DOI https://doi.org/10.30525/2592-8813-2024-spec-9

MOBILE GAMES MARKET TRENDS IN CONTEXT OF EXPERIENCE ECONOMY

Tamara Merkulova,
Doctor of Science (Economics),
Professor at the Department of Economic Cybernetics and Applied Economics,
V. N. Karazin Kharkiv National University, Ukraine,
Visiting Professor,
University of Barcelona, Spain
tamara.merkulova@karazin.ua

Vladyslav Bobrov,
Postgraduate Student at the Department of Economic Cybernetics and Applied Economics,
V. N. Karazin Kharkiv National University, Ukraine
bobrov.vld@gmail.com

Abstract. Mobile games are one of the most rapidly growing markets in the entertainment industry. The modern mobile games sector provides customers with goods that cover all the fields of experience and can be considered as a product of the Experience Economy. Our study is aimed at identifying trends and factors in the development of the computer and mobile games market as a sector of the entertainment industry. The main stages of its evolution were examined. These stages are determined on the one hand, by the development of technical devices, on the other hand, by customer demand for impressions and experience. The main factors that ensured the promotion of game technologies and the market success of game developers and producers of game equipment were identified.

Key words: experience economy, entertainment industry, game study, mobile games, video games, consoles.

Introduction. A quarter of a century has since the term Experience Economy appeared first in a scientific thesaurus [1]. Nowadays a common point of view is that the Experience Economy following Agrarian, Industrial, and Services Economies is forcing businesses to satisfy consumer demand for memory events and experiences. According to the fields of experience (educational, entertainment, esthetic, escapist), the Experience Economy has been prominently developing first of all in sectors related to leisure activities, tourism, culture, and entertainment [2].

Impressions and experiences are the core of the entertainment business, and in general, the development of the entertainment industry determines essentially the trends of the Experience Economy. Mobile games are one of the most rapidly growing markets in the entertainment industry. The modern mobile games sector provides customers with goods that cover all the fields of experience and can be considered as a product of the Experience Economy whose evolution has an essential influence on its development.

Tasks and methodology. Trends in the entertainment industry have been studied throughout the history of civilization, starting from ancient Rome [3].

The studies substantiate the conclusion that as free time increased, people's demand for leisure activities enhanced, really moving entertainment to the set of basic needs. The appearance of the first slot machines was a turning point in the evolution of the entertainment industry, determining the transition from passive spectacle to the pleasures of one's own actions [4].

Various aspects of modern computer and mobile games are discussed in a number of information and analytical sites, such as IGN, AmpereAnalysis, NewZoo [5, 6, 7].

This information is necessary to analyze the trends in this market, which are determined, on the one hand, by the improvement of the technical background of mobile gaming, and, on the other hand, by changing consumer demands in accordance with the Experience Economy insights.

Our study was aimed at identifying trends and factors in the development of the computer and mobile games market as a sector of the entertainment industry. In accordance with the tasks of the study, the main material of the article is structured as follows: the historical aspect of the development of computer and mobile games; consoles and games for personal computers; mobile gaming market and factors of its development.

The research methodology is based on a system and structural analysis of the video game market, and statistical and graphical methods.

Basic theoretical and practical provision. Historical aspect of the development of computer and mobile games. The origin of the entertainment industry can be considered from ancient Greece and ancient Rome, when performances, theaters, and various types of spectacles already appeared. The well-known expression "Bread and Circuses" by the Roman satirist Juvenal became a symbol of fundamental mass needs, equating, in fact, entertainment with primary needs. The Middle Ages contributed to the development of entertainment too, despite the harsh reaction of the church. At this time the first games appeared: cards, dice, checks, and backgammon, which came from the East [8].

The length of the working week can be considered one of the main factors driving entertainment evolution. In medieval England, a person worked 14–16 hours a day, but in 1848, first in Australia, then in some US states, an 8-hour working day appeared. Almost all spheres of entertainment at that time got a powerful boost to develop.

The appearance of cinema and radio became the driver of that process. Until the 50s of the 20th century, big cinema studios took people's attention, collected huge money, and even performed political functions [9].

The appearance of slot machines satisfied the customers' demand for participation and feeling emotions from one's own actions. The first prototype of a gaming machine was a mechanical "Turk", where a person had the opportunity to play chess against the machine. But it was still an illusion because the master was hiding inside the car [10]. At the end of the 19th century, the first gaming machines (slot machines) appeared and quickly became popular.

