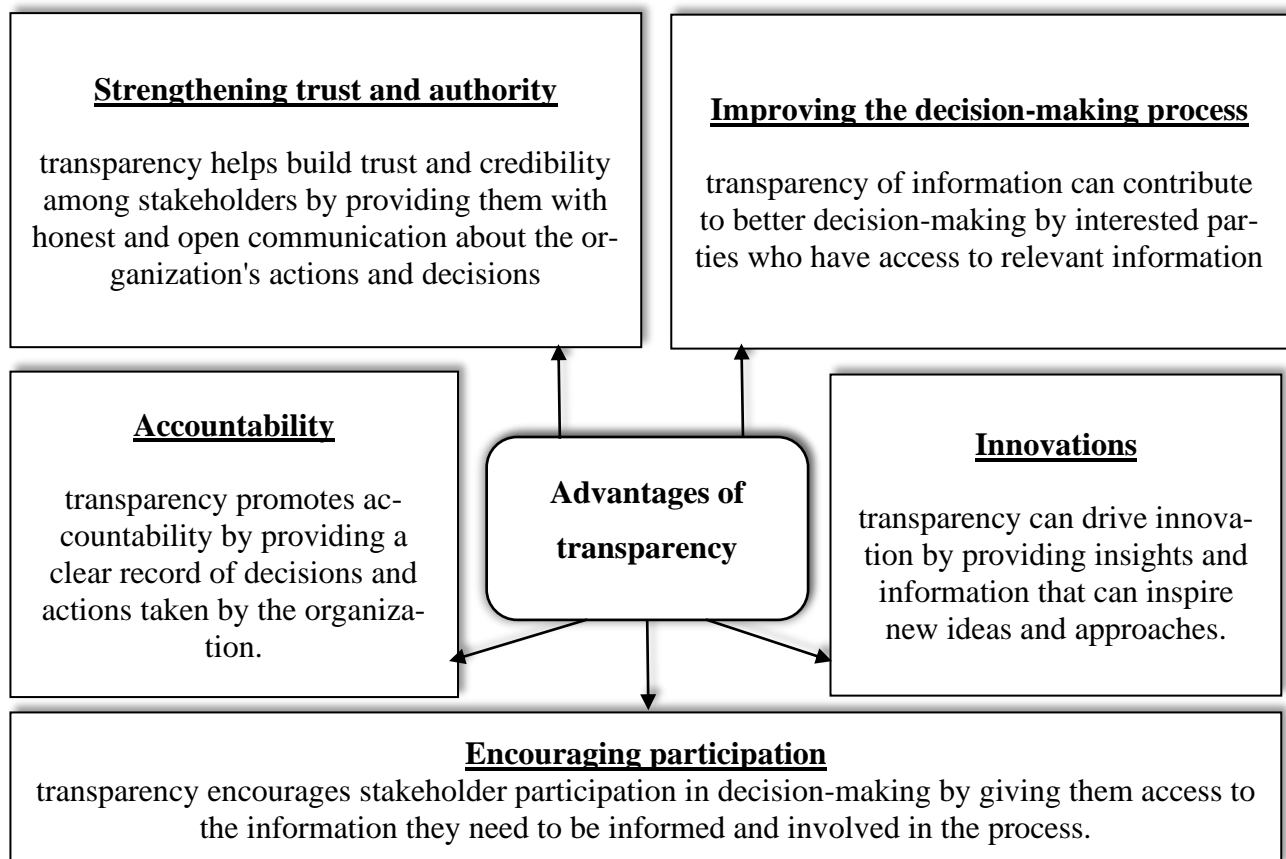
- a real opportunity for citizens to influence this or that decision. Transparency can increase the level of influence of citizens on the decisions of executive authorities, enterprises or organizations. Citizens who have access to information about the company's activities can be more conscious consumers, address the management with requests, proposals and complaints, as well as participate in public discussions and influence decision-making [33; 94; 131; 15].

It is important to consider the advantages of transparency for the enterprise (Figure 9), which will help to understand why it is necessary and useful and how it can help to achieve success in the long term.

Transparency involves the availability of information about the actions of authorities and other institutions, decision-making processes and the use of resources. This means that citizens have the right to information about how the government and enterprises function, what decisions they make and how they use financial resources.

Despite the fact that transparency has many advantages, it can also carry certain risks. Here are some possible ones.

- the risk of data distortion: if the published information is not complete and accurate, it may lead to data distortion and a decrease in trust in the company or organization;
- the risk of misuse of information: if access to information is not properly regulated, there is a risk that this information may be used by unscrupulous persons for their own beneficial purposes or illegal actions;
- the risk of insufficient confidentiality: too high a level of transparency may lead to the fact that companies or organizations cannot protect important information about their activities from disclosure;
- increased security risks: if excessive transparency is ensured by placing data on the Internet, this may increase security risks, such as hacker attacks or viruses;
- information overload: too much information can be overwhelming and overwhelming for stakeholders, leading to confusion and inaction;
- competitive disadvantage: the disclosure of certain information can put the organization in a competitive disadvantage if its competitors do not disclose the same information [72; 107; 11; 57].



Source: compiled by the authors on the basis [18, 56, 26]

Figure 9. Advantages of transparency

Therefore, transparency can help reduce risks, but it depends on what data companies publish and how accessible this information is to stakeholders. In most cases, transparency is important and necessary for a democratic society and effective governance. It is important to balance transparency with other values, such as privacy and security, to preserve good governance and protect rights.

In recent years, there has been a tendency to shift emphasis in the economy towards complete informational openness. Managers' awareness of the need for business transparency forces them to look for ways to quantitatively and qualitatively improve the disclosure of reporting information.

Information transparency means timely provision of access to reliable information, which plays an important role for investors, shareholders, customers and the state in order to obtain a comprehensive picture of the company through the preparation, verification and disclosure of information on the ownership structure, financial and economic activities, composition of the board of directors, committee and management, as well as changes that are of particular importance to shareholders and regulatory bodies based on legislative norms [12].

Transparency involves the degree to which investors have access to necessary financial information about a company, such as price levels, market depth, and audited financial statements. Transparency helps reduce uncertainty and volatility in share prices, as all market participants can make important decisions based on the same data. Investors analyze a company's financial statements to determine whether the stock is worth buying. The more enterprises clarify the sources of income of financial resources and where exactly they spend them, the more confident investors can be about their fundamental indicators [25].

The enterprise must also ensure transparency of management and corporate governance. This means that investors should have the opportunity to familiarize themselves with the management structure, company policies, shareholder rights and other important aspects related to the management of the enterprise.

Effective enterprise management contributes to the development of innovations and increasing the company's competitiveness on the market. Companies that effectively use their resources and implement the latest technologies can respond more quickly to changes in market conditions and be more successful in competition with other enterprises. Effective corporate governance can have a positive impact on relationships with customers, employees, and other stakeholders. Companies that adhere to high management standards and ensure the quality of their products and services can attract new customers and retain existing ones, as well as attract and retain talented employees [90; 14].

Transparency can help reduce risks by providing greater clarity and availability of information about the risks associated with the company's activities. For example, if a company publishes information about the risks associated with its products or services, this can help buyers and investors to understand the risks and make a more informed decision about whether they want to continue working with the company, so transparency facilitates analysis and thus thus, reduces the risk during investment [74].

Conversely, less information means less certainty for investors. When financial statements are opaque, investors can never be sure of a company's true performance and real risk. A lack of transparency can also hide a company's level of debt. If a company hides its debt, investors cannot assess the risk of bankruptcy.

However, in modern conditions, the company must be able to find a balance between which information can be made freely available and which should be hidden, because the potential competitive weakness of the company is at the same time the main benefit for all organizations that receive this information [62].

The conducted SWOT analysis (Fig. 1 0) will provide an opportunity to assess the strengths and weaknesses of transparency, as well as to determine the opportunities and threats of its implementation.

In general, transparency is an important aspect of managing any business, regardless of its size or ownership. However, there are certain features of transparency for individual entrepreneurs that need to be taken into account when developing a business strategy and management approaches.

For individual entrepreneurs, especially those running small businesses, transparency can be more personal and mutual, where interactions with customers and employees based on mutually beneficial agreements and trust are important.

Transparency can also help individual entrepreneurs to be competitive in the market. When customers have more complete information about the activities of a natural person-entrepreneur, they may be more inclined to cooperate with him, which can lead to increased sales and increased income [13; 40].

Large enterprises have a much larger volume of transactions and have a more complex structure, which can lead to difficulties in accounting and reporting. At the same time, sole traders typically have a smaller volume of operations and a smaller number of employees, so it may be easier for them to ensure high transparency.

<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> - requirements for transparency reduce the risks of violation of legislation and other rules, which helps to increase the trust and loyalty of interested parties; - the enterprise has a well-developed internal control and audit system; - a more open and transparent enterprise can attract more investors and customers, which contributes to its attractiveness and competitiveness. 	<p style="text-align: center;">Weak sides</p> <ul style="list-style-type: none"> - lack of transparency policy or its lack of clarity; - an insufficiently effective control system for compliance with the transparency policy; - the risk of leakage of confidential information and data, which may lead to violation of rights and lead to loss of trust and deterioration of the company's image.
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> - meeting the requirements for transparency can help the enterprise attract more investors and customers, which can positively affect the financial indicators of business activity; - the development and implementation of a transparency policy can contribute to the development of long-term relations with partners and other interested parties. 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> - non-fulfillment of transparency requirements may lead to the risk of violation of legislation and regulations, which may have a negative impact on the company's financial indicators and image; - the risk of conflict with stakeholders who have certain expectations regarding the transparency of the enterprise.

Source: compiled by the authors on the basis [33; 94; 15; 104; 137]

Figure 10. SWOT analysis of transparency for the enterprise

However, unlike large enterprises, individual entrepreneurs may have fewer resources and opportunities to ensure full transparency in all aspects of their activities. Therefore, they can focus on ensuring transparency in those aspects that are most important for their business and customers [103; 35].

Individual entrepreneurs can use various means to ensure transparency, such as openness in documentation and reporting, availability for communication with clients and employees, regularity of meetings and presentations on the state of the business. Also, individual entrepreneurs can use Internet technologies, such as blogs, video blogs, and social media, to communicate with their customers and provide information about their activities [9786].

