Електронний журнал «Ефективна економіка» включено до переліку наукових фахових видань України з питань економіки (Категорія «Б», Наказ Міністерства освіти і науки України № 975 від 11.07.2019). Спеціальності – 051, 071, 072, 073, 075, 076, 292.

Ефективна економіка. 2023. № 2.

DOI: http://doi.org/10.32702/2307-2105.2023.2.58

УДК 004.9: 004.415.2

I. Chyzmar,

Postgraduate student of the Department of Economics and Finance,

Mukachevo State University

ORCID ID: https://orcid.org/0000-0002-1715-1310

ON THE QUESTION OF TRANSFORMATIONS OF ECONOMY BASED ON DIGITAL GAMING INDUSTRY

І. І. Чизмар,

аспірант кафедри економіки та фінансів,

Мукачівський державний університет

ДО ПИТАННЯ ТРАНСФОРМАЦІЙ ЕКОНОМІКИ НА ОСНОВІ ЦИФРОВОЇ ІГРОВОЇ ІНДУСТРІЇ

This research aims to study the characteristics of the transformation of the economy based on the digital gaming industry. The author's findings indicate that the digital gaming industry can be detailed based on characteristics that are common to some specialized and specific production features (including the presence of integrated structures, identified by the presence of mixed production, and the difference in the production stage of the product). The digital gaming industry includes various components such as eSports, mobile gaming, multiplayer gaming projects, streaming, and cloud gaming. The content of the digital gaming industry's components highlights its multifaceted nature and suggests that it is structurally

heterogeneous, consisting of large structural blocks, including sectors, industries that provide the material and technical basis for the development of the digital gaming industry, and complexes. Taking into account its multifaceted nature, the digital gaming industry is characterized by its impact on the economy through game developers/publishers, manufacturers of electronic devices, computer components, and other players, as well as its unique origins and development. Its impact becomes increasingly specific to the economy when transmitted through its endemics, which include eSports, gaming, multiplayer gaming projects, cloud gaming, and streaming. There are several possible perspectives for using the results for further research: studying the characteristics that differentiate the spheres of the digital gaming industry and the consequences of these differences for the entire industry; researching the role of integrative structures for producing mixed products in the development of the digital gaming industry, identifying the advantages and disadvantages of these structures, analyzing the economic impact of the digital gaming industry, including its impact on production, distribution, exchange, and consumption systems; investigating the origin and emergence of the digital gaming industry based on factors that contributed to its development; studying specific characteristics and possible impacts of endemics in the digital gaming industry.

Дослідження спрямоване на вивчення особливостей трансформацій економіки на основі цифрової ігрової індустрії. За результатами дослідження автором констатовано, що сфери цифрової ігрової індустрії деталізуються за характеристиками, яким притаманні деякі спільні риси за спеціалізацією та специфікою виділення (зокрема, за наявністю інтеграційних структур, ідентифікованих за наявністю змішаних виробництв, розбіжністю стадії виробництва продукту). Серед складових цифрової ігрової індустрії є сфери цифрової економіки (її ендеміки), зокрема: кіберспорт, мобільний геймінг, багатокористувацькі ігрові проєкти, стрімінг та хмарний геймінг. Зміст складових цифрової ігрової індустрії (ендеміків) звертає увагу на її мультисферність та дозволяє констатувати, що вони досить структурно неоднорідні, оскільки сформовані великими структурними блоками, у яких є