Despite their simplicity, their basic functionality grounded the basis for electronic devices [5].

The further evolution of slot machines was driven by the development and widespread use of computers. However, for very expensive and very big computing machines, as they were in the middle of the last century, the idea of games was unrealistic. Nevertheless, in 1958 physicist Willie Higginbotham created the first simple arcade game "Tennis for Two". Starting as primitive gameplay, the game evolved over the years into the famous Pong slot machine provided by the company Atari. This slot machine did not require large investments and this fact drove essentially its popularity [11]. In the 70s of the 20th century, when people got access to personal computers, the term "interactive entertainment" became widespread: home game systems, or consoles, entered the market.

Consoles and games for personal computers. Game consoles are specialized hardware for computers used for playing video games. Starting in 1972, there are already 9 generations of consoles, which differ in technical characteristics and capabilities.

The market success of game consoles was ensured by the following factors:

1) the possibility of connecting to a home TV;
2) the possibility to choose games, although the range of games was still meager;
3) a number of games were included in the standard configuration of consoles, that is, it was not necessary to buy games;
4) possibility of multiplayer for 2, 3, or 4 players;
5) adequate price: for example, for the Magnavox Odyssey set-top box, it was $100 in 1972, which was affordable for an American or European family.

As comparable prices show, the Magnavox Odyssey (1972) is one of the two most expensive consoles. The advanced consoles of 4, 5, 6 generations (1990, 1996, 2000) were the cheapest when entering the market (Table 1).

Table 1

Price for selected types of game consoles*

Console Generation	Console type	Company	Year of market entry	Original price $	Original prices adjusted for inflation 2022, $
1	Magnavox Odyssey	Magnavox	1972	99	689
2	ColecoVision	Coleco Industries	1982	175	528
3	NES	Nintendo	1983	199	581
4	SNES	Nintendo	1990	199	443
5	Nintendo 64	Nintendo	1996	199	369
6	PlayStation 2	Sony	2000	299	505
7	PlayStation 3	Sony	2006	499	720
8	PlayStation 4	Sony	2013	399	623
9	Xbox Series X	Microsoft	2020	499	561

**Calculated on the base [5]*

Adequate price policy for consoles can be illustrated by the case of the USA (Table 2). Comparing prices for selected consoles from different generations and monthly average household income shows that the highest relative price was in 1972 (Magnavox Odyssey, 10,5% of monthly income), and the lowest one was in 1996 (Nintendo 64, 5,1%). The trend of relative prices could be described as decreasing, however, this tendency wasn't monotonous. But, in general, game consoles were not very expensive and this facilitated their popularity.

Table 2

Game console prices and household income, USA*

Year	Console type	Monthly average household income, $	Original console price, $	Relative price (4/3, %)
1	2	3	4	5
1972	Magnavox Odyssey	940	99	10,5
1982	ColecoVision	2026	175	8,6
1983	NES	2117	199	9,4
1990	SNES	3117	199	6,4
1996	Nintendo 64	3927	199	5,1
2000	PlayStation 2	4761	299	6,3
2006	PlayStation 3	5547	499	9,0
2013	PlayStation 4	6053	399	6,6
2020	Xbox Series X	8086	499	6,2

**Calculated using [12]*

Set-top boxes remain an important and stable sector of the games and interactive entertainment market (Fig. 1).

This market has some specific features; among which it is worth noting the following.

1. Higher prices for games and sales of consoles "in the red", because producers earn interest from licensed copies of games.

2. Consoles lag technologically behind personal computers, as they are developed and come out once every five to seven years, while PCs are constantly being modernized.

3. The console market is an oligopoly with a very high entry threshold. To enter this market it is necessary to invest not only in a new console and marketing, but also in the games themselves, because development companies are skeptical about developing games for the new architecture.

