European Commission

Information gathering for assisting the European Commission in complying with its obligations under Article 40 (“reporting”) of Regulation (EU) 2017/2394 on Consumer Protection Cooperation

Case study on in-app purchases

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1. Introduction

This case study looks into the developments in the market for mobile applications (apps), in particular its large segment of mobile games. The specific focus is on in-app (in-game) purchases. In-app purchases refer to the sales of digital content within an app and do not cover purchases of physical goods or services. In-game purchases were the subject of a previous action by the CPC Network in 2014.[1] The Internet platform providers Apple and Alphabet as well as the association of online game developers ISFE were asked to clearly identify in-app purchases in online games and address issues relating to misleading advertising of games as "free". In 2017-2018, a particular form of in-app purchases, so-called loot boxes, has garnered significant attention. Loot boxes are a form of in-app purchases where the consumer makes an in-game purchase without knowing the exact nature of the item they will receive, as this is only revealed after the purchase has been made. These loot boxes have raised concerns of sharing features with gambling and thus posing high risks to consumers. In some EU Member States (notably Belgium and the Netherlands), national gambling authorities have subsequently banned these types of in-app purchases, causing the video game industry to react by altering certain games and game features as well as their consumer labelling practices.

This case study investigates the developments in in-game purchases and in-app purchases, where possible, since these actions took place.

2. Market trends and changes in consumer behaviour

2.1. Market trends

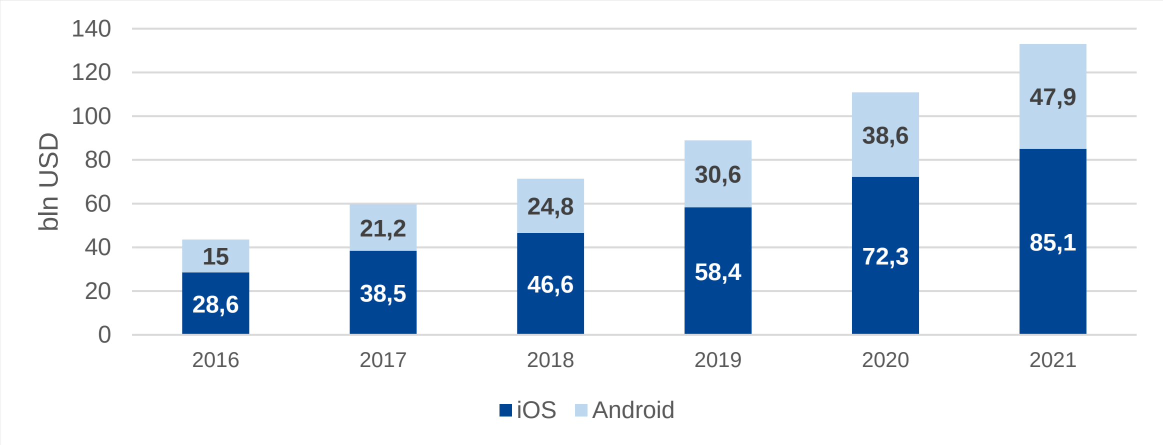
The market for mobile apps by revenue has been growing globally, from USD 43.5 billion in 2016 to USD 133 billion in 2021 (see Figure 1). This seems only natural with the number of apps constantly increasing and currently reaching more than 5 million across the two major app stores (App Store and Play Store) on the global scale,[2] while the users spent on average 4 hours 48 minutes per day on mobile in 2021 (up 30% from 2019).[3]

[1] See the press release and relevant Common Positions at: https://ec.europa.eu/commission/presscorner/detail/en/IP_14_847 .

[2] 42 Matters (2022). Google Play Statistics and Trends 2022, available at: https://42matters.com/google-play-statistics-and-trends ; 42 Matters (2022). iOS Apple App Store Statistics and Trends 2022, available at: https://42matters.com/ios-apple-app-store-statistics-and-trends .