сектори, галузі, які забезпечують матеріально-технічну основу розвитку сфер цифрової ігрової індустрії, та комплекси. Враховуючи наявність мультисферності (що спрямована на ідентифікацію та трансформацію кожної складової), цифрова ігрова індустрія характеризується впливом на економіку через розробників/видавців ігор та компанії на соціальну та культурну сфери. У дослідженні було виявлено, що цифрова ігрова індустрія є мультисферною та складною галуззю, яка складається з різних складових, таких як кіберспорт, мобільний геймінг, багатокористувацькі ігрові проєкти, стрімінг, та хмарний геймінг. Кожна з цих складових має свої специфічні характеристики та може мати важливий вплив на економіку через розробників ігор, компаній-виробників електронних пристроїв та комп'ютерних компонентів. Однак, не дивлячись на те, що складові цифрової ігрової індустрії мають спільні риси, вони є структурно неоднорідними та складаються з великих структурних блоків, у яких наявні сектори, галузі та комплекси. Це робить їх складними для дослідження та аналізу. Існує декілька можливих перспектив для використання результатів для подальших досліджень: вивчення характеристик, які відрізняють сфери цифрової ігрової індустрії та наслідки цих відмінностей для функціонування всієї індустрії; дослідження ролі інтеграційних структур для виробництва змішаної продукції у розвитку цифрової ігрової індустрії, ідентифікація переваг та недоліків цих структур, аналіз економічного впливу цифрової ігрової індустрії, включаючи її вплив на системи виробництва, розподілу, обміну та споживання, дослідження походження та виникнення цифрової ігрової індустрії відповідно до того, як фактори сприяли розвитку, дослідження конкретних характеристик та можливих впливів ендеміків в цифровій ігровій індустрії.

Key words: *e-sport; mobile gaming; multi-country gaming objects; shooting; cloud gaming; endemic.*

Ключові слова*: кіберспорт; мобільний геймінг; багатокористувацькі ігрові проєкти; стрімінг; хмарний геймінг; ендеміки.*

Problem setting *(*description of the problem being analyzed in general and its connection with important academic or practical tasks). The phenomenon of multi-sphere development of the digital gaming industry has led to problems regarding the unity of approaches to such a category as the basic concept, which includes structures of endemics with specific characteristics of the value chain. Considering the author's previous research, we propose to consider the category of "digital gaming industry" as a multi-sphere part of the digital economy, which is oriented towards the market of software products for organizing the game process or digital games. Such content is determined by the specificity of digital games. It is both a specific product and an element of interactive entertainment**.** At the same time, multisphericity is integrated by us as a phenomenon formed during processes of gradual complication of social reproduction. In particular, real-virtual products emerged and improved. The digital gaming industry developed and improved a value chain with a virtual product that had material and intellectual public utility. Thus, publishing houses that finance the development of new objects are the beneficiaries of the profit from the licensing of names that contain a virtual component. The level of products and talents sums up the developers, designers, artists, composers who in this way expand the virtual space of the product of the digital game industry. The level of technology creation is a space for development of games, game engines, combined software, development management tools. The publishing industry serves the market with unlimited virtual consumer needs. The hardware basis of the platform minimizes labor costs for providing virtual services of the game industry for gaming consumers. This allows to constantly increase the rates of profit. Separate features of the chain of values were formed not at the same time, but as a result of long, complex evolutionary changes.

The wording of the purposes of article (problem). According to the above, aim of the article is to study the features of economic transformations based on the digital gaming industry.

The analysis of the last research and publications in which the solution to this problem is begun. **The analysis of the last research and publications in which the solution to this problem is begun**. Among the works dedicated to the

transformation of the economy based on the digital gaming industry, we have identified the best practices of Mark J. P. Wolf, Jiji Gaho Sha, Jason Whittaker, Proskurina M.O., Skavronska I.V., Mandzii A.R. In particular, the approach of Proskurina M.O. deserves attention (who provides a characterization of individual blocks of the digital gaming industry, demonstrates the relationship between them, and outlines the basic principles of the creative economy) and the approach of Laznev I.O., Tsaranenko D.I. (who determine the features of functioning of the endemic sphere of esports in the digital gaming industry and its impact on the economy). At the same time, most available sources highlight the concepts of cultural industries or their role in the socio-economic system of modern society. The description of the transformations of the economy under the influence of the digital gaming industry has not gained popularity in modern scientific literature due to the limited research in this area.

