

REVIEW

Economic Model of Microtransactions in Video Games

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ARTICLE INFO

Article history:

Received: 29 December 2018

Accepted: 2 January 2019

Published: 4 January 2019

Keywords:

Microtransactions

Freemium games

Pay-to-win

Mobile games

Video games

ABSTRACT

Microtransactions denote a payment made for purchase of mobile phone application or additional content in video games. The basic revenue principle for publisher was to sell the entire content at once, with the buyer having to pay the game as a whole. Trends from mobile applications and mobile games market have slowly transferred to PC games and console video games. About one half of total revenue of big video games publishers comes from microtransactions. The topics of this paper are the economic effects of microtransactions on video game industry business model. The scope of microtransactions and different implementing procedures will be discussed in paper. The goal is to determine the change of the position of all stakeholders involved in the process of creating and publishing video games.

1. Introduction

After initial success, the video game industry has undergone a great expansion in the last two decades of the 20th century. There was a significant increase in the number of published titles every year, except in the period from 1983 to 1985^[1]. In amusement arcade, video game machines gradually replace the pin-ball, while some companies develop specialized home gaming consoles. The growing market accepts all kinds of products, which leads to development of different gaming genres. Video games begin to intertwine with other genres of modern culture, primarily music and film^[2].

Due to the high cost of equipment and unavailability of professional staff, the number of companies on the supply side was initially very small. With increasing demand, more and more development studios and publishers have entered the market. The basic revenue principle for publisher was to sell the entire content at once, with the buyer having to pay the game as a whole (a pay-to-play concept, a premium-price sale). In this way, the buyer received the whole game, while the publisher was compensated in full. There were major changes on the video games supply side at the beginning of 21st century. The sharp drop in equipment prices and the exponential growth in the number of educated ICT experts have allowed the creation of a large

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number of new development teams. The overproduction of video games made success much more difficult than in the previous period.

Development teams were buying media visibility and favorable positioning in stores through contracts with publishers. As these positions were limited and costly, development teams turned to the Internet as a distribution channel. This creates a segment of independent development teams - the so-called indie studios. Using direct distribution, indie studios could avoid imposed contract with publishers. Given that their budgets are very limited, games they make in most cases cannot be compared with games that are funded by major publishers. Therefore, indie games prices are also several times lower. An alternative approach was the partial sale of the game at lower price, or even the free download of the game, in which some content could be additionally charged. In gaming terminology, games that are basically obtained free are called free-to-play games, or freemium games, and all purchases that are subsequently performed are called microtransactions.

The topics of this paper are the economic effects of microtransactions on video game industry business model. The goal is to determine the change of the position of all stakeholders involved in the process of creating and publishing video games. The first part explains the concept of microtransactions and the forms in which they can occur. In the second part, the method of performing microtransactions in different circumstances was analyzed. In the third part, the impact of microtransactions on publishers' cash flow is analyzed.

2. The Scope of Microtransactions

Originally, microtransactions denote a payment when purchasing an application for a mobile phone or additional content in video games^[3]. Although most microtransactions are low-amount payments, they can be said to be determined primarily by purpose, not by the amount. There are many examples of microtransactions of high amount, often at the price level for complete games, as in the case of *Dead Space 3*^[4]. However, most of the applications for mobile operating systems are sold at a price that falls under the category of micropayment - usually only a few dollars. Applications are offered at a low price to reach as many users as possible. Another group of applications offers free download and use of basic content. Publishers often offer additional content, which can be purchased at low price, which either brings new functional use of the application or make a certain change in design. Some applications have free versions that are full of third-party ads, so the user has to pay a certain amount if he wants

to use a clean version^[5]. The trick that publishers often resort to is to give a trial period of several weeks during which the application is free. The idea is to make user accustomed to the application, so in order not to lose the product that gives him value he accepts to pay later.

Trends from mobile applications and mobile games market have slowly transferred to PC games and console video games. The concept of microtransactions was firstly adopted by indie studios, fighting thus against the more potent competition of publishers. After some time, the publishers themselves have changed business policy and started to rely on microtransactions, even in those games for which customers paid full price when buying. Depending on the genre of the video game, various additional contents can be purchased via microtransactions. Generally, through microtransactions customers can make cosmetic changes to the existing game design, bring additional content otherwise unavailable in a free version, improve position under existing conditions, buy time or subscribe to access certain game modes.