[3] Most of this time is spent in social and communication apps. Data.ai (2022). State of mobile 2022, available at: https://www.data.ai/en/go/state-of-mobile-2022 .

Figure 1: Total annual app-related revenue (globally)

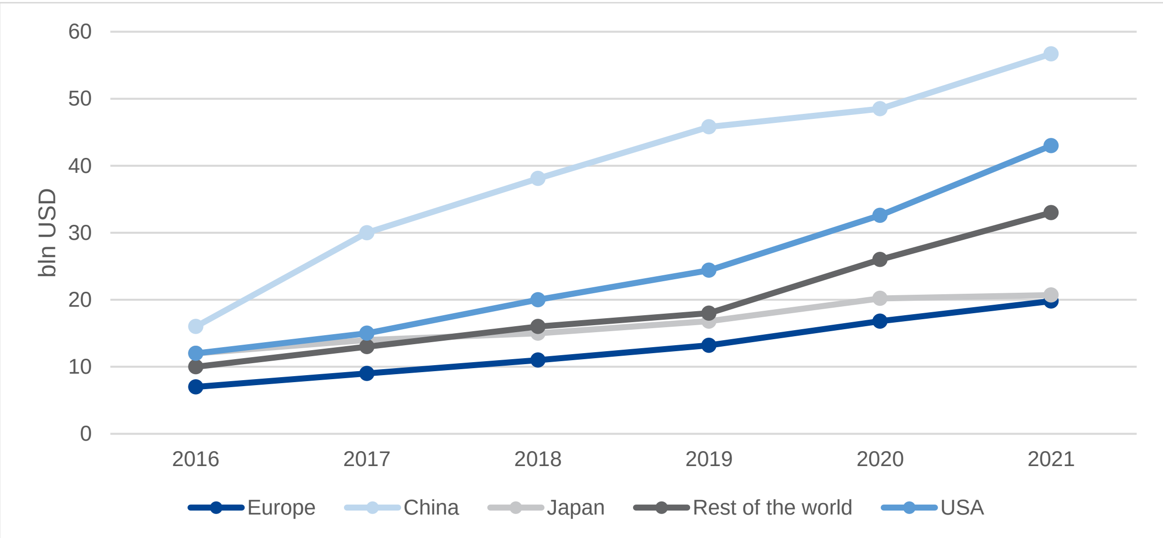


Source: Business of Apps (2022). App Revenue Data, available at: https://www.businessofapps.com/data/app-revenues/

The biggest share of the mobile app revenue (over 48%) comes from in-app purchases, while over 37% come from paid app downloads and 14% from ads.[4] The bulk of the revenue comes from just a handful of apps: in 2021, 233 apps (174 games and 59 other apps) brought in more than USD 100 million, with 13 of them surpassing USD 1 billion – a growth of 20% by comparison to 2020.[5]

Europe (including countries beyond the EU) represents approximately 15% of the global market by revenue, lagging behind China and the USA (see Figure 2).