The paper's main body with full reasoning of academic results. The digital gaming industry today is one of the fastest-growing sectors in the economy. It has become a distinct sector that combines various industries with similar characteristics of business activities related to the development, promotion, and sale of computer games and unique value chains. This sector is characterized not only by the peculiarities of origin, emergence, and formation, but also by different impacts on the economy (including production systems, distribution, exchange, and consumption).

The description of the impact of the digital gaming industry on the economy from the 1770s to the present allows us to identify the following main objects of influence: (1) virtual products; (2) virtual services; (3) virtual corporations; (4) value chain. Let us consider in detail the specifics of the strengthening of the digital gaming industry's impact on the economy, in terms of its development stages (highlighted in Table 1), namely, in the following time periods: from the 1870s to the 1970s; from 1971 to the 1980s; from 1980s to the 1990s; from the 1990s to the 2000s; from the 2000s to the present. [4; 8; 9].

Table 1. Stages of development of the digital gaming industry

Stage of development	Impact on the economy
1870-1970 s	Limited impact of the digital gaming industry on the economy
1971-1980 s.	Increased impact on the economy due to the release of the first computer games
1980-1990s	Introduction and Rapid Expansion of Home Gaming Consoles
1990-2000 s.	Beginning of the formation of the digital gaming industry as a separate sector of the economy
2000 to the present time	Strong impact on the economy due to the development of the global internet, mobile devices, and e-commerce. It was conducted through the minimization of hardware and the mass distribution of mobile phones

Source: Drafted by author and based on the [1, 2, 3, 4]

So, the stage of the emergence of digital computer games and the first publishers (which occurred during the period of the 1870s to the 1970s) is specific in that there was not yet a collection of companies producing/supplying homogeneous products. Therefore, their influence on the economy was absent. During this period, the first computers and computer games were developed in academic circles (Table 2). Most of these games did not have a commercial purpose, so they did not become popular until the 1970s. Nevertheless, they helped to develop computer technology and video games in the future.

Table 2. Characteristics of the first games developed in academic circles

Game Title	Year of Release	Developer	Platform	Purpose of Creation
Nim	1940	John Nash	simple slot	For teaching logic and strategy.
OXO (Noughts and Crosses)	1952	Alexander S. Douglas	EDSAC	For demonstrate the technical capabilities of the computer and computer graphics
Tic-Tac-Toe	1952	A.S. Douglas	EDSAC	
Tennis for Two	1958	William Higinbotham	Oscilloscope	
Spacewar!	1962	Steve Russell, Martin Graetz, Wayne Wiitanen, Alan Kotok, Peter Samson, Dan Edwards	DEC PDP-1	
Hunt the Wumpus	1972	Gregory Yob	mainframe computers	For teaching logic and strategy.
Colossal Cave Adventure	1976	Will Crowther, Don Woods	mainframe computers	For learning programming and exploring the capabilities of mainframe computers.
Rogue	1980	Michael Toy, Glenn Wichman, Ken Arnold	Unix	For teaching logic and strategy.

Source: Drafted by author and based on the [1, 2, 3, 4]

In addition, during this period, the first demonstration of the Nimatron game machine took place at the World's Fair in New York in 1940. Nimatron became very popular among the exhibition visitors and Nash was highly praised for his work. This game opened the door to the creation of a new generation of electronic games, which eventually led to the emergence of the first fully electronic game machine in 1971. Also, during this period, the first amusement device with a display screen was patented (it was the "Cathode Ray Tube Amusement Device" or an entertainment device based on a cathode ray tube, which was patented by Thomas T. Goldsmith and Estle M. Goldsmith in 1947). However, these devices did not gain wide popularity as electronic games were still very new at the time, and the technologies were not yet advanced enough to produce electromechanical game machines in large quantities. In addition, the revenue from the series of games in the DECUS Digital Equipment Corporation library (1970) was insignificant. Nevertheless, these events together laid the foundation for the emergence of arcade halls and publishers that eventually became the basis of the digital gaming industry.