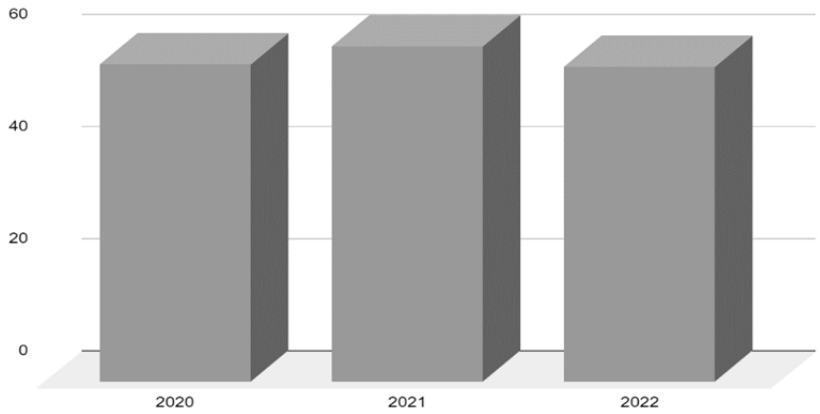

Fig. 1. Global console gaming market, bn $

Source: Harding-Rolls P. [13].

In addition, a game console is a device that has only entertainment functions. Another situation is when multi-functional equipment is used for games. After the appearance of the first mass PCs, the possibility of using this equipment opened up for everyone who could buy such a gadget.

Thus, PC games developed closer to the end of the 1980s, when CD-drive technology began to spread around the world. In our opinion, the main factors that ensured the success of interactive entertainment on a PC are the following.

1. Rapid technological development of personal computers. Modern consoles and mobile devices do not have similar computing power.

2. Unification of standards. Computer parts from different manufacturers can be combined with each other, and the market of operating systems is controlled by Microsoft.

3. Multifunctionality of the device. Modern PCs have many functions, including those related to the Internet. Personal computers were purchased first of all for work or study, but at the same time, the user's need to play can be satisfied.

4. Piracy. Unfortunately, a huge amount of content on the PC is distributed illegally. This is still a specific feature of the software market, where software companies don`t have ultimate solutions to prevent piracy.

5. Competition. Due to the lack of a monopoly from hardware companies, small game studios had an opportunity to create games, so the variety of genres and cult projects has been growing [14].

It is worth emphasizing that the entertainment industry has become its cult status thanks to the development of PC games. For almost forty years of commercial production, a large number of franchises have been issued, which, by the way, later were realized as console and mobile versions. Table 3 presents the five most popular games in history by the number of copies officially sold (including PC, console, and mobile devices).

Mobile gaming. Since the 2010s, mobile gaming has become the most promising and profitable for companies [16]. Based on the analysis of mobile gaming specifics [15, 16] we identified the most important factors driving this success.

Flexibility in free time spending. The modern rhythm of life, especially in megacities, leaves people only moments for recreation, and therefore many potential game players have very limited time resources for their favorite pastime. Mobile games in this sense are more flexible, because they take less time, and mostly do not require strong concentration of attention.

Simplicity. The mobile game is much simpler, and closer to an arcade game and this broadens the target audience. As an example, we can refer to the genre "Three In A Row", which children like very much. Simplicity eliminates restrictions of age, education, skills, etc., and therefore contributes to the potential consumers' audience expansion.

Table 3

Best-selling video games

Title	Country	Sales (m)	Issue Date	Is mobile?	Genre
Minecraft	Sweden	238	2009	Yes	Sandbox
Grand Theft Auto V	UK	185	2013	No	Action-adventure
Tetris (EA)	Canada	100	2006	No	Arcade
Wii Sports	Japan	83	2006	No	Simulator
PlayerUnknown's Battlegrounds	South Corea	75	2017	Yes	Battle Royale

Source: Sirani J. [15].

Accessibility and convenience. The smartphone is always nearby, there is no need to start a PC or console and carry special equipment with you. Thus, people can play at any time using their smartphones.

Rapid development of mobile technology. The iPhone the latest model can produce a fairly high-quality picture and allow customers to play full-fledged ports of computer games.

Public opinion. The attitude toward games is different in countries. For example, buying a game console may be considered by society as "curious" for an adult, but playing on a phone is considered a usual activity because the phone has many other functions.

But the multi-functionality of a mobile phone has a flip side. Even when the game application is running, there are fairly standard functions that need to be performed, including support for telephone communication with the substation; permanent protection of confidential phone information and SIM card information; saving charge due to battery power.

Because of these limitations, in mobile gaming, we can note a "genre drought", that is, a limited range of genres and types of games. Mobile game developers concentrate on simple gameplay, a small amount of time for playing (and this is the opportunity to play in transport or during a school break), and efficient usage of limited technical resources.