There are many ways to sell cosmetic content through microtransactions, which in no way affect the very mechanism of play. This comprises the purchase of alternative looks or costumes for existing characters in the game, completely new characters, a different voice of narrators or characters, elements of an environment that have no effect on gameplay. This is the case with *Far Cry 5*^[6] and *Overwatch*^[7], which represent the most exclusive class of games on the market. Most of the gaming community accepts only cosmetic microtransactions, because it is considered that all other forms create an imbalance among players. Cosmetic changes are often part of a wider pack of microtransactions and serve as an additional stimulus to consent the player to additional purchase.

The second group of microtransactions brings additional content to the existing game, without changing gameplay or creating imbalances. It is used for buying new missions in action games, new nations and new scenario packages in strategic games, new vehicles or tracks in racing games, classic teams or regimes in sports games, new characters in fighting games, new levels in platform games and new episodes in adventure games or gameplay modes in managerial simulations. Those additional contents are called DLC (downloadable content), and are often sold at a price that is close to the price of the original. Often by purchasing a DLC package, the player really gets a new experience and gets the feeling that the creators have made the effort to bring additional content. This is the case with the DLC package *Lair of the Shadow Broker* for *Mass Effect 2*, and the *Enemy Within* for the *XCOM*^[8], which extends the story of the original game

with additional content and offers a new experience to the players. There are frequent situations when the DLC package obviously represents a scrapped part of the original game, with the only purpose of additional charge. This is an example of buying additional characters in the game *Mortal Combat X*^[9], which rises the original 60\$ price to an incredible 150\$. DLC packages are sources of extra income for publisher, because the resources used for its creation had already been used to create the original game. This is the typical example of achieving the economy of scale^[10].

The third group of microtransactions is especially unpopular in the gaming community. It is about purchases that change the existing balance in the game. In games intended for one player, microtransactions facilitate promotion, while in multiplayer games they create a privileged position for a player who pays, and discriminate other players. Purchasing of improvements and bonuses for character or faction that a player is leading distorts the existing balance of the game^[11]. Buyers of microtransactions have more chances to win than other players. Such an approach is called pay-to-win and is often aggressively stimulated by the design of the game, which prevents progress after some level of achievement without microtransactions. Earlier it was characteristic of mobile games, whose initial launch was not charged, but progress through the game was becoming increasingly difficult or almost impossible. There are attempts to apply pay-to-win approaches in the most exclusive games, which have already been paid full price. Although publishers give official announcements that everything that is the subject of microtransactions can be obtained by playing, in practice things are a little different. In the game *Star Wars Battlefront 2*, unlocking of all content is practically impossible without payment^[12]. A team of players has created tables with a calculation of the required hours of playing for gradually unlocking the content, where only for the first hero (one of the many that follow) it takes many dozens of hours playing. Fortunately for the future of video game development, the gaming community punished an attempt to double-charge through the boycott of this game.

"Selling time" is especially popular in mobile games, which means players who play the free version must wait for a certain period of time between their turns, while players that pay microtransactions eliminate waiting periods and can play more consecutive turns. A negative example of this practice is the mobile version of *Dungeon Keeper*, where serious progress was completely blocked without payment^[13]. Games that imply a time limit to complete certain tasks or to finish levels also sell time. In this case, users want to buy additional time, because

after initial progress it becomes impossible to continue to advance according to the schedule that games originally provide.

On gaming consoles, such as Sony Play Station and Microsoft Xbox, multiplayer regime of any game is extra charged. Players also need to pay periodic subscriptions in order to access a multiplayer mode in some PC games. Since these games do not practically have single player mode, or if such a mode is much less attractive than the multiplayer mode, publishers sell passes for servers through which multiplayer matches are organized. The sales volume represents the economy of scale, as the bulk of the costs are fixed and relates to the maintenance of their own or leased servers, so a greater number of players reduces the average cost. A large number of publishers use this form of microtransactions even for premium-price games. An example is the *World of Warcraft*, in which it is necessary to pay an annual or monthly pass in order to be able to play in multiplayer mode^[14]. In the literature, the sale of a pass is not actually called microtransactions, but it is a business model of additional sales that is close to the previously described ones.

There are many games that combine these approaches in order to achieve as much profit as possible. *Game of War: Fire Age* is infamous for uncompromising access to microtransactions^[15]. Time limits, the inaccessibility of stronger units and weapons, unlocking social events, in this game everything is for sale and everything is impossible or very difficult to achieve without payment.