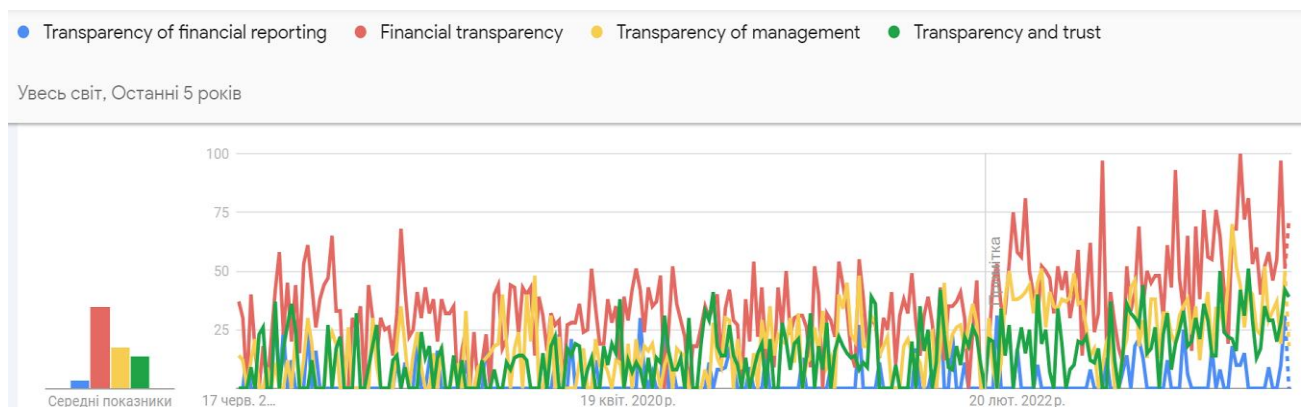
Ultimately, transparency is an important component of successful business management for individual entrepreneurs. Although this may be less formal than in larger enterprises, standards and principles of transparency must be adhered to in order to ensure the trust and sustainability of the business in the long term.

In general, introducing transparency into the company's operations can increase investor confidence, reduce risks and provide more efficient access to

capital. Transparency is an important component of an enterprise's investment attractiveness. The more transparent and accessible the enterprise is to investors, the more likely they will be interested in its financial activities and be ready to invest their funds in it.

In today's world, where businesses face a variety of challenges, the importance of transparency in management and financial reporting is increasing. This prompts a study of the popularity and trends associated with such keywords as "Transparency of financial reporting", "Financial transparency", "Transparency of management" and "Transparency and trust" (Fig. 11) . Analyzing Google Trends for these keywords provides a deeper understanding of the importance of transparency in today's business environment. This analysis shows the growing interest of Google users in the topic of transparency and trust in the context of governance and financial reporting.

In recent years, there has been a steady increase in the popularity of requests for these keywords, reflecting the relevance and importance of transparency in organizations and financial processes. The steady growth in popularity shows that transparency is becoming an increasingly important aspect of modern business.



Source: compiled by the authors

Figure 11. Dynamics of the popularity of transparency and trust in the business environment based on Google Trends data

Organizations and enterprises realize that transparency in management and financial reporting is a key factor for success and sustainability. At the same time, the public is actively interested in these issues, as more transparent enterprise management and open financial reporting contribute to strengthening trust and understanding of enterprise activities.

"Financial transparency" is a broad topic that covers the issue of transparency in financial transactions, data and processes. This term has the highest

level of interest, which indicates the need to understand and ensure openness in the management of financial resources. This may include public availability of financial data, financial audit processes, compliance with reporting standards, and other mechanisms that promote transparency in the financial industry.

The term "Transparency of financial reporting" arouses considerable interest, which indicates the importance of accuracy, reliability and accessibility of financial reporting for investors, shareholders and other interested parties . The high level of interest in this topic emphasizes the need to improve financial reporting standards and strengthen transparency in this area.

The term "Transparency of management" also has a high level of interest. This indicates a search for information and best practices regarding transparent management in organizations. Interest in this topic may be related to issues of corporate culture, openness in the decision-making process, and ethical leadership.

"Transparency and trust" takes on great importance, since transparency has a direct relationship with the creation of trust. The growing interest in this aspect indicates the need to strengthen the interaction between transparency and trust in the business environment, as well as their impact on the sustainability, stability and success of enterprises.

Google Trends analysis shows that these topics are relevant and can interest a wide audience. The growing interest in the transparency of management and financial reporting may indicate changes in the relationship between enterprises and their stakeholders, as well as increasing demands for transparency and an ethical approach to business.

3.2 Information and digital possibilities for assessing the transparency of enterprises

The assessment of the transparency of enterprises is an important tool for ensuring stability and trust in the economic system and contributes to increasing the investment attractiveness of a particular enterprise. Transparency of enterprises means that they publish open and clear information about their activities, financial condition and management.

Research methods may include assessing the company's level of openness regarding reporting, transparency of corporate governance, compliance with the principles of social responsibility and sustainable development, as well as the level of interaction with stakeholders.

ESG Transparency Index 2020 is an important method for assessing the level of transparency of Ukrainian companies. The index evaluates the transparency of enterprises according to the criteria of environmental, social and managerial responsibility, which are important for assessing the sustainability of companies and attractiveness for investors. Within this index, the 50 largest taxpayers in Ukraine were evaluated [42]. In Figure 12, we will consider in more detail the results of the study of the ESG Transparency Index of Ukrainian companies.

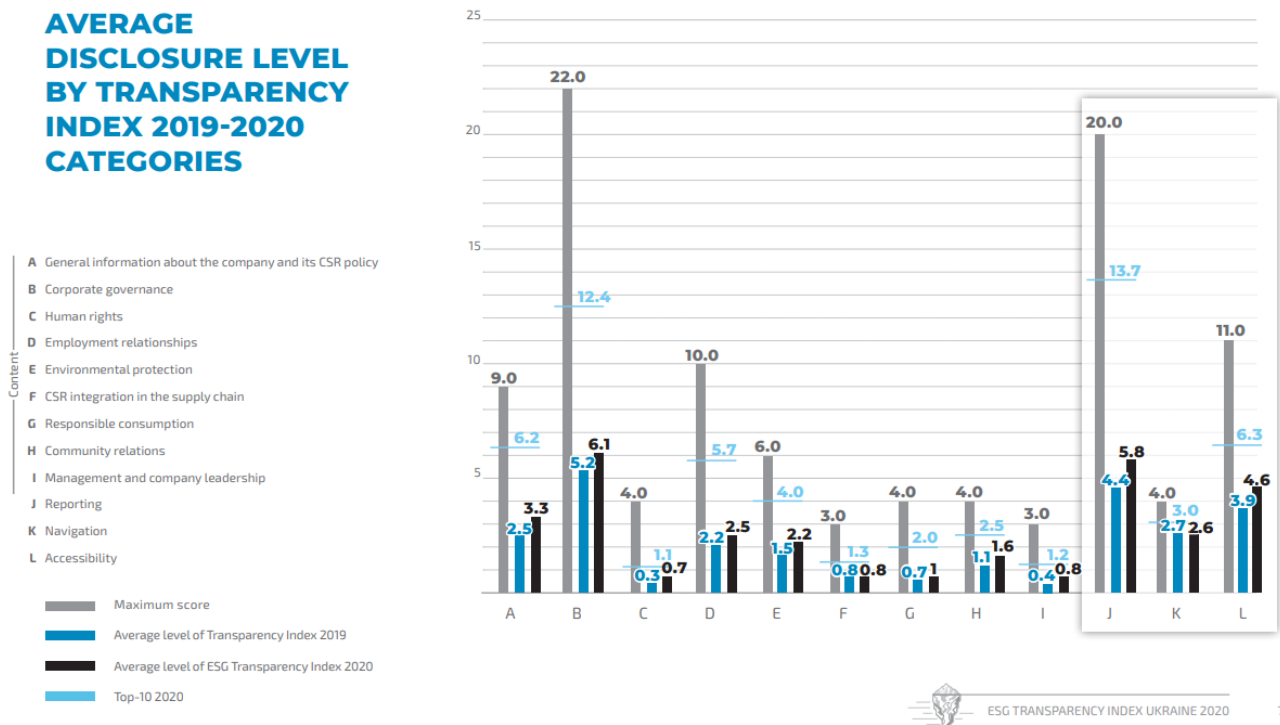


Figure 12. The average level of information disclosure by category of the 2019-2020 ESG Transparency Index [42]

The transparency index of enterprises is an indicator that reflects the level of availability and quality of information provided by enterprises about their activities and management.

According to the results of the analysis of the ESG Index, the average level of transparency for the component "General information about the company and CSR policy" increased from 2.5 points in 2019 to 3.3 in 2020, i.e. by 32% more, while the maximum value is 9 points.

According to the "Corporate governance" component, the value of the Index increased by 0.9 points in 2020 compared to 2019, but despite the growth, the indicator remains at a low level, the maximum value for this component is 22 points. Companies usually publish information about their governing bodies

on their websites, sometimes provide information about the functional responsibilities of their governing bodies, but are reluctant to disclose their policies on salaries, remuneration and bonuses for management and supervisory bodies.

An insignificant increase in the Transparency Index is observed for the "Human Rights" component from 0.3 points in 2019 to 0.7 in 2020, i.e. by 0.4 points more. Businesses often provide information on human rights in their non-financial reports or Codes of Ethics, considering ways in which people with special needs can be employed.

The maximum value of the Transparency ESG Index for the Labor Relations component is 10 points, while the average level increased by 0.3 points in 2020 compared to 2019. Most companies disclose their HR and health and safety practices in non-financial or management reports. The reports also contain information on the results of the implementation of these practices. Among the most common practices are training programs, programs for leadership development, career development, programs for the development of soft skills of employees, health insurance for employees and their mandatory medical examination, etc. [7441].

According to the "Environmental protection" component, the average level of transparency increased from 1.5 points in 2019 to 2.2 in 2020, i.e. by 47% more. Information on environmental policy is displayed according to the following criteria: atmospheric emissions, water resources, waste, energy efficiency level, presence of "green offices" and support for eco-volunteering.

The average level of transparency for the component "Implementation of CSR in the supply chain" remained unchanged in the period 2019-2020, the maximum value is 3 points. According to the component "Responsible consumption", the average level of transparency increased from 0.7 points in 2019 to 1 point in 2020, i.e. 43% more, while the maximum value is 4 points for all enterprises.

An increase in the average level of transparency by 0.5 points in 2020 is observed in the Community Relations component, the maximum value in 2020 is 4 points. Most companies that have production units in certain communities actively implement and support social projects in these same communities. Usually, companies provide information about their social projects, which include educational initiatives for youth and entrepreneurs, development of charity, local infrastructure, assistance to hospitals and medical workers [41].