Figure 2: Share of global mobile app revenue by region/ country



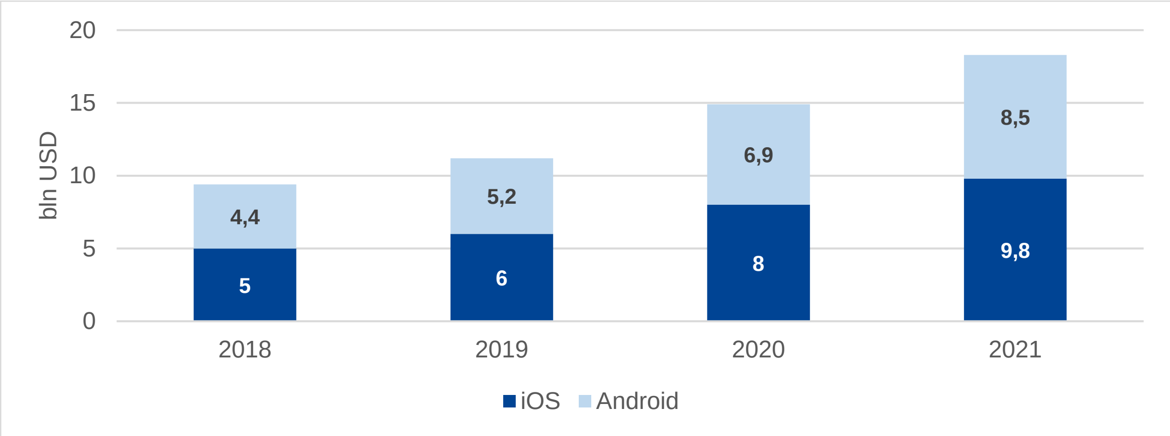
Source: Business of Apps (2022). App Revenue Data, available at: https://www.businessofapps.com/data/app-revenues/

[4] Saleh K. (2022). Global In-app Purchase Revenue Statistics and Trends, invesp, available at: https://www.invespcro.com/blog/in-app-purchase-revenue/ .

[5] Data.ai (2022). State of mobile 2022, available at: https://www.data.ai/en/go/state-of-mobile-2022 . An investigation by The Economist found a similar pattern: about 1% of iOS gamers generate 64% in terms of sales in the USA; in the UK, less than 5% of apps generate about 90% of sales in Play Store. See The Economist (2022). The secrets of b-g tech, available at: https://www.economist.com/business/the-finance-secrets-of-big-tech/21808956 .

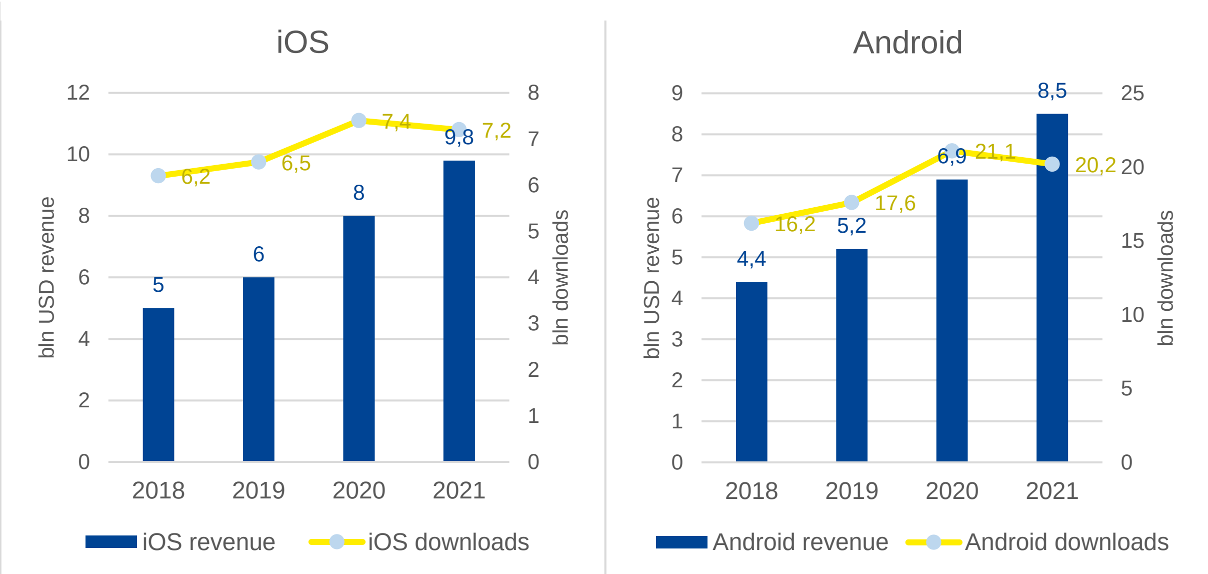
Over the last decade, on the global scale and in Europe, the market for mobile apps has become more mature and consolidated. There are now two big ecosystems (platforms) – Apple with App Store and iOS, and Alphabet with Google Play and Android – dominating the app distribution (see Figure 3) while Microsoft dropped out of the race and Huawei is trying to get in. The profitability of the two stores is markedly different (this is a global phenomenon): even though Android has a larger market share in terms of devices and downloads, iOS has been leading in revenue generation for app developers (Figure 4). This and the brand loyalty of Apple users make App Store more attractive for developers.