3. Implementation of Microtransactions in Video Games

Implementing microtransactions into games can be done in different ways, but they all have two aspirations. On the one hand, making purchases should be as simple as possible and not to interrupt the gaming process, while on the other hand, the act of purchasing additional content itself should psychologically be as far away from spending money as possible. The first request comes as a result of the need to respond to the wishes of the players at the time they occur. The desire to spend money on in-game purchases comes as a result of the game itself, so payment must follow this process and not interrupt it. It is often an impulsive reaction caused by poor results achieved, so delaying execution could result in a decrease in desire. Leaving the game in order to make a payment can lead to hesitation and postponement of purchase, causing the loss of potential earnings. Such a situation would be equivalent to going to the bank and traditional payment for a service or product in e-commerce. Therefore, regardless of the service where the payment will be made, it is necessary to

implement the store itself in the game.

The second requirement is the consequence of the tendency to relativize the consumption of real money and to separate it from the content being purchased. From a psychological point of view, it is easier to sell certain content if the customer is not aware of its true price, or its relative price compared to other products or services. Therefore, development teams will rarely set prices in fiat currency for additional content they sell. The above mentioned does not apply to DLC packages and subscription payments, because these prices are clearly indicated and purchases are not in-game.

One of the easiest ways to achieve both requests is to use virtual money as an intermediary. Virtual money is electronic money used in an enclosed virtual community. It serves as a mean of calculation and payment in transactions where the issuer is involved. It is used for purchasing virtual products and services^[16]. For microtransactions purposes, development teams have implemented virtual money in a number of video games. Depending on the design, the game can have one or two (some way and more than two) forms of virtual money. In games where there are two or more forms of virtual money, one form is distinguished and it cannot be earned in the game, but it must be purchased. Such a form is usually called the premium currency and its shape varies^[17]. In most games, these are gems (Clash of Clans, Dungeon Keeper, Clumsy Ninja) and gold (Game of War, Farm Heroes Saga, Real Racing 3), while some games have unique premium currency forms, such as nobility points at Kingdom at War and donuts in Simpsons: Tapped Out^[18]. It is not possible to buy exactly the desired amount of virtual money (as much as it takes to buy, for example, the new skin for the character that player leads), but there are pre-defined packages. Package prices usually range from \$ 4.99 and very often go up to \$ 100. The use of premium currency gives the publishers four types of advantages.

Firstly, by using a package system, publishers get space for a discount system. Most often each more expensive package offers a higher amount of premium currency, attracting users to perform more expensive purchases. This is supported by the fact that packages cheaper than \$ 4.99 are rarely purchased even when they are available. Secondly, players rarely apply a fiat currency/premium currency rate to final purchase. If the basic package of 132 donuts in the Simpsons: Tapped out game costs \$ 9.99 and the Christmas tree costs 75 donuts, the player will not focus too much on calculating the price of tree in dollars and comparing it with a price from a real environment. If he or she wants a Christmas tree, he or she will focus on the necessary donuts. If the "change" remains unused, then

the model of selling the premium currency through packages is even more successful, because players spend more compared to the situation when they could buy the desired item directly. Thirdly, by using the package system, publishers get a tool for price discrimination. Depending on whether a player buys the same premium currency in the United States, Japan, the UK or Europe, prices will vary. This means that the real exchange rates will not be applied to the packages, but the approximate rates that allow the rounding of prices in certain currencies. In other words, some players can have price advantage for smaller or larger packages than players from other geographical regions. Finally, publishers can apply a non-refundable and loss-aversion method to provoke players to buy. Players receive a premium currency in small amounts as a reward for certain activities. As these volumes are insufficient to buy, publishers offer an additional premium currency that will allow the use of pre-existing stocks. Most players have an aversion to loss and believe that existing stocks are earned, and that they can be lost if not used. Although a rational purchase decision should not depend on whether a certain amount of premium currency has already been earned, a large number of players behave in accordance with the sunk costs fallacy^[19] is willing to pay extra in order not to lose previously earned.