According to the "Leadership of management and companies" component, the average level of transparency during the analyzed period increased by 0.4 points, while the maximum value of the ESG Index is 3 points. The component indicating the personal involvement of the company's top management

in public activity remains too low, most company managers do not express their positions on issues that are important to society [42].

The average level of transparency under the "Reporting" component increased from 4.4 points in 2019 to 5.8 in 2020, i.e. by 32% more, the maximum value of the Transparency Index for all enterprises is 20 points. The Navigation component shows a negative trend, with the average level of transparency decreasing by 0.1 points in 2020 compared to 2019, while the maximum value of the ESG Index is 4 points. The average level of transparency of the Index under the "Accessibility" component has a growing tendency, so in 2019 the value of the indicator was 3.9 points, and in 2020 – 4.6 points, i.e. 18% more, while the maximum value of transparency across all enterprises is 11 points. Corporate websites that are easy to navigate and provide accessible information empower stakeholders to deepen their understanding of the company's corporate governance and social responsibility.

Based on the conducted research and analysis of all components of the ESG Index, it is worth noting that Ukrainian companies are gradually increasing the level of transparency. Thus, the average level of transparency in 2020 was 32%, which is 6.5% more than in 2019.

Companies from the financial sphere, transportation and electricity supply, pharmaceuticals, and metallurgical production have the highest level of information disclosure among all companies (Fig. 13). The leader of this rating is VF Ukraine PrJSC with a transparency level of 62.5 points.

Assessing the level of transparency of enterprises by type of activity makes it possible to determine in which industries the most attention is paid to transparency and openness of data (Table 14). The highest level of transparency is observed for such activity as "Activity of main departments", namely 59.2 points. The leader of the Index for this type of information disclosure is DTEK Group. Next in the rating is a company in the field of financial services with a score of 48.6. JSC "UKRGASBANK" is a leader in this field. "Supply of electricity, gas, steam and air conditioning" ranks third in the rating with a transparency level of 42.3 points. The leading companies of the Transparency Index are SE "NAEK Energoatom" and PrJSC "Ukrhydroenergo". According to the type of activity "Telecommunications", PJSC "VF Ukraine" has the highest level of transparency, the average level of transparency is 41.6 points. The lowest level of transparency falls on the IT sector - 19.5 points and retail trade - 19.4 points.

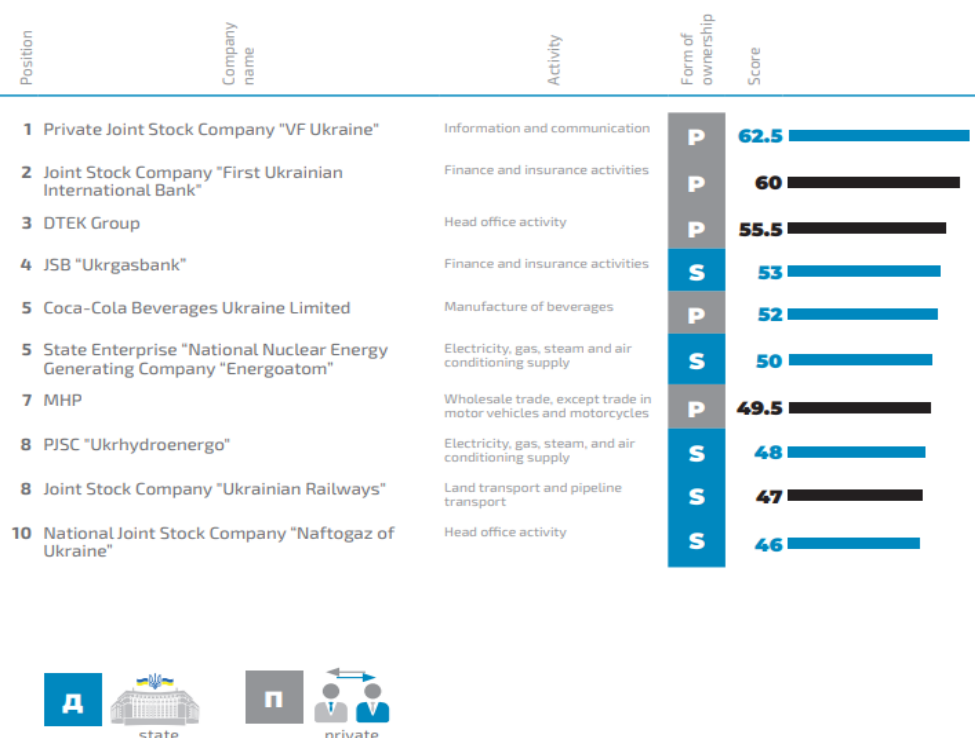


Figure 13. Results of the ESG Transparency Index of TOP-10 companies [42]

Table 14. The level of transparency of companies by type of activity [42]

Activity	The level of transparency of companies	A leading company Transparency index
Activities of the main departments	59.2	DTEK Group
Provision of financial services	48.6	AB "UKRGASBANK"
Supply of electricity, gas, steam and air conditioning	42.3	SE "NAEK "Energoatom" PJSC "Ukrhydroenergo"
Telecommunications	41.6	PJSC "VF Ukraine"
Transport, warehousing, postal and courier delivery	36.4	JSC "Ukrzaliznytsia"
Production of beverages	31.7	SP "Coca-Cola Beverages Ukraine Limited"
Wholesale trade, except trade in motor vehicles and motorcycles	27.3	MHP
Extraction of metal ores	25.7	PJSC "Poltava Mining and Processing Plant"
Extraction of crude oil and natural gas	24.2	JSC "Ukrgezvydobuvannya"
Production of tobacco products	21.2	JSC "Imperial Tobacco Production of Ukraine"
IT	19.5	IT-Integrator LLC
Retail	19.4	Auchan Retail Ukraine
Others	26.8	Farmak JSC

In Ukraine, in recent years, companies have become more aware of the need to implement ESG policies. In particular, many companies have realized that ESG initiatives can not only reduce their negative impact on the environment and society, but also have a positive impact on business, attract new investors, and improve their image, because The ESG index helps investors and consumers evaluate social responsibility, environmental friendliness and corporate culture of enterprises [61].

The transparency index of enterprises can be developed at the level of individual enterprises or for a group of companies in a certain industry. The development of such an index may require certain expertise and access to information about the activities of enterprises.

The enterprise transparency index can be used as a tool for assessing investment risks, making decisions about cooperation with partners and suppliers, and also for increasing the trust of consumers and other interested parties in the enterprise's activities.

Within the framework of the initiative for transparency and the introduction of anti-corruption measures in state-owned enterprises and local self-government bodies in Ukraine, the rating "Financial stability of state-owned enterprises in Ukraine" was created, which aims to improve the efficiency of management of state-owned enterprises [92].

The transparency of the financial indicators of the fifty largest state-owned enterprises of Ukraine is evaluated in six key areas of their activity, which are listed in Table 15.

Table 15. Spheres of transparency and weighting values for forming a rating of enterprises [92]

Sphere of transparency	Value, %
1. Transparency and access to information	30
2. Economic indicators	20
3. Public procurement and ownership	20
4. Personnel policy	10
5. Ethics and conflict of interests	10
6. Grants and charity policy	10

Data for the formation of the transparency rating is collected by means of requests for public information of the selected companies and from their official websites.

The overall rating can range from 0%, which is the worst result, to 100%, which is the best result. The scale for evaluating the transparency of state-owned enterprises is shown in Table 16.

Table 16. Transparency evaluation scale of state enterprises [92]

A+	80-100	WITH-	40-44
AND	75-79	D+	35-39
AND-	70-74	D	30-34
B+	65-69	D-	25-29
IN	60-64	E+	20-24
IN-	55-59	E	15-19
C+	50-54	E-	10-14
WITH	45-49	F	0-9

For a more detailed introduction to the given methodology for assessing the transparency of state-owned enterprises, consider Figure 14.































Позиція	Назва	Рейтинг ▼	Загальна прозорість	I. Прозорість та доступ до інформації	II. Економічні показники	III. Державні закупівлі та власність	IV. Кадрова політика	V. Етика та конфлікт інтересів	VI. Гранти та благодійна політика
1.	 ДП Національна енергетична компанія "Укренерго"		82 %	68 %	95 %	100 %	87 %	100 %	38 %
2.	 ПАТ "Укрпошта"		78 %	86 %	72 %	90 %	80 %	93 %	23 %
3.	 ДП "Адміністрація морських портів України"		74 %	79 %	78 %	83 %	70 %	100 %	12 %
4.	 ПАТ "Укрзалізниця" (консолідований)		72 %	59 %	98 %	87 %	67 %	88 %	23 %
5.	 ПрАТ "Укргідроенерго"		72 %	76 %	95 %	50 %	83 %	95 %	23 %
6.	 Публічне акціонерне товариство "Національна акціонерна..."		69 %	66 %	88 %	33 %	83 %	88 %	77 %
7.	 ДП Національна атомна енергогенеруюча компанія...		66 %	63 %	100 %	40 %	73 %	95 %	23 %
8.	 Державне спеціалізоване підприємство "Чорнобильська..."		64 %	59 %	79 %	67 %	60 %	83 %	23 %
9.	 АКЦІОНЕРНА КОМПАНІЯ "ХАРКІВБЛЕНЕРГО"		63 %	61 %	89 %	33 %	70 %	82 %	50 %
10.	 Маріупольський МТП		63 %	77 %	86 %	40 %	40 %	83 %	23 %
11.	 Южний МТП		62 %	67 %	91 %	40 %	47 %	90 %	23 %
12.	 ПАТ "ОДЕСЬКИЙ ПРИПОРТОВИЙ ЗАВОД"		61 %	60 %	87 %	60 %	80 %	30 %	23 %
13.	 ПУБЛІЧНЕ АКЦІОНЕРНЕ ТОВАРИСТВО...		60 %	70 %	75 %	40 %	60 %	78 %	23 %
14.	 ПАТ "ЗАПОРІЖЖЯБЛЕНЕРГО"		59 %	61 %	82 %	53 %	53 %	85 %	0 %
15.	 Державна іпотечна установа		59 %	54 %	78 %	40 %	57 %	83 %	50 %

Figure 14. Transparency rating of state enterprises for 2021 [111]

As of 2023, due to COVID-19 and the state of war in Ukraine, data on new studies was not published, so we will analyze the results of the ranking as of 2019 and 2021.