The stage of development of digital technologies from 1971 to the 1980s is important in the history of computer games because it saw the creation of some of the first successful electronic games and devices to play them. The first electronic games, such as "Computer Space" (1971) and "Pong" (1972), made electronic games more accessible and understandable to a wider audience. These games became popular among users and triggered the process of virtualizing digital goods and services that could be offered to the market. The development of virtualization of digital goods and services was also associated with the activities of companies such as Atari, Commodore, and Magnavox (see Table 2), which preceded the emergence of the first gaming consoles, computers, and other devices and digital games, including computer games (which influenced the birth of the video game industry as a field of the economy).

Table 3. The specifics of the activities of Atari and Magnavox on the market

year	game console	gaming computer	manufacturer	game	computer game	Sold copies, units
1972	Magnavox Odyssey	-	Magnavox	Table Tennis / Ping Pong	-	350000
1975	Home Pong	-	Atari			150000
1975	Atari Pong	-	Atari	Pong	-	There is no definite information
1977		Commodore PET	Commodore		-,	
	Atari 2600	-	Atari	Combat, Space Invaders, Breakout	-	30 million
1978	Magnavox Odyssey²	-	Magnavox	K.C.'s Krazy Chase, U.F.O.	-	2 million
1978	-	Atari 400, Atari 800, Atari 1200XL	Atari	-	Space War, Star Raiders, Indy 500	1978 Atari 400 Atari
1979	Intellivision		Mattel	Baseball, Space Battle, Poker and Blackjack	-	3 million
1979-1980*	Atari 2600		Atari	Missile Command, Pac-Man, Adventure	-	There is no definite information

Note

* The first attempt to sell virtual products was made by the American company Atari

Source: Drafted by author and based on the [2-4]

The first attempt to sell virtual products by the American company Atari was associated with the game "Adventure", which was released in 1979. This game was developed for the Atari 2600 game console and featured new gameplay elements such as underground caves with hidden items and puzzles. In addition to the game itself, Atari also decided to release additional materials that could be ordered by mail for a certain price. This was the first attempt to use virtual content as a product for sale, which created the potential for the use of virtual products in the future.

The turning point in the formation of virtualized products and the further development of the digital gaming industry were: 1) the Magnavox home game consoles, which inspired Atari to create the successful arcade game Pong (1972); 2) the first home computers, the "Atari" (the company released its first home computer, the Atari 400, in 1979. This computer had a keyboard, built-in sound, a graphical display, and a built-in BASIC interpreter) and "Commodore" (the Commodore PET

home computer in 1977. PET had a keyboard, built-in monitor). Later, Atari released more powerful computers, such as the Atari 800 and Atari 1200XL. In 1980, Commodore released its most popular home computer, the Commodore 64. This computer had many available programs and games and was particularly popular among gamers. Numerous games were created on console and computer platforms. Atari also created and successfully commercialized these games on arcade machines.; 3) Appearance of Magnavox home game consoles (1971). During this period, all digital games were simple but very popular and served as a catalyst for the further development of the gaming industry. The aforementioned events and technologies, along with the proliferation of gaming arcades and applications for computers and other devices, helped make electronic games popular and accessible to a greater number of people

During the mass production stage of virtual production in the digital gaming industry worldwide (from the 1980s to the 1990s), the process of developing digital games became more complex and transformed from an auxiliary sphere of activity into an industry. Virtual products were identified as an independent category of products, one of the reasons being the need to determine their value and price. Virtual products have their own specificity, which cannot be reduced to standard mechanisms for evaluating goods that have a material form. During the 1980s to mid-1980s, the gaming industry experienced growth and development with the emergence of new gaming consoles, virtual products, and computer games, increasing the demand for gaming projects. However, the desire for manufacturers to dominate the global market led to: 1) the appearance of a significant number of publishers financing the development of new gaming projects (including Electronic Arts, Activision, Capcom, Sierra On-Line, Lucas Arts, and copycat companies); 2) the emergence of a layer of developers, designers, artists, and composers. In the period from 1985 to 1990, many US-based gaming companies focused on mass-producing games with simple graphics and un innovative gameplay to meet the growing demand for computer games. These games were called "clones" - they were created to imitate successful games from other manufacturers but caused a crisis in the US video game industry.