The second most frequent microtransactions model are so-called loot boxes. Players get loot boxes of unknown content which cannot be opened unless they pay a certain amount as a reward for progress. While the virtual money model is more often used in mobile games, the loot boxes model is more common in PC games^[20]. The contents of the boxes vary from cosmetic details to serious improvements that make gameplay easier. The problem is that player cannot know in advance what he or she will get. Using a similar aversion to loss as in the case of virtual money, publishers are provoking players with loot boxes to pay and get the secret contents. The price of opening one box is low, but the problem is that their content often has a low value for player. In the case of games where a large amount of different items are collected, a player can spend huge amounts on opening boxes whose content he does not need. The problem is not in the application of the system itself, but in the distribution of prizes and their impact on the further course of the gameplay. If the system is designed so that player cannot progress through the game without the paid content, this aggressive model can be punished by the abandonment of a large number of players.

Although all forms of microtransactions have encountered a disapproval of gaming community at a smaller or larger scale, loot boxes have been the subject of legal

considerations in several countries^[21]. The main criticism is that players pay a certain amount of money without knowledge what they are going to receive and therefore loot boxes actually represent the form of gambling. The Belgian court ruled that loot boxes in FIFA 18, published by the EA Games, represent a form of gambling^[22]. According to the verdict, a larger number of publishers were ordered to ban loot boxes in games sold in Belgium, and an investigation was conducted against those who did not comply with the decision. Just before that, New Zealand ruled that loot boxes were not a form of gambling^[23]. The crucial problem is that gambling regulation is a very demanding procedure, which video game publishers probably will never undertake. However, the argument that video game publishers refer to is that loot boxes always give something to the customer, only that it is not always what the customer wanted. In fact, they are close to card collecting, because the customer does not always get what he bought the bag for. During gambling, the player can remain without anything, and this is not possible with loot boxes. The opponent's argument is that cards have some intrinsic value, because the customer can trade cards that he does not need, which is not possible in video games. Also, the contents of the card bag is decided at package-time, while the content of the loot box is decided at open-time, which means that publishers can deliberately remove items player needs.

Regardless of the form they choose, publishers are aware that most of the customers will not use microtransactions. By attracting a sufficient number of those willing to spend, the average income from the game will increase. A survey in 2014 showed that only 1.5% of free-to-play games players use microtransactions, and that 10% of them produce 50% of total revenue^[24]. This means that 0.15% of the total number of players brings half of all revenues. These players are called in zargon "whales"^[25]. Unlike individuals who spend a lot in the real world, "whales" of video games are not millionaires. Those are average people, mostly younger men, who easily get on certain entertainment content. In 2016, the Taphoy platform classified users according to the average number of microtransactions and amounts they spend. "Whales" perform 7.4 purchases monthly, spending on average \$ 335. This is an amount that is five times higher than the price of exclusive PC games^[26].

4. Changes in Video Games Industry

There were two opposing tendencies in creating video games over the past 15 years. The first was the growth of total budgets needed for the production (development and marketing) of top-notch video games. The second was the

fall in the minimal required budget for creation average video games, which led to the rise of an indie scene^[27]. During this period, mid-size studios were virtually gone, while the entire industry polarized at one of the two ends. The content of video games today is far more realistic in every way than it was fifteen years ago, but the number of designers and animators needed is much higher. Large studios can hire more designers and animators than before, and each individual aspect of the game is made longer and harder than before. The cost of game development is therefore higher than before. The pluralism of devices on which a particular game can be played (PCs, Xboxs, Sony Playstations) raises the total cost of production, as optimization is required for each system individually. In addition, investment in marketing grows practically every year. Publishers invest in traditional marketing, digital and social marketing, sponsoring various promotional events aimed at popularization of content they sell. The final results are games whose budgets can be measured with movie budgets.

In 1997, more than \$ 100 million was invested in the production of Final Fantasy 7, around 40 million for the development of the game and the rest in marketing^[28]. Costs grew in the XXI century, so about 250 million US dollars were invested in the production of Call of Duty 2: Modern Warfare in 2009, with most of the investments being made by marketing^[29]. Grand Theft Auto V from 2013 is the most expensive game at the time of release, with a total cost of \$ 265 million^[30]. In Table 1, one can see 10 most expensive video games according to total development and marketing costs, adjusted to 2018 price level. In this way, it is possible to compare costs from different periods of time.

These budgets are too high for the publishers to finance them with their own funds. Loans are setting even higher profitability thresholds, that is, the publisher must sell at least 25-30% more than the investment, in order to start making profit. Bearing in mind that the premium price of exclusive video games has been \$ 60 for more than a decade^[31], publishers need to sell at least five million copies of the game at full price to cover all costs. Since exclusive games cost more and more, publishers cannot afford cutting costs as an operational strategy. In order to achieve a breaking point as early as possible, they have to achieve an increase in sales revenue. However, \$ 60 represents the psychological price that publishers do not dare to cross^[32]. The ability to indirectly generate revenues higher than the premium price represents the most powerful motive for using microtransactions.