In 2021, the best position in this rating was taken by the State-Owned State Energy Company "Ukrenergo" with the result of overall transparency - 82%, while the average value for all state enterprises is - 49%. In the categories "Government Procurement and Property" and "Ethics and Conflict of Interest", the company received the highest results of 100%. Transparency of such information means providing access to information about the procurement process,

including requirements for goods and services, evaluation of proposals, awarding of contracts and cost. This helps to ensure competition among suppliers and prevent corruption. In addition, transparency is important to ensure the effectiveness of spending public funds and protect the interests of the public. Ethical transparency indicates that a company adheres to high standards of conduct and discloses its actions and decisions. This helps the enterprise to maintain the trust of customers, partners and the public, thus maintaining the investment attractiveness of its enterprise [95].

It should be noted that the state enterprise NEC "Ukrenergo" needs to pay attention to increasing the level of transparency in the field of "Grants and charity policy", because this will allow the public and potential sponsors to trust the enterprise and have confidence that the funds will be used effectively and in accordance with the purpose. Also, the transparency of grants contributes to ensuring a fair and transparent process of distribution of financial resources.

Today, there is a general tendency to increase the level of transparency in the activities of enterprises. This can be confirmed by performing a comparative analysis of the transparency rating for 2021 with the 2019 rating (Fig. 15).































Позиція	Назва	Рейтинг ▼	Загальна прозорість	I. Прозорість та доступ до інформації	II. Економічні показники	III. Державні закупівлі та власність	IV. Кадрова політика	V. Етика та конфлікт інтересів	VI. Гранти та благодійна політика
1.	 ДП Національна атомна енергогенеруюча компанія...		55 %	56 %	85 %	27 %	43 %	95 %	23 %
2.	 ПАТ "Укзалізіція" (консолідований)		53 %	47 %	60 %	53 %	53 %	82 %	23 %
3.	 ДП "Украерорух"		51 %	46 %	64 %	40 %	40 %	77 %	50 %
4.	 ПАТ "ОДЕСЬКИЙ ПРИПОРТОВИЙ ЗАВОД"		50 %	48 %	73 %	60 %	53 %	30 %	12 %
5.	 ПАТ "ЦЕНТРЕНЕРГО"		50 %	58 %	47 %	40 %	67 %	60 %	23 %
6.	 Державне підприємство Поліграфічний комбінат...		50 %	51 %	49 %	40 %	73 %	67 %	23 %
6.	 ПУБЛІЧНЕ АКЦІОНЕРНЕ ТОВАРИСТВО...		50 %	57 %	63 %	27 %	60 %	85 %	0 %
8.	 Публічне акціонерне товариство "Державна акціонерна компані..."		49 %	31 %	81 %	47 %	50 %	82 %	12 %
9.	 АКЦІОНЕРНА КОМПАНІЯ "ХАРКІВБЛЕНЕРГО"		49 %	44 %	81 %	7 %	50 %	82 %	50 %
9.	 ДП "Адміністрація морських портів України"		49 %	50 %	38 %	53 %	57 %	100 %	0 %
11.	 Публічне акціонерне товариство Національна акціонерна...		48 %	58 %	77 %	27 %	50 %	45 %	0 %
12.	 ПАТ "Укрпошта"		47 %	53 %	47 %	40 %	67 %	65 %	0 %
13.	 ПАТ "ТУРБОАТОМ"		46 %	57 %	52 %	27 %	63 %	65 %	0 %
14.	 Державна іпотечна установа		43 %	53 %	75 %	13 %	47 %	13 %	35 %
15.	 ПрАТ "Укргідроенерго"		42 %	53 %	57 %	13 %	50 %	73 %	0 %

Figure 15. Transparency rating of state enterprises for 2019 [111]

The conducted analysis makes it possible to establish that the highest position in this rating was taken by SE "NAEK "Energoatom" with a total transparency score of 55% on the B- rating scale. The company received the highest score of 95% in the field of "Ethics and Conflict of Interest", and the lowest - 23% in the field of "Grants and Charitable Organizations". Despite the loss of the leading position in the 2021 rating, Energoatom improved its transparency results to 66%, which indicates that the company is paying attention to increasing the transparency level.

It is worth noting that NEC "Ukrenergo", which in 2021 had the highest level of transparency (82%) on the A+ rating scale, among all analyzed companies in 2019, ranked only 20th in the transparency rating with an overall result of 39% (D+). This indicates that the company paid attention to the transparency of its activities and took the necessary measures to implement it.

A general analysis of the rating "Transparency and Financial Stability of State Enterprises in Ukraine" allows to assess the efficiency of enterprise management and their role in the country's economy. It is an important tool for decision-making regarding the support of state-owned enterprises, as well as the development and implementation of policies for their development.

The development of transparency of enterprises in Ukraine can have a significant impact on the country's economy, help improve the investment climate and increase competitiveness.

One of the first steps in this direction is the creation of open databases on the activities of enterprises, such as registers, which will store data on financial status, tax obligations and other important indicators. This will make it possible to avoid fictitious and dishonest enterprises, which in turn will have a positive effect on the fight against corruption and increasing trust in business [65].

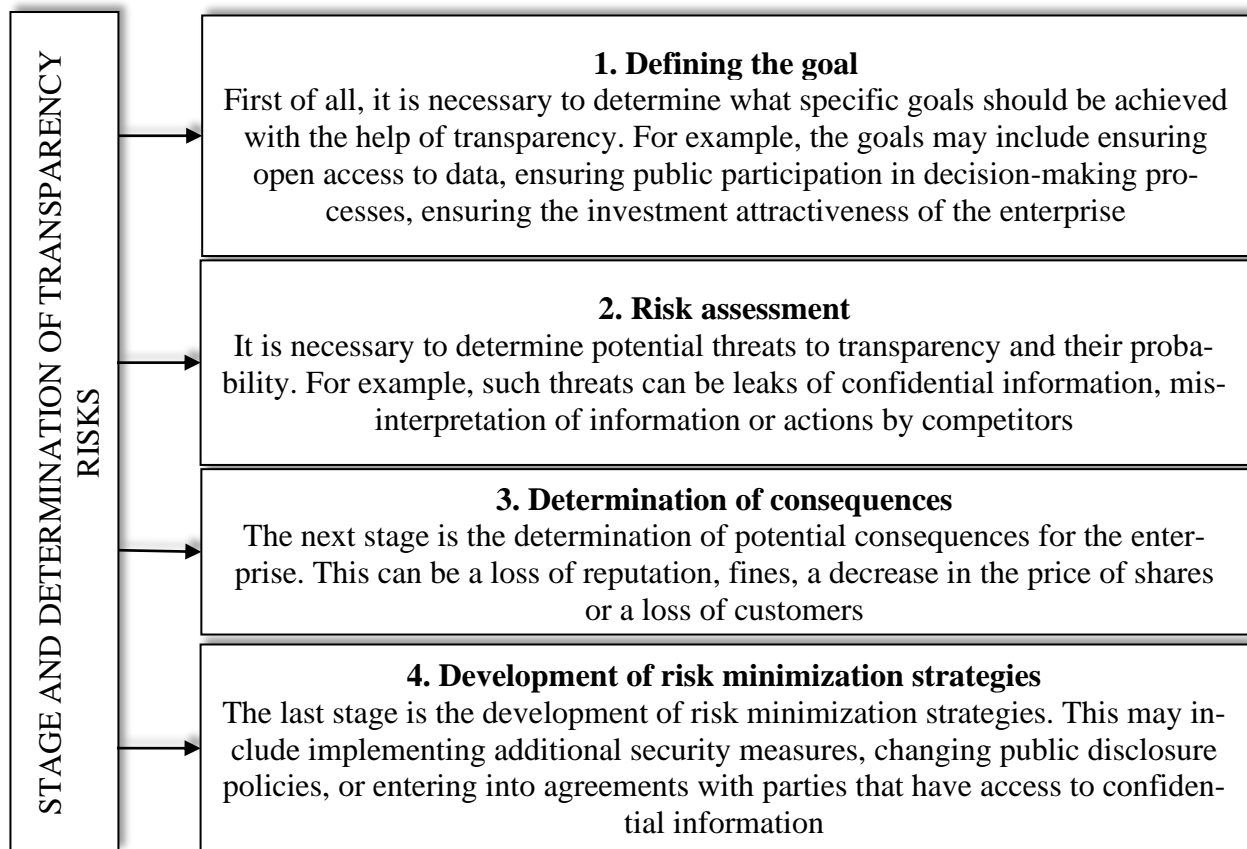
To achieve this goal, it is important to provide a legislative framework that will ensure transparency requirements, as well as promote the development of open data and its use.

In general, the development of transparency of enterprises in Ukraine is an important component of the country's economic development, so it is necessary to provide the necessary conditions and resources for the implementation of relevant measures and projects.

Risk and transparency are important concepts in business, finance and risk management. Risks mean the possibility of loss or failure as a result of adverse circumstances or unforeseen events. Transparency refers to the clarity and availability of information about business processes, financial statements, and other aspects of a company's operations.

Enterprise transparency risk management is a process of identification, assessment and management of risks associated with insufficient or incomplete

information about the enterprise's activities. The transparency of the enterprise means the availability and quality of information about financial indicators, activities, processes and decisions of the enterprise for interested parties (Fig. 16).



Source: compiled by the authors on the basis [15; 50; 130]

Figure 16. Stages of determining transparency risks

The main components of enterprise transparency risk management are:

- identification of risks. It is necessary to analyze all aspects of the company's activity and identify possible risks associated with insufficient transparency;

- risk assessment. After identifying the risks, it is necessary to assess their potential impact on the company's activities and determine the probability of their occurrence;

- risk management. To reduce the risks associated with insufficient transparency, the enterprise can use various tools and practices, such as the publication of financial reports, openness in the management of activities and processes, the use of information security standards and access control to confidential information;

- monitoring and analysis. After implementing transparency risk management measures, it is necessary to monitor and analyze their effectiveness and changes in the risk environment [50; 16; 31].

One of the ways to ensure transparency is regular and accurate reporting on the company's financial results. This may include the publication of annual reports, financial reports and presentations to investors. A business must disclose its financial information in detail, including revenues, expenses, assets and liabilities, as well as an explanation of changes in them. It is also important to ensure the availability of information about the risks associated with the company's activities, including the possibility of adverse economic conditions, competition and other factors that may affect its financial results. Usually, such analysis is carried out by accounting specialists, auditors, investors, creditors and other interested parties [66].

Transparency of financial reporting of business entities means that financial information related to their activities is available and understandable to the general public, shareholders and investors. This is important to ensure transparency and openness of governance and to ensure trust from investors, consumers and other stakeholders. The transparency of financial reporting can have a significant impact on the investment attractiveness of business entities.

It is worth highlighting the main advantages of the transparency of the company's financial reporting (Fig. 17).