Although mobile phones already began to appear en masse in the early 1990s, the market for mobile games began to take shape closer to the new millennium. Back then, the capabilities of phones were low even compared to computers of the time, and mostly mobile games were simple arcades, such as the famous Snake. It was the flagship game developed by Nokia for its phones. Moreover, this game became one of the factors of the extremely high popularity of the Nokia 3210, 3310, and 1100 phone models. The last model of 2002 is still the most popular mobile device in history – more than 250 million phones have been sold [17].

The next stage of the mobile market development can be considered the Java era when phones got color screens and the possibility of installing applications not foreseen by the basic configuration. At that time, many well-known projects appeared on the market – first of all, Gravity Defied, a bicycle riding simulator. The game became very popular due to its simple gameplay and ability to control levels. Such interest of the audience (mostly young) began to move mobile games closer to pre-computer games.

In 2005–2010, there were a lot of big PC projects that were adapted to the technical limitations of phones. For example, Assassin's Creed, Diablo, The Elder Scrolls, The Witcher, Splinter Cell, FIFA, and even the classic Prince of Persia had their mobile versions. But, comparing the possibilities for players on large devices, mobile games remained something "for children" or a simple adaptation of large projects with primitive graphics and uncomfortable controls (narrow mobile keyboard with small keys). A specific problem was the lack of adequate game distribution at that time.

There was no CD-type technology for phones, and IrDA (known as an infrared port) and Bluetooth served as the only means of exchanging data between phones. In addition, there only were a few mobile stores with games, and mostly they had limited supply from a cellular operator. It should be singled out the specific technical problem related to mobile Internet standards: phones were not able to work on a wired connection, and Edge and 3G standards had noticeably inferior speed in data exchange [18].

The appearance of the first iPhone in 2007 was a qualitative leap for the industry. The technological breakthrough, especially the touch screen, required new applications including games, from software manufacturers. In 2009, the cult game Angry Birds was issued.

At that time large game companies began to be created, which were aimed only at the mobile market. Two successful applications for the implementation of games were formed – App Store and Play Market. For example, in the first quarter of 2023, 2.248 and 2.633 million applications, respectively, were available on these platforms (2022). Number of apps available in leading app stores as of 3rd quarter [19].

Games have remained the largest category of applications in the App Store. At the beginning of 2023, there were about 340,000 games (Fig. 2).

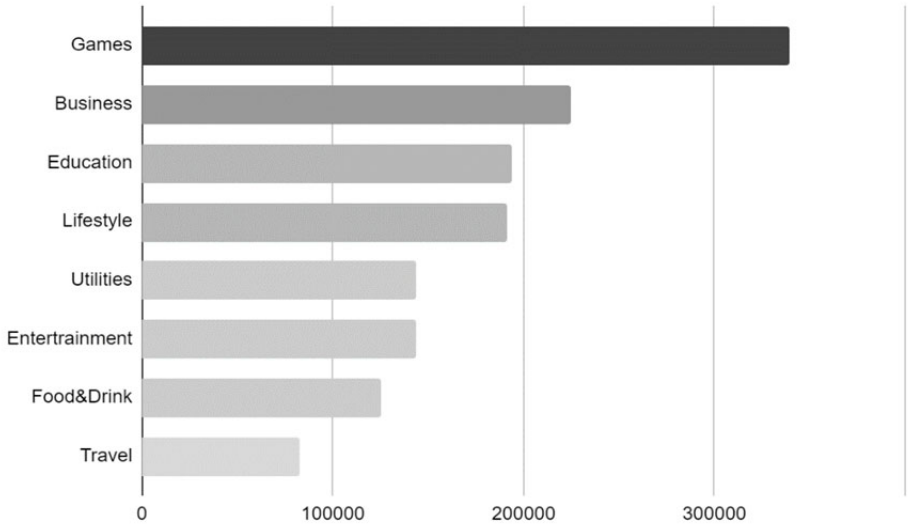

Fig. 2. Categories of applications in the App Store

Source: Curry D. [20].

For comparison, Steam (the largest digital store for PC games) will have about 92,000 games available in 2023 [21]. This can be explained by the fact that the App Store has a fairly loyal new app policy, and as a result, a lot of these games are of mediocre quality and have a very limited audience. The fact that a total of 94% of applications are free can serve also an argument in favor of low quality of these products. Of course, they can earn through additional features or donations, but, in general, it is a trend in the mobile market to give the minimum functionality to persuade the user to buy the premium version [22].

Therefore, over the past 10 years, the mobile games industry has grown to a global promising market, that has many regional features.