Expansion at the distributor level was observed in connection with the crisis of the US video game industry and the popularization of Blockbuster LLC's video game rental service through video rental stores, DVD mail, streaming, and video on demand. The active proliferation of home computers in Europe and Asia, characterized by the processes listed in Table 4, brought together the production of the digital gaming industry with the methods of creating central processors and other PC components necessary for the existence and development of digital games.

Table 4. Basic processes of home computer distribution in Europe and Asia

The country	Year of mass distribution	Popular computers	Number of users at the beginning of 1990
United Kingdom	1980	Sinclair ZX81, Commodore 64, BBC	2 million
France	1982	Thomson MO5, Amstrad CPC, Atari	2 million
Germany	1983	Commodore 64, Atari, Schneider	3 million
Japan	1982	NEC PC-88, NEC PC-98, Sharp X1	18 million
China	1984	DJS-050, New Star FC-20	0,3 million
India	1984	Hinditron 1600, XT Clone	0,03 million.

Source: The data on the number of users were taken from the study "The Digital Universe Decade - Are You Ready?" by the International Data Corporation (IDC), published in 2002.

The digital gaming market has gradually transformed into a specific environment of buying and selling relationships with consumers' unlimited virtual needs. A computer program that creates a game reality by organizing the gameplay becomes a virtual product. Such a virtual product, like a digital game, has several advantages over traditional physical products, including [1; 6; 7]: the ability to create an unlimited number of copies; no physical strain (does not require a physical copy of the game); immediacy (can be purchased and installed instantly); rapid updates.

We can observe from this stage:

1) a chain of prototypes of virtual products that reveals why earlier versions have features that are defined in later objects;

2) trends towards gamification of non-game application software.

As for the stage of development of game development technologies and technologies accompanying computer games (from 1990 to 2000 years), it is characterized by the transformation of the initial prototype of the digital game

industry into a developed industry. Such an industry is oriented on all kinds of computer programs which have got the opportunity of development, promotion, and sale, applying hardware-software systems of launching interactive game platforms, game engines, and computer and cyber-sports games. The processes of evolution have greatly contributed to:

- The spread of the Internet and hardware-software systems, which in the complex have become the products of the formation of an idea about the "ideal virtual product";

- expansion of the range of value and attractiveness of virtual products. This is also due to the emergence of virtual services.

Coming to rough estimates from 1990 to 1998, the total volume of the market of the digital game industry increased from $ 3,1 billion 13,1 billion (fig. 1).

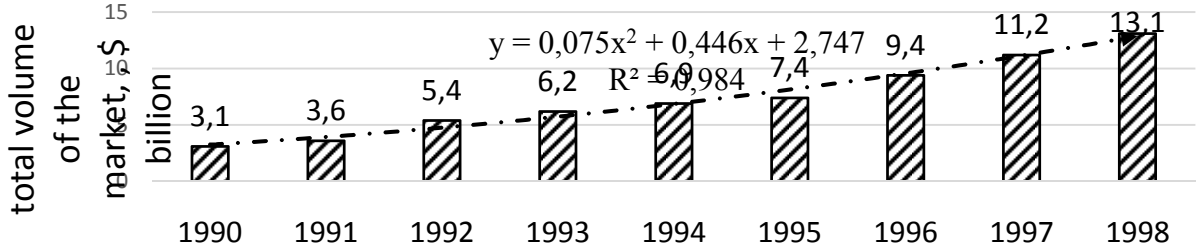

Fig. 1. Changes in the global digital gaming market since 1990 to the end of 1990, $ billion

Source: Data on the total market volume estimates were collected from various sources, including [1-4], and reports from research companies Super Data Research and Newzoo.