Figure 3: Gross app revenue development (all of Europe), by the operating system



Source: SensorTower (2022). European Consumer Spending in Mobile Apps Grew 23% in 2021 to More Than $18 Billion, available at: https://sensortower.com/blog/european-app-revenue-and-downloads-2021 ; SensorTower (2021). European Mobile App Consumer Spending Grew 31% in 2020 to Nearly $15 Billion, available at: https://sensortower.com/blog/european-app-revenue-and-downloads-2020 ; SensorTower (2020). European Mobile App Consumer Spending Grew 19% in 2019 to More Than $11 Billion, available at: https://sensortower.com/blog/europe-app-revenue-and-downloads-2019.

Figure 4: iOS and Android app revenues vs app downloads (all of Europe)

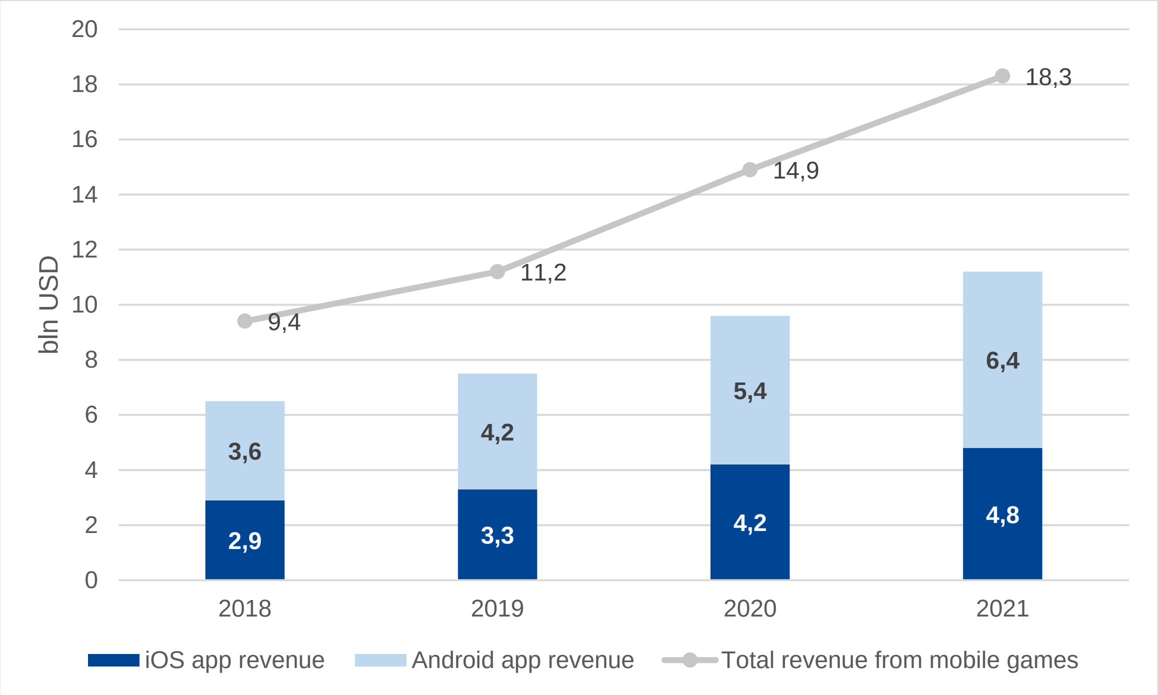


Source: SensorTower (2022). European Consumer Spending in Mobile Apps Grew 23% in 2021 to More Than $18 Billion, available at: https://sensortower.com/blog/european-app-revenue-and-downloads-2021 ; SensorTower (2021). European Mobile App Consumer Spending Grew 31% in 2020 to Nearly $15 Billion, available at: https://sensortower.com/blog/european-app-revenue-and-downloads-2020 ; SensorTower (2020). European Mobile