Ensuring trust: the more open and transparent a company's financial report is, the more trust and loyalty it can attract from investors, consumers and other interested parties. When financial information is accessible and understandable, it is easier for people to make decisions about investing, buying goods and services. Investors are more inclined to invest their money in companies that they trust and that present their financial data clearly and transparently, which in turn promotes business development.

Increased efficiency: transparency of financial reporting allows the management of the enterprise to develop strategies and make decisions more effectively, because it is clear how the business entity functions and what needs to be done to improve its performance.

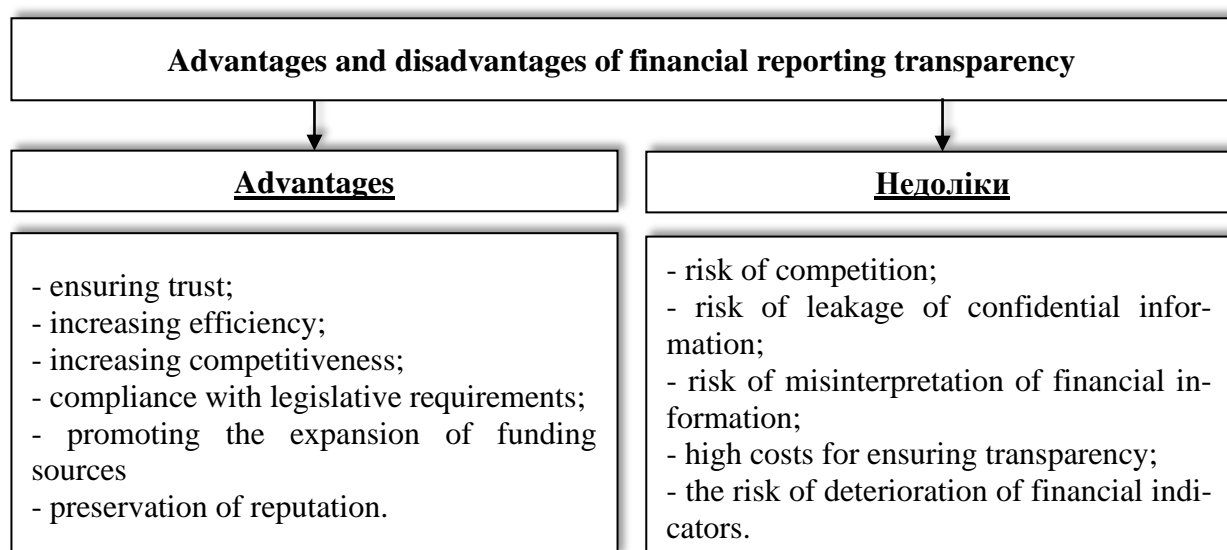
Increasing competitiveness: the transparency of financial reporting can help attract new investors and customers, as it highlights the activities of the economic entity and the responsible management of its finances, which can ensure their stability in the market and the entry of the enterprise to a new competitive level.

Reputation: Transparency of financial reporting helps a company maintain and enhance its reputation among investors, customers, and the public.

Legal Compliance: Financial reporting transparency is mandatory in many countries, as legislation requires business entities to publish their financial statements and other financial information.

Facilitating the expansion of financing sources: business entities that have transparent financial reporting can attract more different types of financing, for example, bank loans, bond issues, venture capital, and others. This can help provide a more stable financial base for further development [107; 66; 48; 28; 84].

Although the transparency of financial reporting has many advantages, there are some disadvantages that should be considered by the company when conducting its activities. Among the shortcomings of the transparency of financial reporting, the following can be noted (Fig. 17).



Source: compiled by the authors

Figure 17. Advantages and disadvantages of financial reporting transparency

Competitive Risk: Public disclosure of financial statements can provide competitors with detailed information about a company's financial performance that can be used to their competitors' advantage.

Risk of leakage of confidential information: Public disclosure of financial statements may lead to the leakage of confidential information about the enterprise.

Risk of misinterpretation of financial information: information provided in financial statements may be misinterpreted by interested parties, which may lead to a negative impact on the company's reputation.

High transparency costs: Businesses may need additional resources to ensure financial reporting transparency, such as software, auditing services and other equipment.

Risk of deterioration of financial indicators: public disclosure of financial statements can lead to deterioration of the company's financial indicators, especially if open information about shortcomings and problems in financial management will be an obstacle to attracting investors [56; 84; 91; 22; 125].

It is important to note that although transparency implies the availability of information, it must have its boundaries, which will separate open information, which is necessary to create a positive image of the company and satisfy the interests of stakeholders, from closed information, which may pose a threat to the economic security of the company due to the possibility of its dissemination. [82].

In order to achieve the maximum effect from transparency, it is necessary to create an effective system for collecting, protecting, processing and distributing information, as well as to ensure the availability and comprehensibility of information for different groups of users.

3.3 The role of Blockchain technology in increasing the transparency and efficiency of management at enterprises

Transparency is a key factor in ensuring a stable, democratic and transparent business. Despite all the benefits that can be gained by implementing transparency in the enterprise, one should not forget about the risks that may arise with insufficient attention to details and uncontrolled access to information. For example, open access to confidential information can lead to its misuse by third parties, which can harm the business. In addition, with insufficient control over transparency, there may be an unwanted influence of external factors on business activities, which can lead to a loss of customer trust and damage to the company's reputation. That is why it is important to ensure an adequate level of protection of open information.

In today's world, companies increasingly use the latest technologies to ensure the transparency of their activities. This allows enterprises to ensure transparency of their operations and openness towards their customers, partners and other interested parties [128].

One of the advantages of implementing the latest technologies to promote transparency is ensuring the accuracy and speed of information processing. For example, with the help of Internet technologies, you can create websites that

give customers the opportunity to get all the necessary information about the company, its services and products, as well as receive notifications about new introductions. With the help of artificial intelligence and data analysis technologies, enterprises can quickly and efficiently collect and analyze data about their activities, which allows enterprises to make decisions based on facts and data, rather than on feeling and intuition [6].

The modern economy is completely dependent on information technologies. At present, it is practically impossible to imagine the effective functioning of almost any branch of social life without the use of information and communication technologies, as they provide the opportunity to optimize processes, increase their efficiency, and also make it possible to store and process large volumes of information, make more accurate calculations, quickly transfer information and ensure its accuracy, transparency and reliability. In the field of the financial sector, there is an active implementation of projects based on innovative information systems and technologies, which are aimed at the development of new services and products, as well as to ensure more reliable software preservation of information and its protection from cyber attacks [148].

Modern information technologies significantly simplify the process of increasing the level of information transparency of any institutions.

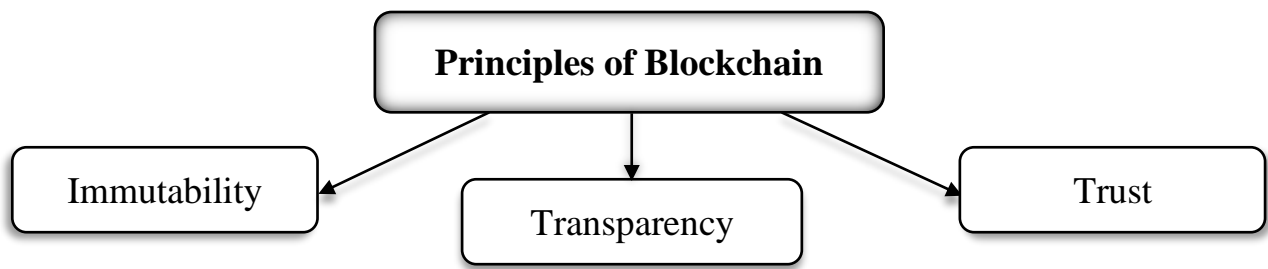
Blockchain technology is a powerful tool for ensuring transparency, security and trust between business partners, customers and other stakeholders. It is especially useful for businesses operating in industries where transaction accuracy and security are important.

The main benefit of blockchain is that it builds trust between parties exchanging information. The exchanged information is encrypted in the form of an electronic list of records or blocks. It cannot be erased, which helps ensure trust between users. Once information is recorded, it cannot be changed without changing all records, the activity log can only be updated by adding new records, which also ensures secure transactions between users [139; 81].

Given blockchain's potential to enable transparency, simplicity and efficiency by creating new financial services infrastructure and processes, the technology is rapidly gaining momentum across industries.

Blockchain technology has great potential to improve business and ensure transparency, security and efficiency in various areas.

Thanks to three principles (Fig. 18), the blockchain provides a single source of truth that is updated in real or near-real time.



Source: compiled by the authors on the basis [21; 67]

Figure 18. Principles of blockchain technology

Principle of Immutability – Blockchain technology is an immutable database where data already in the blockchain cannot be manipulated. The principle of transparency shows that activities are carried out openly without secrets, information is freely available to users at any time. The principle of trust is ensured by the openness, transparency and immutability of data in the blockchain, which is the basis of the trust relationship between the client and the company.

Blockchain technology will provide a significant increase in efficiency, cost savings, transparency in various areas of the economy, reduction of fraud, while allowing real-time data exchange between different parties in a reliable and traceable way. It allows parties to maintain comprehensive records of assets, contracts and property data without having to physically own them or put anything on paper or intermediaries. For all industries, this means that the results are more transparent, as the possibility of changing or misrepresenting information is eliminated [126].

Blockchain technology can be used to ensure transparency and security in supply chain management, where it is important to track the location of goods and control their storage conditions. The use of blockchain technology can help reduce risks and improve the quality of control over these processes.

In the financial sector, blockchain can be used to ensure transparency and security of financial transactions. Blockchain can be used to record and store all transactions that take place in the system. This allows to ensure transparency and confirmation of all transactions carried out in the system and to prevent possible fraudulent actions and other types of criminal activity [123].

In addition, blockchain can be used to ensure transparency and security of customer data. With the help of blockchain technology, customer data can be stored and processed in a secure and transparent manner, which allows to ensure the security and confidentiality of customer data, as well as to prevent possible breaches of this data.

In order to successfully implement blockchain in your enterprise, you need to study the technology in detail, understand its advantages and disadvantages, as well as evaluate the opportunities and costs of its implementation. It is important to carefully analyze the needs and capabilities of a specific enterprise and take into account technical and legal aspects for the successful implementation of this technology [106].

In case of successful implementation of the blockchain, the enterprise can receive significant benefits, such as reducing the costs of data storage and processing, ensuring data security and confidentiality, ensuring transparency and integrity of data, improving process management and much more. Using them in combination with proper management can ensure the efficient operation of the company and increase the trust of stakeholders [108].