It should be noted that although the data provided are indicative and may differ from actual figures (since the industry was still young and some data may not be available or accurate), the rapid growth of the total market volume of the digital gaming industry during the period under review is obvious.

The main events of the stage (which caused the transformation in the economy) can be considered: the introduction of the optical disk with different data recording standards, which are now called "ridgeway books"; wide implementation of operating systems on graphical interfaces implementation of technologies 3D graphics, 3D graphics processors; the appearance of the phenomenon of a joint game expansion of

the role of publishing houses in financing development of new game projects for licensing of games; development of e-sport.

Stage of minimization of hardware and mass distribution of mobile phones (since 2000 and till now). This stage is characterized by the fastest growth in the total volume of the digital game industry market (Fig. 2), namely from $ 23,2 billion in 2000 to $ 189,3 billion in 2021.

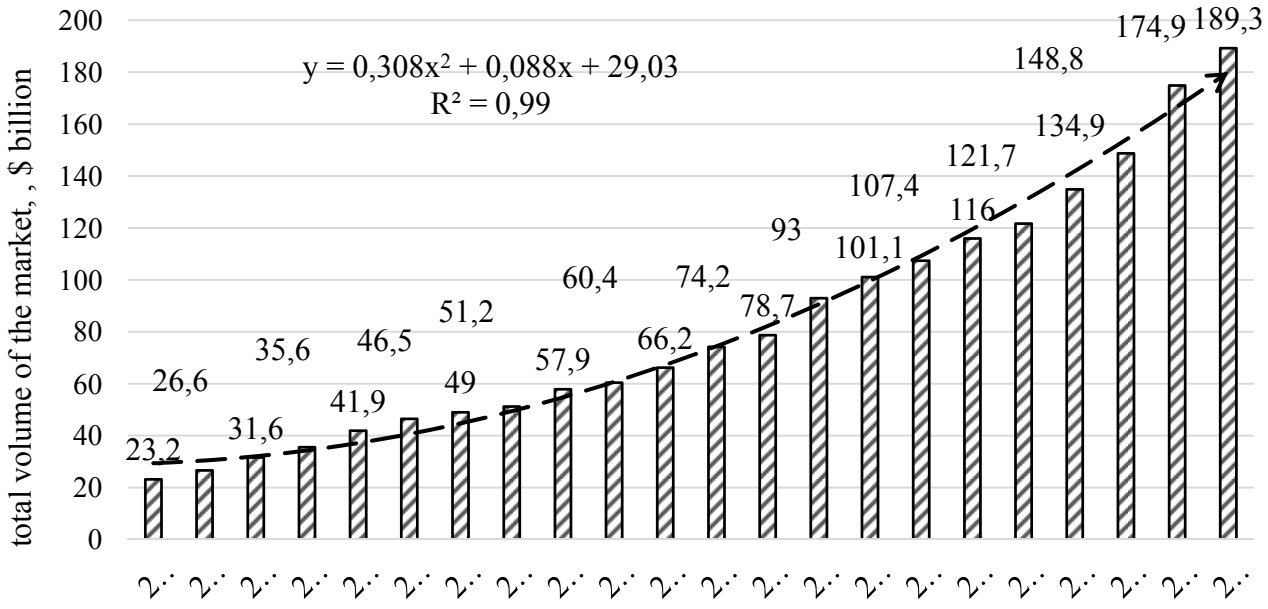

Fig. 2. Changes in the total volume of the market of digital game industry in the world from 2000 to 2021, $ billion

Source: this information is based on [1-4], as well as reports from research companies Statista (data for 2000-2011 was obtained from the article "Games market revenue worldwide from 2015 to 2020, by region"), SuperData Research (data for 2011-2016 was obtained from the report "Global Games Market Report"), and Newzoo (data for 2017-2021 was obtained from the Global Games Market Report).