App Consumer Spending Grew 19% in 2019 to More Than $11 Billion, available at: https://sensortower.com/blog/europe-app-revenue-and-downloads-2019.

While non-gaming apps constitute an overwhelming majority in app stores (87% in App Store and 86.5% in Play Store),[6] the revenue generated from gaming apps continues to constitute the biggest share of the overall app revenue in Europe (and worldwide), but the non-gaming apps start to win more ground (Figure 5). It is interesting to note that the absolute majority of all apps in both app stores are free of monetary payment,[7] which means that a large share of the revenue comes from in-app purchases.

Figure 5: Total mobile app revenue v revenue from mobile games (all of Europe)



Source: SensorTower (2022). European Consumer Spending in Mobile Apps Grew 23% in 2021 to More Than $18 Billion, available at: https://sensortower.com/blog/european-app-revenue-and-downloads-2021 ; SensorTower (2021). European Mobile App Consumer Spending Grew 31% in 2020 to Nearly $15 Billion, available at: https://sensortower.com/blog/european-app-revenue-and-downloads-2020 ; SensorTower (2020). European Mobile App Consumer Spending Grew 19% in 2019 to More Than $11 Billion, available at: https://sensortower.com/blog/europe-app-revenue-and-downloads-2019.

Yet these staggering revenues seem to be attributed to a rather small share of app users. It is reported that only 5% of European app users spend money on in-app purchases, which translates to a monthly average of EUR 0.22 per user and per app.[8] This means that a small share of usually long-term users are the biggest spenders generating the largest share of these revenues.[9] The difference in spending between iOS and Android users

[6] 42 Matters (2022). Google Play Statistics and Trends 2022, available at: https://42matters.com/google-play-statistics-and-trends ; 42 Matters (2022). iOS Apple App Store Statistics and Trends 2022, available at: https://42matters.com/ios-apple-app-store-statistics-and-trends .

[7] 96.7% of all apps in Play Store and 93.9% in App Store are free. 42 Matters (2022). Google Play Statistics and Trends 2022, available at: https://42matters.com/google-play-statistics-and-trends ; 42 Matters (2022). iOS Apple App Store Statistics and Trends 2022, available at: https://42matters.com/ios-apple-app-store-statistics-and-trends .

[8] Saleh K. (2022). Global In-app Purchase Revenue Statistics and Trends, invesp, available at: https://www.invespcro.com/blog/in-app-purchase-revenue/ .

[9] While there is a lack of studies in this regard, especially European studies, there are some indications who these big spenders are. In the context of mobile gaming, they are males aged 25-34. 10% of such gamers generate 90% of all in-game

remains significant: on average, an iOS user spends almost twice as much on in-app purchases as an Android user. Insights from stakeholders consulted for this study seems to suggest that iOS users are in general more affluent and willing to spend more money compared to Android users[10].

Market consolidation also occurred on the app supply side: although it remains a largely SME market, there are now more big developing companies, and the most popular games come from such companies.[11] The consolidation on the app supply side also means growing professionalisation and better companies' resources, including legal resources (i.e., bigger companies can afford better legal advice or have their own legal departments).