Blockchain can be used to ensure transparency and security of interactions between businesses and their customers in all industries. This technology allows for transparency and accuracy of data, which helps prevent possible errors and criminal activity, and provides greater trust between market participants.

Therefore, the implementation of blockchain technology in enterprises can bring many benefits, including ensuring transparency and security of operations, reducing risks and increasing work efficiency. Therefore, it can be expected that in the future the use of blockchain technology will become even more widespread in all areas of the economy and at various levels of business.

4 DIGITAL FACTORS OF FINANCIAL TRANSPARENCY WHEN DETERMINING INVESTMENT ATTRACTIVENESS IN ENTREPRENEURSHIP

4.1 The role of publicity and transparency in the formation of investment attractiveness and investment decision-making

A modern investor operates in a rapidly changing environment and has many opportunities for making investment decisions, which at the same time creates the problem of evaluating and choosing the optimal solution among a large number. Therefore, the issue of transparency of economic relations at both the macro and micro levels is becoming important today. The challenge is to assess investment attractiveness through transparent and effective tools. The data of international and national ratings can become such transparent tools.

The problem of forming and ensuring the investment attractiveness of the country, region, and business entity continues to be relevant for a long time. After all, in addition to the task of creating investment attractiveness, it is necessary to constantly work on maintaining, or better, increasing its level.

A modern investor operates in a rapidly changing environment and has many opportunities for investing funds, which at the same time creates the problem of evaluating and choosing the optimal project among a large number. Therefore, the transparency of economic relations is of great importance today.

The transparency of the investment climate is currently a key element in the development of the economy and the attractiveness of the country's investment potential. Investors are looking for reliability and stability in their investment decisions, so ensuring transparency is a critical component of investment success.

Factors affecting the investment attractiveness of the state should be supplemented by the state of the country's financial and credit system, the level of development of productive forces, investment activity of the population, the status of foreign investors, the level of development of investment infrastructure and the possibility of attracting investment resources. The problem of regional development is studied much less often. Although the level of development of regions determines the attractiveness of enterprises and industries located on their territory.

Investment attractiveness of regions is an indicator that characterizes some of them from the point of view of financial development, investment attractiveness, independence, tax culture, standard of living of the population and a number of other factors that significantly affect the formation of investment profitability and investment risks, etc. If the state is rich in minerals, forests and

other resources, then the objects of investment are mainly mining or processing industries.

The degree of investment attractiveness is an important indicator of the country's investment climate and, therefore, an indicator of the effective socio-economic development of the state's economy in general.

Organization of economic cooperation and development, direct investment is a category of cross-border investments made by a resident (direct investor) in a country with the purpose of realizing his long-term interest in a company (recipient of direct investment), which is a resident of a country different from the country where the direct investor is located.

One of the tools for ensuring transparency in assessing the investment climate is the use of blockchain technologies and other innovative solutions. "Blockchain can help ensure reliability and security of information exchange between participants in the investment process. Technologies of artificial intelligence and data analysis can also help in assessing risks and predicting the results of investments" [8].

In addition to technology, legislative and regulatory measures to ensure transparency are important. Legislation can establish requirements for the reporting of information, as well as ensure openness and availability of information. Regulators can oversee compliance with transparency requirements and rely on standards developed by the community.

The role of rating agencies and auditing companies in ensuring transparency is extremely important for creating a transparent investment climate. One of the examples of successful work in this direction is the Transparency Rating of the 100 largest cities, developed and implemented by Transparency International Ukraine [3].

This rating was created in order to assess the level of transparency and openness of city councils, and to make them available for analysis and comparison. To prepare this rating, the Transparency International Ukraine team uses a variety of data sources, in particular, checks the compliance of published information with the requirements of Ukrainian legislation and regulatory acts of central executive authorities, as well as conducts website analysis, examines official responses of city councils, analyzes quantitative indicators for using independent Internet statistics. Also, data sources include citizens' complaints, court decisions, information in authoritative mass media, public information in databases, as well as documents from public organizations and deputies of local councils.

This rating has become an important tool for understanding the transparency of the activities of local councils in Ukraine and their readiness to attract investments.

One of the tools for ensuring transparency is the Monetary Policy Transparency Index, which is developed by independent organizations and contains assessments of the transparency of monetary authorities in various countries of the world [115].

The Index of Transparency of Monetary Policy (ITMP) is a global rating that determines the level of transparency and quality of communication of monetary authorities with their stakeholders, including investors, market participants and citizens. ITMP provides an opportunity to compare the transparency of monetary authorities in different countries and to identify their weak points, which allows to improve the work of monetary authorities and increase trust in them.

The index consists of four main variables affecting its value [115]. The first variable is the disclosure of monetary policy objectives. This means that countries that report their inflation targets open up their monetary strategies to the public and help inform their decisions. This variable also reflects the level of communication between the national bank and the public.

The second variable is the openness of economic data. Countries that publish more economic data than required have a higher monetary policy transparency index. This includes the release of data on inflation, exchange rates, reserve assets and other economic indicators.

The third variable is the transparency of monetary policy implementation methods. Transparency of monetary policy means that the central bank must explain in detail its actions, strategies and mechanisms of monetary policy. For example, the central bank must explain why it makes certain decisions, what tools it uses to achieve its goals and how it responds to changes in the internal and external economic situation.

Operational openness means that the central bank must explain in detail its operations from the interbank market, including operations on the purchase and sale of currencies, management of reserves and other operations that affect the country's monetary policy. This ensures a high level of openness and transparency of monetary policy, as well as the trust of national and international investors.

Transparency in investment decisions in entrepreneurship means the availability of information about investment opportunities, processes and results of their implementation. This means that investors should be able to get full information about potential risks and investment opportunities in a certain investment project. To achieve transparency in investment decisions, it is necessary to ensure the clarity and availability of information about the investment project [100].

Transparency in investment decisions in entrepreneurship is an important component for ensuring effective risk management and increasing the probability of success of an investment project. Ensuring transparency in investment decisions helps investors to understand the potential risks and benefits of an investment project, as well as to determine the correct approach to its evaluation and selection [88].

Transparency ensures the availability of information and allows investors to make informed decisions. Signs of transparency in investment decisions include the availability of information, the permission to distribute information, and the availability of information to third parties [129].

One of the main signs of transparency is the availability of information. Information about the financial condition and financial results of the company, its business operations, risks and opportunities should be available to investors. This information can be provided in the form of various reports and financial statements. Providing access to this information helps investors understand how a company is using their money and make informed investment decisions.

Another sign of transparency is the permission to disseminate information. Companies should have the right to publish their financial statements and other information about their activities, as well as provide information about their relations with investors. This ensures transparency in the relationship between the company and investors and helps maintain trust in the information provided.

For investors, information about the company's activities is critically important, as it helps them make informed investment decisions. The transparency of the company's activities includes not only the availability of information for investors, but also the availability of this information for third parties.

The availability of information to third parties means that any person who has an interest in the company's activities can gain access to it. This can be information about the company's financial results, internal management structure, future plans, or any other information that may be important to investors or other interested parties [94].

The availability of information to third parties is important to ensure transparency in the company's activities, as it allows to reduce risks and increase trust. Investors can be sure that the company does not hide any information and fulfills its obligations to them, and other interested parties can monitor the company's activities and ensure its compliance with legislation and ethical standards.

4.2 Rating indicators of investment attractiveness as a tool for implementing the transparency of financial relations

Since making investment decisions is a complex process that requires in-depth analysis and risk assessment, one of the key tools that helps investors make informed decisions is rating evaluation. The ratings act as an information base that helps to assess the financial stability, credit risk and profitability potential of various investment objects.

So, we can say that ratings are a modern information tool for investors. After all, ratings are a system of ratings that are provided by rating agencies to various issuers, securities and financial instruments. They provide investors with objective information about the creditworthiness, risks and potential profitability of these objects. Ratings help investors understand how reliable various investment opportunities are and what risks are associated with these investments.

According to research, rating agencies have a significant impact on the investment process. Studies have shown that changes in ratings affect the price dynamics of stock markets. When the rating goes up or down, it can change the value of the company's shares and affect the investment decisions of investors.

One of the key roles of ratings in making investment decisions is to provide access to the necessary information:

1. Assessment of financial stability.

One of the most important aspects of ratings in making investment decisions is the assessment of the issuer's or company's financial stability. Rating agencies analyze financial indicators such as earnings, debt, solvency and management efficiency to determine the level of risk of an investment. Investors can use this information to understand the potential risks and potential returns of their investments.

2. Definition of credit risk.

Credit risk is an important factor influencing investment decisions. Rating agencies assess the issuer's creditworthiness and determine credit risk ratings. This helps investors determine the probability that the issuer will not be able to repay its obligations on time. Availability of credit risk ratings allows investors to make informed choices and understand the potential risks associated with their investments.

3. Consideration of ratings when forming an investment portfolio.

Ratings also play an important role in the formation and management of an investment portfolio. Investors can use the ratings to allocate their investments among different assets, depending on their attractiveness and riskiness.

Ratings help balance a portfolio by allocating investments across different asset classes such as stocks, bonds, real estate, and more. This allows investors to reduce risk through diversification and increase the potential return on their portfolio.

4. Impact of ratings on the cost of capital

Ratings can strongly influence the cost of capital for issuers. A high rating can reduce the cost of raising capital, as it indicates the reliability and creditworthiness of the issuer. On the other hand, a low rating can increase the cost of raising capital, as investors will demand higher returns to compensate for the higher risk. Ratings are an important factor that is taken into account in the capital markets and affects the price of shares, bonds and other financial instruments.

Therefore, various ratings are reduced to specific numerical values that are understandable and accessible to investors. This allows investors to easily compare different investment objects and make an informed choice.

Thus, the ratings create a transparent basis for making informed decisions and help investors reduce risks and increase the potential return on their investments. However, it is worth remembering that rating evaluation has its limitations and potential disadvantages:

- firstly, ratings are based on existing financial data and information, which may be limited or out of date. They do not take into account possible changes in the economic environment or unforeseen events that may affect the issuer's financial stability.

- secondly, sometimes rating agencies may have a conflict of interest or bias in setting ratings. This may be related to connections with issuers or other interested parties, which may distort the objectivity of the rating.

All these limitations and disadvantages should be taken into account when using ratings in making investment decisions. Investors should use ratings as one of the tools when analyzing an investment object, and not the only factor for making a decision.