It is worth noting that although the above data are indicative of the rapid changes in the industry that have resulted in the rapid transformation of the digital gaming industry into an industry with developed endemic (endemic) digital gaming industries and a unique value chain based on the broad availability of productive hardware-based game design and software (among which mobile devices; personal computers; virtual reality platforms; arcade machines; game consoles).

In addition to the phenomenon of hardware-software systems, this stage is characterized by the release of virtual products at anytime, anywhere, in any number of variants of models and formats. The variety of virtual game products is connected

with the spread of game engines, which: significantly simplified the processes of development of new game products; significantly reduced the time to launch new game products. At the same time, there is:

1) growth of the role of the consumer as a co-producer of virtual products;

2) differentiation of virtual products and related to separate specialized activities.

The stage that began in 2000 and continues until now is connected with the development of the multisphericity of the digital game industry, which is oriented on a new type of environment (virtual or digital economy).

The main events of the stage can be considered [7; 8; 9]: Facebook innovations (2007); Android Google release, with full SDK 1.0 developer package. (2008); the selection of new spheres of the digital game industry. At the same time, the spheres of the digital game industry are detailed by characteristics, which are characteristic of some common features by specialization and specificity of allocation. The diversity of spheres caused the difference in the modern structure of incomes of the digital game industry [7; 8; 9].

The endemic components of the digital gaming industry are not limited to virtual and augmented reality, financial trends, and improvements in graphics quality. Rather, they encompass the digital methods and tools used to create products within each endemic sector of the gaming industry. These sectors (endemic to the digital game industry) are structurally heterogeneous, formed by large composite blocks. For example, the following structural components of the digital gaming industry are identified (Fig. 3).

Fig. 3. Structural components of the digital gaming industry

Source: Drafted by author and based on the [10, c. 8-12]

Among such components, those identified as areas of the digital economy (its endemics), of which the main ones are: esports; mobile gaming; multiplayer game projects; streaming; cloud gaming. The content of the components of the digital gaming industry (endemics) allows us to state that they are quite structurally heterogeneous, as they are formed by large structural blocks that include: sectors; industries that provide the material and technical basis for the development of areas of the digital gaming industry; complexes.

The presented distribution of endemic components of the digital gaming industry is conditional. For example, a component of the esports sector may include the mobile gaming segment, cloud gaming services, and streaming. Currently, it does not exist in a pure form, as it contains a significant number of hybrid directions. At the same time, it can be noted that the endemics are structurally heterogeneous. The spheres and products of the digital gaming industry contain components such as: (1) the gaming industry (production of esports or other digital games - esports, mobile gaming); (2) development and maintenance of gaming software; (3) gaming software engineering (cloud gaming); telecommunications (streaming).

Identification of digital gaming industry sectors based on orientation is the result of deepening labor specialization. The stages of digital gaming product production

include production, distribution, exchange, and consumption. The components of integrated structures are identified based on the presence of mixed production.

Conclusions from this study and prospects for further exploration in this area. Based on the findings of the study, the following conclusions have been reached:

1. It has been shown that the spheres of the digital gaming industry are differentiated by characteristics that have some common features in terms of specialization and the specificity of extraction (including the presence of integration structures identified by mixed productions, discrepancies in the production stage of the product). Among the components of the digital gaming industry, the spheres of the digital economy (its endemics) include: esports; mobile gaming; multiplayer gaming projects; streaming; cloud gaming.

2. The content of the components of the digital gaming industry (endemics) highlights its multifaceted nature and allows us to state that they are structurally heterogeneous, as they are formed by large structural blocks that include sectors, industries that provide the material-technical basis for the development of spheres of the digital gaming industry, and complexes.

3. Taking into account the presence of multisphericity (aimed at identifying and transforming each component), the digital gaming industry is characterized by: 1) impact on the economy through game developers/publishers and manufacturers of electronic devices, computer components, and other players (including production, distribution, exchange, and consumption systems); 2) peculiarities of origin, emergence, and formation. The impact becomes of narrow specificity for the economy when transmitted through endemics.