The growing maturity of the app market has gone hand in hand with the refinement of business models. The division into "pure forms" of subscription and free-to-play has blurred into a variety of mixed monetisation models.[12] For players of mobile games, the question is not anymore whether but when they are going to pay: before or during the playing. Often, the free-of-monetary-payment version or free-of-monetary-payment part of the game is financed by advertising and has limited functionality or levels. Such limitations can be removed partially or completely if the player buys a subscription to the game or pays for individual features in money. In-game purchases may be employed for a range of things, such as cosmetic items ("skins", like a new outfit for the character), functional updates (e.g. level-up faster), extra lives for the character, opening new game levels, seasonal passes and continuing to play after the initial free-of-monetary-payment version.[13] In-game purchases can be done by actual currency (i.e. euro or dollar), but some of them can be also realised with the game money or token. All this allows keeping the initial price of the game for the consumer very low or free of monetary payment. If the consumer enjoys the game, they can invest monetary resources in it later, which lowers the investment risk for the consumer and increases consumer choice.

Such mixed monetisation models also lower the development and investment risks for the game developers. The competition in the mobile games market is fierce with thousands of games being released around the clock and by developers from around the globe.[14] A larger game developer may release around a hundred games per year, of which only 2-3 would gain popularity and generate revenue. Game developers release many shorter free-of-monetary-payment versions of games, observe which of them are more popular with

purchases revenues. See Deloitte (2019). Mobile gamers spending more than £40 a year on in-app purchases, press release, available at; https://www2.deloitte.com/uk/en/pages/press-releases/articles/mobile-gamers-spending-more-than-40-pounds-a-year-on-in-app-purchases.html ; Close J., Spicer S.G., Nicklin L.L., Uther M., Lloyd J. and Lloyd H. (2021). Secondary analysis of loot box data: Are high-spending "whales" wealthy gamers or problem gamblers? *Addictive Behaviors* 111, available at: https://www.sciencedirect.com/science/article/abs/pii/S0306460321000368 .

[10] For more details see: Android Users vs. iPhone Users - The Demographics - AnsonAlex.com

[11] If we look at the most popular mobile games in Europe, across iOS and Android, the top-10 are all developed by big companies, such as Tencent, Moon Active, Roblox Corporation, Playrix and King. For the top-10 mobile games in 2019-2021, see SensorTower (2022). European Consumer Spending in Mobile Apps Grew 23% in 2021 to More Than $18 Billion, available at: https://sensortower.com/blog/european-app-revenue-and-downloads-2021; SensorTower (2021). European Mobile App Consumer Spending Grew 31% in 2020 to Nearly $15 Billion, available at: https://sensortower.com/blog/european-app-revenue-and-downloads-2020; SensorTower (2020). European Mobile App Consumer Spending Grew 19% in 2019 to More Than $11 Billion, available at: https://sensortower.com/blog/europe-app-revenue-and-downloads-2019 .

[12] For a short overview of the evolution of business models see Klayman J. (2019). The history of mobile gaming monetization, ironSource, available at: https://www.is.com/community/blog/the-history-of-mobile-gaming-monetization/ .

[13] Mikkelsen T. (2020). Improving F2P mobile games with subscription, GameAnalytics, available at: https://gameanalytics.com/blog/improving-f2p-mobile-games-with-subscription/ ; Grguric M. (2022). Subscription Monetization: A Big Mobile Gaming Trend, Udonis Blog, available at: https://www.blog.udonis.co/mobile-marketing/mobile-games/subscription-monetization .

[14] Almost 3000 apps daily in Play Store and over 1000 apps daily in App Store. 42 Matters (2022). Google Play Statistics and Trends 2022, available at: https://42matters.com/google-play-statistics-and-trends ; 42 Matters (2022). iOS Apple App Store Statistics and Trends 2022, available at: https://42matters.com/ios-apple-app-store-statistics-and-trends .

consumers, and then invest and develop only those games, including pay-for options in them. Consumers do not like to replay even their favourite games, hence developers create sequels,[15] spin-offs[16] and various other expansions, which may be pay-for. Overall, this means that the lifespan of games becomes longer (even though the playtime of a singular session on a mobile device is not necessarily very long) and the investment in the brand gains in importance.[17]