Another important trend that affects video game publishers is changes in the overall revenue structure. Figure

Table 1. Top ten most expensive video games according to the total costs [27-29]

Position	Full name of the game	Year of release	Total costs at the release	Total costs adjusted to 2018
1	Call of Duty: Modern Warfare 2	2009	250	286
2	Grand Theft Auto V	2013	265	279
3	Star Wars: The Old Republic	2011	200+	218+
4	Halo 2	2004	120	208
5	Destiny	2014	140	145
6	Dead Space 2	2011	120	131
7	Final Fantasy VII	1997	80-145	120-220
8	Grand Theftz Auto IV	2008	100+	114+
9	APB: All Points Bulletin	2010	100	112
10	Mac Payne	2012	105	112

1 shows the movement of total revenues at the industry level in the period 2012-2017 and the projection of the Newzoo agency for the period 2018-2021. The mobile games segment that was ranked as last in 2012 took over first place only three years later. There are estimates that in 2018, more than half of all industry's revenue will originate from this segment. While the average annual growth rates of PC games and console games revenues are 3.1% and 2.3% respectively, the annual growth rate of mobile games revenues is as high as 26.8%. Due to the indicated trends, an increasing number of publishers are trying to rely their revenue on a growing segment of market.

live services (the terminology used by this company for various forms of microtransaction), a 31% increase over the previous fiscal year [35]. Live services now account for 42% of all company revenue and even 62% of revenue from digital distribution.

5. Conclusion

The bulk of the gaming community has a very negative attitude towards microtransactions. While one part sees them as an expression of publishers' greed the other part thinks that providing the opportunity to buy out the lack of abilities undermines the meaning of gaming competition. A small number of games are reserved only for cosmetic microtransactions, so players openly show their dissatisfaction more and more.

Regardless of the fact that the legal treatment of microtransactions varies across countries, the fact is that a number of negative effects on children have been recorded. The loot boxes system may not be a gambling itself, but it develops children's fondness towards gambling. This is also testified by websites that allow betting on the next content a player will get by opening loot box. An even greater problem is the abstractness of spending real money, which leads children to unconscious spending. Aggressive in-game sales allow children to make payment that is executed through an account at the mobile application store. As the payment instrument is already linked to an account, children can pay by themselves. Since they do not need to enter any security code for making payments, they do not have to be aware that they actually spent their parents' money. In practice, there have been cases where children spent thousands of dollars on microtransactions.

A classic pay-to-play approach is no longer a dominant model of monetization in the video games industry. High development and marketing costs have intensified



Figure 1. Total video games industry revenue with shares of individual market segments in the period 2012-2021 [33]

Large publishers have adapted to these trends. More than half of Activision Blizzard's revenue in fiscal year 2017 comes from microtransactions. Out of a total of \$ 7.16 billion in revenue, about \$ 4 billion comes from various forms of microtransaction [34]. The company purchased mobile games publisher King, who has Candy Crash and Farm Heroes in his portfolio. In the fiscal year 2018, EA Games has made \$ 2,196 billion through the so-called

cash flows and have forced publishers to change their approach. Kickstarter campaigns allow players to early purchase the game cheaply, and provide development teams with a sufficient budget. Microtransactions allow the sale of additional content and the achievement of economies of scale, raising publishers' average earnings per game. In the future one can expect sharp decline of the classical approach to sales and more aggressive reliance on microtransactions. In the domain of exclusive games, the dominant form will probably become a monthly or annual subscription fee for accessing games, even for those with dominant single player mode.