Based on these conclusions, there are several possible directions for further research: studying the characteristics that distinguish different sectors of the digital gaming industry and the implications of these differences for the entire field; investigating the role of integration structures, such as mixed production, in the development of the digital gaming industry, identifying the advantages and disadvantages of these structures; analyzing the economic impact of the digital gaming industry, including its influence on production, distribution, exchange, and

consumption systems; exploring the origins and emergence of the digital gaming industry in relation to factors that contributed to its development; researching specific characteristics and potential impacts of endemics in the digital gaming industry, such as esports, mobile games, multiplayer gaming projects, streaming, and cloud gaming.

Література

1. Jason Whittaker, *The cyberspace handbook*, Routledge, 2004, p. 122
2. Jiji Gaho Sha, inc, *Asia Pacific perspectives, Japan*, vol. 1, University of Virginia, 2003, с. 57 URL: https://books.google.co.uk/books?id=CTRWAAAAYAAJ (дата звернення 15.07.2020)
3. Kent S. L. The Ultimate Guide to Video Game History. Three Rivers Press, 2001.
4. Mark J. P. The Video Game Explosion: A History from PONG to Playstation and Beyond, ABC-CLIO, URL: https://books.google.co.uk/books?id=XiM0ntMybNwC&pg=PA103#v=onepage&q&f=false (дата звернення 15.07.2020)
5. Tom Hirschfeld, The 8-Bit Era: A Comprehensive Guide to the Early Personal Computer, 2016
6. Лазнева І.О., Цараненко Д. І. Кіберспорт та його вплив на зміну структури світового ринку комп'ютерних ігор, Науковий вісник Ужгородського національного університету, 2018, Вип. 22(2), с. 63-67.
7. Проскуріна М.О. Стркетура індустрії комп'ютерних та цифрових ігор, як частина національної економки, Науковий вісник Міжнародного гуманітарного університету, 2017, Вип. 22. С. 58-62.

References

1. Whittaker, J. (2004), The cyberspace handbook, Routledge, London, UK.
2. Jiji Gaho Sha, inc. (2003), *Asia Pacific perspectives, Japan*, vol. 1, University of Virginia, available at: https://books.google.co.uk/books?id=CTRWAAAAYAAJ (Accessed 15.07.2020).

3. Kent, S. L. (2001), The Ultimate Guide to Video Game History, Three Rivers Press, USA.

4. Mark J. P. (2007), “The Video Game Explosion: A History from PONG to Playstation and Beyond”, ABC-CLIO, available at: https://books.google.co.uk/books?id=XiM0ntMybNwC&pg=PA103#v=onepage&q&f=false (Accessed 15.07.2020).

5. Hirschfeld, T. (2016), The 8-Bit Era: A Comprehensive Guide to the Early Personal Computer, Three Rivers Press, USA.

6. Lazneva, I.O. and Tsaranenko, D.I. (2018), “Esports and its impact on changing the structure of the global computer games market”, *Naukovyy visnyk Uzhhorods’koho natsional’noho universytetu*, Vol. 22(2), pp. 63-67.

7. Proskurina, M.O. (2017), “Structure of the computer and digital games industry as part of the national economy”, *Naukovyy visnyk Mizhnarodnoho humanitarnoho universytetu*, Vol. 22, pp. 58-62.

Стаття надійшла до редакції 20.02.2023 р.

МУКАЧІВСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ

89600, м. Мукачево, вул. Ужгородська, 26
тел./факс +380-3131-21109
Веб-сайт університету: www.msu.edu.ua
E-mail: info@msu.edu.ua, pr@mail.msu.edu.ua
Веб-сайт Інституційного репозитарію Наукової бібліотеки МДУ: http://dspace.msu.edu.ua:8080
Веб-сайт Наукової бібліотеки МДУ: http://msu.edu.ua/library/