Conclusions. The mobile games market was analyzed as a sector of the entertainment industry and the main stages of its evolution were identified. These stages are determined on the one hand, by the development of technical devices that allow expanding the capabilities of players, on the other hand, by customer demand for impressions and experience. The main factors that ensured the promotion of gaming technologies and the market success of game developers and producers of game equipment are identified. The development of mobile gaming has become a natural milestone in the evolution of the entertainment industry and the experience economy. The next step is the transition to cross-platform video games, as a number of game companies have already announced.

References:

1. Pine, J. and Gilmore, J. (1999) The Experience Economy. Harvard Business School Press, Boston, 1999.
2. Andersson Ake E, Andersson David E. (2006). The Economics of Experiences, the Arts and Entertainment. Publisher: Edward Elgar, Cheltenham, UK.
3. Hammer D. (2009). Roman Spectacle Entertainments and the Technology of Reality – ResearchGate. Retrieved from: https://www.researchgate.net/publication/236775111
4. Winter D. (2018). Mangavox Odyssey, first home video game console – Pong-Story. Retrieved from: http://www.pong-story.com/odyssey.htm
5. Sirani J. (2020). Update: Comparing the Price of Every Game Console, With Inflation – IGN. Retrieved from: https://www.ign.com/articles/comparing-the-price-of-every-game-console-with-inflation
6. Harding-Rolls P. (2022). Console market reaches new heights with growth to $60 billion – AmpereAnalysis. Retrieved from: https://www.ampereanalysis.com/insight/console-market-reaches-new-heights-with-growth-to-60-billion
7. Top countries and markets by video game revenues (2023). Newzoo. Retrieved from: https://newzoo.com/resources/rankings/top-10-countries-by-game-revenues
8. Madruga I. (2019) The history of gambling development – LoginCasino. Retrieved from: https://logincasino.com/article/kratkii-ekskurs-v-istoriy-samih-populyarnih-azartnih-igr
9. Sakhno O. (2019). The Formation of Memory on Jewish People Genocide in the Soviet Cinematography — Zaporizhzhia historical review. Retrieved from: https://istznu.org/index.php/journal/article/view/126
10. Standage T. (2002). The Turk: The Life and Times of the Famous Eighteenth-Century Chess-Playing Machine – New York: Walker, pp. 22–23
11. Abby. (2023) The Complete History of Tennis for Two. – HC. Retrieved from: https://history-computer.com/tennis-for-two-complete-history/
12. (2023). US Average Household Income by Year – Mutpl. Retrieved from: https://www.multpl.com/us-average-income/table/by-year
13. Harding-Rolls P. (2022). Console market 2022 review: Hampered by lack of hardware availability – Ampere Analysis. Retrieved from: https://ampereanalysis.com/insight/console-market-2022-review-hampered-by-lack-of-hardware-availability
14. Khomych A. (2022). What is an Indie Game and Why is It So Popular – Getsocial. Retrieved from: https://blog.getsocial.im/what-is-an-indie-game-and-why-is-it-so-popular/
15. Sirani J. (2023). The 10 Best-Selling Video Games of All Time – IGN. Retrieved from: https://www.ign.com/articles/best-selling-video-games-of-all-time-grand-theft-auto-minecraft-tetris
16. Endey A. (2022). Mobile Gaming is Getting Popular and Here's Why – Movies, Games and Tech. Retrieved from: https://moviesgamesandtech.com/2022/06/22/mobile-gaming-is-getting-popular-and-heres-why/
17. With 255 million sales, Nokia 1100 is world's highest sold phone (2023). Kashmir. Retrieved from: https://thekashmiriyat.co.uk/with-255-million-sales-nokia-1100-is-worlds-highest-sold-phone
18. Dovhaluk B. (2023). History of Java Games – Smart2000s. Retrieved from: https://smart2000s.com/2021/09/26/history-of-java-games/
19. Number of apps available in leading app stores as of 3rd quarter 2022 (2022). Statista. Retrieved from: https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/
20. Curry D. (2023). App Store Data – Businessofapps. Retrieved from: https://www.businessofapps.com/data/app-stores/
21. Dean B. (2023). Steam Usage and Catalog Stats for 2023 – Backlinko. Retrieved from: https://backlinko.com/steam-users
22. App store VS Google store (2021). Byyd. Retrieved from: https://www.byyd.me/ru/blog/2021/09/app-store-vs-google-play/