References

- [1] Ernkvist, M. Down many times but still playing game: Destruction and industry crushes in early video game industry (J), *History of Insolvency and Bankruptcy*, 2008, 161, 161-192
- [2] Boxer, S. (2013) How video games are transforming the film industry (N), *The Guardian*, November 17th.
- [3] Statt, N. Micropayments, mega angst, and the future of console games (N), *CNet*, 2013, December 19th.
- [4] Tassi, P. Is \$50 Worth of Dead Space 3 DLC Still a 'Microtransaction'? (J), *Forbes*, 2013, January 30th.
- [5] Hof, R. Why Most People Won't Pay To Block Mobile Ads (J), *Forbes*, 2015, July 9th.
- [6] Oloman, J. Far Cry 5 has comestic-only microtransactions (J), *IGN News*, 2018, March 16th.
- [7] Kain, E. 'Overwatch' Micro-Transactions Are Just Fine, And Way Better Than Paid DLC (J), *Forbes*, 2016, June 10th.
- [8] Whitaker, R. 8 Examples of DLC that Doesn't Suck (J), *Escapist Magazine*, 2017, June 8th.
- [9] Smith, D. The new 'Mortal Kombat' is packed with obnoxious extra fees that are going to make a lot of money (J), *Business Insider*, 2015, April 15th.
- [10] Campbell, C. This is why paid DLC is here to stay (J), *Polygon*, 2015, January 27th.
- [11] Dingman, H. How loot boxes are turning full-priced PC games into pay-to-win games of chance (J), *PC World*, 2017, October 10th.
- [12] Tassi, P. (2018) 'Star Wars Battlefront 2' Unveils A Total Progression Rework, With Paid Loot Boxes Not Returning (J), *Forbes*, March 16th.
- [13] Bramwel, T. Console developers need to look at Dungeon Keeper and learn (J), *Eurogamer*, 2014, February 8th.
- [14] Phillips, T. (2016) World of Warcraft and all current expansions now included in subscription (J), *Eurogamer*, July 18th.
- [15] Gilbert, B. How the abysmal 'Game of War' featuring Kate Upton makes so much money (J), *Business Insider*, 2015, May 22nd.
- [16] Tomić, N. Effects of micro transactions on video games industry = Efekat mikrotransakcija na industriju video igrara, *Megatrend review*, 2017, 14(3), 239-257.
- [17] <https://www.gamesparks.com/blog/looking-at-in-game-currencies>.
- [18] Graebner, W. 5 Premium Currency Pricing Trends and Tricks used by Mobile Free-To-Play Games (J), *Gamasutra*, 2014, May 1st.
- [19] Arkes, H.R., Blumer, C. The psychology of sunk cost (J), *Organizational Behavior and Human Decision Processes*, 1985, 35(1), 124-140.
- [20] Williams, M. The Harsh History Of Gaming Microtransactions: From Horse Armor to Loot Boxes (J), *USGamer*, 2017, October 11th.
- [21] Kent, E. 15 European gambling regulators unite to tackle loot box threat (J), *Eurogamer*, 2018, September 17th.
- [22] Wales, M. EA reportedly under criminal investigation in Belgium due to FIFA's loot boxes (J), *Eurogamer*, 2018, September 10th.
- [23] Good, O.S. Another regulator says loot boxes are not gambling (J), *Polygon*, 2017, December 16th.
- [24] <https://www.swrve.com/company/press/swrve-finds-015-of-mobile-gamers-contribute-50-of-all-in-game-revenue>.
- [25] Rigney, R. These guys 5K spending spree keeps your games free-to-play (J), *Wired*, 2012, November 1st.
- [26] Shaul, B. Infographic: 'Whales' Account for 70% of In-App Purchase Revenue (N), *AdWeek*, 2016, March 1st.
- [27] Theodore, S. (2016) Why Have Video Game Budgets Skyrocketed In Recent Years? (J), *Forbes*, 2016, October 31st
- [28] Leone, M. Final Fantasy 7: An oral history (J), *Polygon*, 2017, January 9th.
- [29] Funk, M. How Much Did 'Modern Warfare 2' Cost to Make? (J), *The Escapist*, 2009, November 19th.
- [30] Villapaz, L. 'GTA 5' Costs \$265 Million To Develop And Market, Making It The Most Expensive Video Game Ever Produced: Report (J), *International Business Times*, 2013, August 9th.
- [31] Yan, M., Gilbert, B. Here's the reason most new console video games cost \$60 (J), *Business Insider*, 2018, October 29th.
- [32] Kohler, C. Video games can't afford to cost this much (J), *Wired*, 2012, April 13th.
- [33] <https://newzoo.com/insights/articles/global-games-market-reaches-137-9-billion-in-2018-mobile-games-take-half/>
- [34] Thubron, R. Over half of Activision Blizzard's \$7.16 billion yearly revenue came from microtransactions (J), *TechSpot*, 2018, February 12th.
- [35] <https://cdavisgames.com/2018/05/08/ea-now-makes-forty-percent-of-its-revenue-from-live-services/>