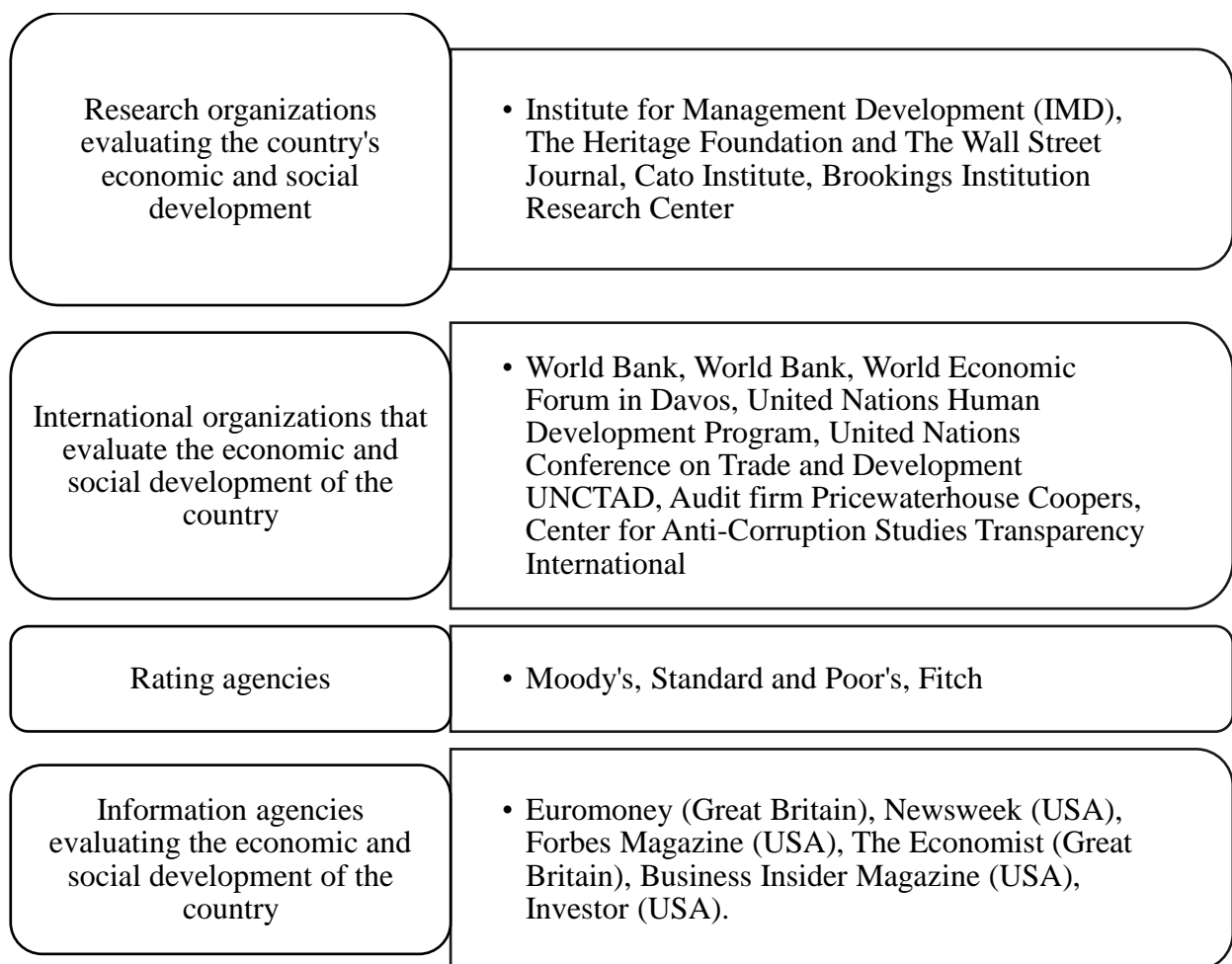
In general, rating evaluation has a significant role in making investment decisions. It provides investors with the information they need and helps them make informed decisions based on risks and potential returns. However, investors should be careful not to rely solely on ratings, but to conduct additional analysis and research to get the full picture before making an investment decision.

Ratings are an important tool in the investment world and help ensure a more transparent investment climate. They stimulate competition and contribute to the development of capital markets, attracting more investment opportunities.

It should also be noted that ratings are not static and may change over time. Investors should regularly update their analyzes and review ratings to ensure the relevance of their investment decisions.

In general, the rating assessment is an important tool in making investment decisions and can act as a transparent tool for assessing the investment attractiveness of the investment climate of the country and the business entity, but it should be used in combination with other methods of analysis and be aware of its limitations. Investors should have a comprehensive approach to market and investment analysis, considering ratings as one of the factors influencing decision-making.

Below are the types of organizations that form ratings that evaluate the economic and social development of the country (Fig. 19).



Source: compiled by the authors on the basis [73]

Figure 19. Organizations evaluating the economic and social development of the country

For an investor, when making investment decisions, the place and rating of the country, its image, investment attractiveness, namely the volume of direct foreign investment flows to a certain country, are an important factor.

A potential investor must first analyze certain lending conditions, the mechanism of the taxation system, the legislative and legal regime of the investment sphere of the country in which it is planned to invest its capital, etc. Such conditions are reflected in a certain way in a number of various international ratings of states. It is especially useful to observe the dynamics of the state's position in recent years in order to understand the direction in which the country is moving.

Thus, the indicators of credit ratings show the creditworthiness of issuers, information on credit histories of debt instruments (government bonds, treasury bills).

Note that, on the one hand, such ratings function as a toolkit for investors: comparison of the risks of funds invested in countries (business structures), securities, analysis of investment profitability, assessment of the investment climate in the recipient country, as a result, to find and accept reasonable investment decisions. Also, ratings create a promising investment image for stock market participants: they contribute to a high level of trust from investors (they provide information about the issuer's capacity).

The most influential international rating agencies include Standard & Poor's (S&P Global Ratings), a share of about 50% of the market of credit rating agencies, Moody's Investor's Service (30% share) and Fitch Ratings Inc. (10% share). These companies research and evaluate the investment attractiveness of many countries, certain regions, various industries, regulate global credit and investment flows.

The most relevant method for assessing the country's investment attractiveness is the method from the European Business Association (EBA) [112], because it has greater realism, weighty expert assessment by companies operating in the domestic market. The indicator of the index for Ukraine is determined based on the results of a survey of company managers in Ukraine.

The investment climate of Ukraine can be assessed using various methods and calculation of indicators (indices). With the ease of doing business index, we can evaluate business conditions by many indicators, the rating includes 190 countries. The components of the index measure the normative legal acts that control the activities of small and medium-sized businesses (Table 17) [5].

Table 17. Investment climate of Ukraine in the light of international ratings (based on [142])

Indicator	Organization	Maximum value	Years			
			2019	2020	2021	2022
Ease of doing business index	The World Bank	190 (ranking)	71	64		
Index of global competitiveness	World Economic Forum	rating	85	71	49	57
EBA investment attractiveness index	European Business Association	5	3.25	3.06	2.95	2.5
Environmental efficiency index		place	119	-	-	70

Thus, according to the data in Table 17, we can see that according to the ease of doing business index calculated by the World Bank, Ukraine improved its position in 2020. However, according to the index of global competitiveness in 2022, due to guilt, Ukraine significantly worsened its position. According to the indicator of investment attractiveness of the EBA, we observe a systemic deterioration of the index. This indicates the difficulties and limitations of doing business in Ukraine, which reduces the investment attractiveness of Ukraine as a whole.

Regarding the environmental performance index, data for 2021 is not available, but the indicator has decreased from 119 in 2019 to 70 in 2022. This indicates certain measures to improve environmental efficiency in recent years.

According to the data of the rating agency Fitch Ratings, indicators of the level of investment attractiveness of Ukraine have a sinusoidal trend (Fig. 20) [46].

General index of investment attractiveness of the country

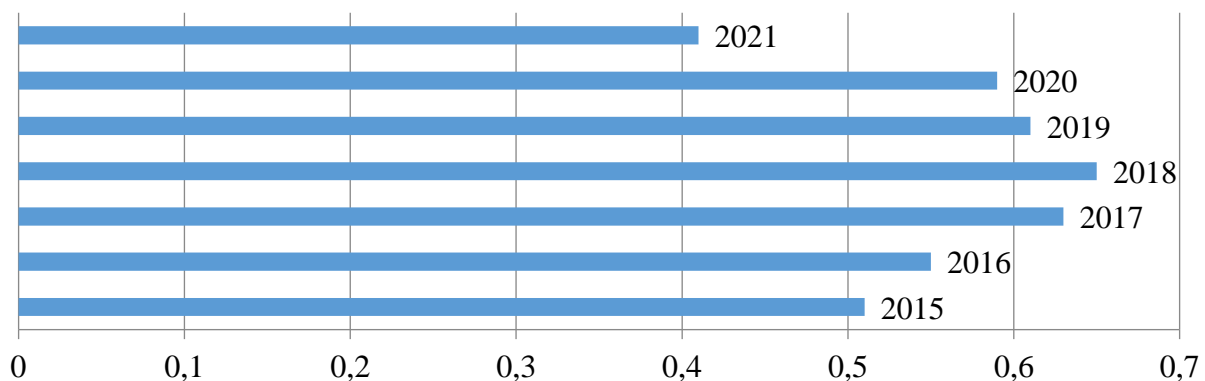
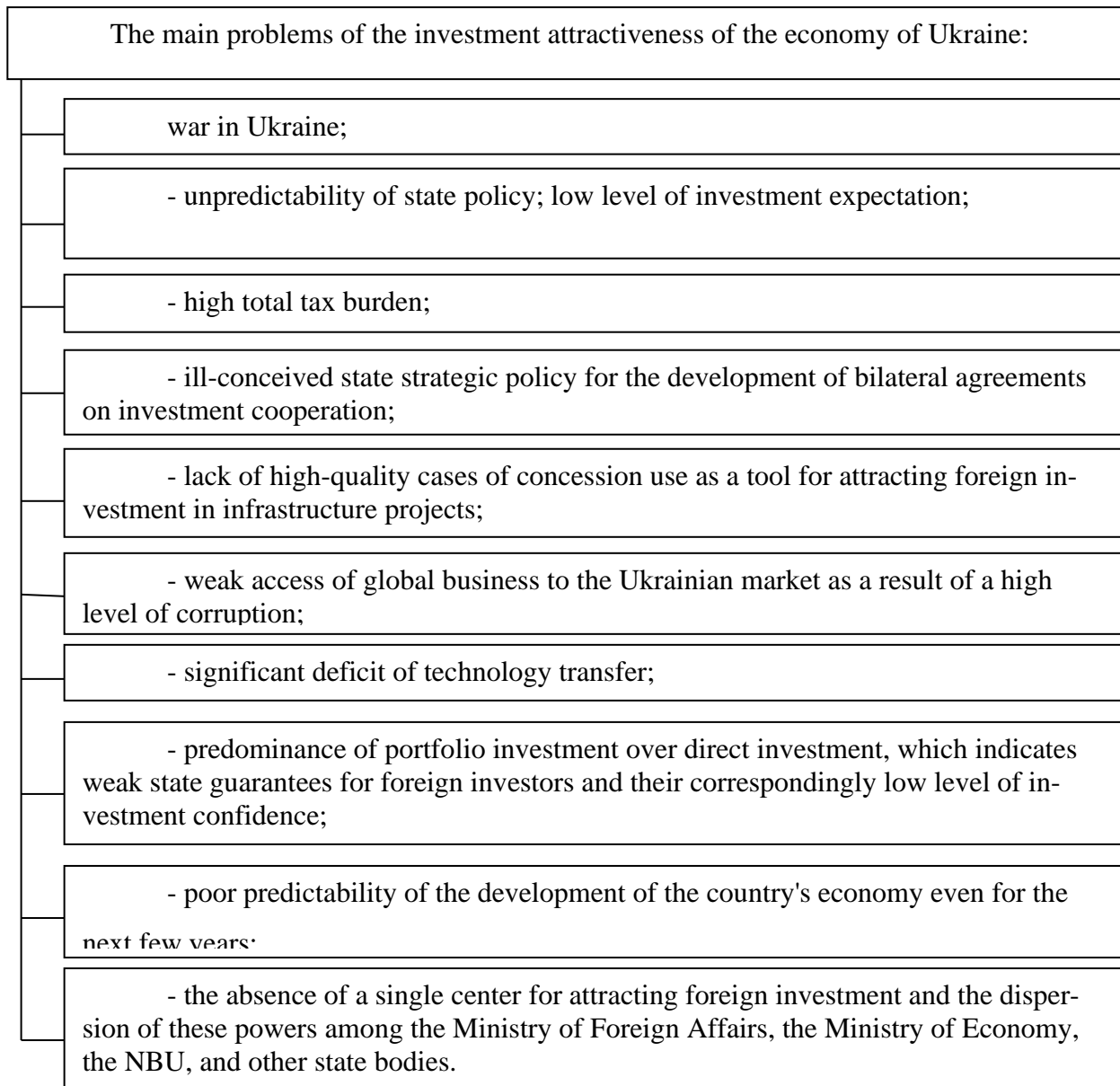


Figure 20. Rating of assessments of the investment attractiveness of Ukraine [46]

Therefore, the investment attractiveness index of Ukraine indicates the normalization of the investment climate in 2015-2018, and its deterioration in 2019-2021, which makes it possible to say that Ukraine belongs to the countries of risky investment.

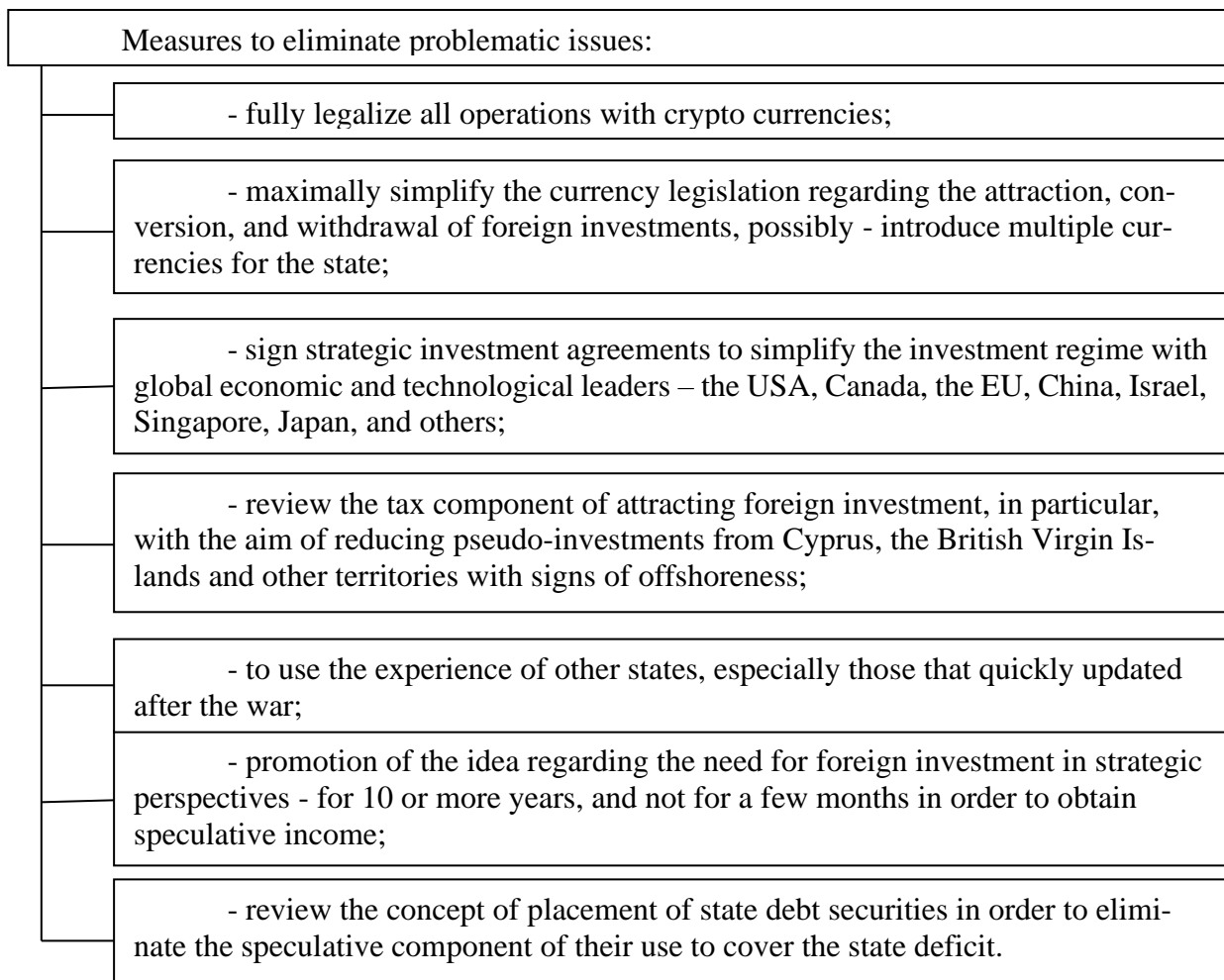
Having considered the investment attractiveness of Ukraine as a whole and the investment attractiveness of Ukrainian enterprises taking into account the impact of the war, we will single out the main problems of the investment attractiveness of the Ukrainian economy (Fig. 21).



Source: compiled by the authors on the basis [109, 119, 68, 45]

Figure 21. The main problems of investment attractiveness of the economy of Ukraine

In accordance with the above-mentioned problems, we proposed measures to eliminate these problematic issues and are presented in the form of Figure 22.



Source: compiled by the authors on the basis [109, 119, 68, 45]

Figure 22. Measures to eliminate problematic issues

In addition, it is worth noting that the conditions of war increase the importance of the study of the main directions of monetary and fiscal policy from the point of view of investment attractiveness. These measures should contribute to attracting foreign investors to Ukraine through direct and portfolio investments. However, limitations such as the country's underdeveloped stock market, military risks, an incomplete regulatory framework for capital mobility and financial supervision, and the need to simplify capital repatriation and tax requirements should be taken into account.

CONCLUSIONS

Today, digital technologies are of great importance both in our everyday life and in the existence and functioning of enterprises in any sector of the economy. It is an indisputable fact that every year the influence of digital technologies (such as various "smart" devices, programs for Big Data analysis, the Internet of Things, machine learning technologies, cognitive analytics services, etc.) on the management processes of business structures is increasing, and those listed above tools are increasing in importance and are not only existentially important for the survival of any market participant, but are also an integral part of the digital ecosystem connecting the state, business and society.

Digital products market research and analysis of market trends in the field of digital products revealed that the demand for digital solutions is constantly increasing. The key trends are the transition to cloud technologies, augmented reality, artificial intelligence and the Internet of Things. Businesses that successfully adapt to these trends and offer innovative digital products have an advantage in the market.

Digital platforms and products have a significant impact on the business environment. They provide enterprises with convenient access to markets, facilitate communication with customers and contribute to the creation of new business models. The relationship between digital platforms and the business environment requires attention to ensuring cyber security, protecting personal data and regulating relations between market participants.

Introducing transparency into the company's operations can increase investor confidence, reduce risks, and provide more efficient access to capital. Transparency is an important component of an enterprise's investment attractiveness. The more transparent and accessible the enterprise is to investors, the more likely they will be interested in its financial activities and be ready to invest their funds in it.

The "Financial Stability of State Enterprises in Ukraine" rating and the ESG Transparency Index of Ukrainian companies as transparency assessment methods are important tools for ensuring stability and trust in the economic system and contribute to increasing the investment attractiveness of a particular enterprise. These methods can be used as tools for assessing investment risks, making decisions about cooperation with partners and suppliers, and also for increasing the trust of consumers and other interested parties in the activities of the enterprise.

Risk and transparency are important concepts in business, finance and risk management. Risks mean the possibility of loss or failure as a result of adverse circumstances or unforeseen events. Transparency refers to the clarity

and availability of information about business processes, financial statements, and other aspects of a company's operations.

In order to achieve the maximum effect from transparency, it is necessary to create an effective system for collecting, processing and distributing information, as well as to ensure the availability and comprehensibility of information for different groups of users.

Modern information technologies significantly simplify the process of increasing the level of information transparency of any institutions. Blockchain technology is a powerful tool for transparency. The implementation of blockchain technology in enterprises can bring many benefits, including ensuring transparency and security of operations, reducing risks and increasing work efficiency. This technology allows for transparency and accuracy of data, which helps prevent possible errors and criminal activity, and provides greater trust between market participants. Therefore, it can be expected that in the future the use of blockchain technology will become even more widespread in all areas of the economy and at various levels of business.

The transparency of the investment climate is currently a key element in the development of the economy and the attractiveness of the country's investment potential. Investors are looking for reliability and stability in their investment decisions, so ensuring transparency is a critical component of investment success.

Development of a strategy for improving the investment climate in Ukraine is of great importance considering transparent data of international and national ratings. These ratings provide valuable information that can guide improvements in various areas. Using this information, Ukraine can focus on specific measures to attract more investments.

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