Currently, in-game purchases of various kinds seem to be the dominant monetisation model, while pure subscription is rarely to be found in this segment.[18] The subscription model also is not used in shopping apps, banking apps and many single-purpose apps. However, the subscription model works well for content-driven apps (e.g., news, music, video) when consumers return to the app to get more new content and some service apps (e.g., digital storage, scheduling, productivity, fitness). Yet even subscription-based apps usually have a free-of-monetary-payment trial or free-of-monetary-payment and premium versions.[19] Examples of in-app purchases in non-gaming apps include additional filters in a photo app, access to new (types) of lessons in a language app, unlimited number of swipes in a dating apps and access to an add-free version of an app.

The popularity of the subscription-based model has been growing since 2016 (see Figure 6), when Apple opened its App Store to subscription models for all developers and started charging lower commissions (15% instead of the standard 30%) for app-related transactions by subscribers who are over one year old. Google’s Play Store followed suit soon afterwards.[20]

[15] A sequel usually is a continuation of the story from the previous game, i.e. it takes off where the previous story ended. Sequels are also released in the form of prequels, i.e. showing what happened before the original story started.

[16] A spin-off uses characters, story elements or even gameplay mechanisms from an existing game and develops them in new directions in an independent game. The new game can be of a different genre from the original one. For example, one of the spin-off of the world-famous game *Mario* is *Luigi’s Mansion*. This game is done in a comical horror genre and the main character is Mario’s brother Luigi who needs to vacuum-clean all ghosts in the haunted mansion.

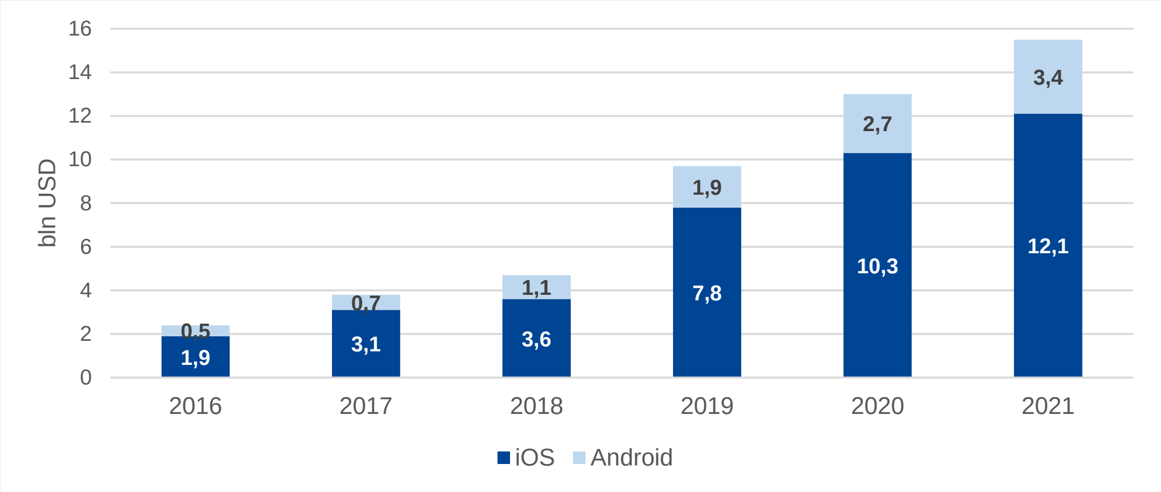
[17] Silver D. (2022). Mobile gaming industry overview, ironSource, available at: https://www.is.com/community/blog/mobile-gaming-trends/ .

[18] The 2017 survey of mobile developers showed that 79% of gaming app used in-app purchases for monetisation. Statista (2017). Most-used mobile app monetization models according to mobile developers worldwide in 2017, available at: https://www.statista.com/statistics/297024/most-popular-mobile-app-monetization-models/ .

[19] Localytics (n.d.). Subscription-Based Apps: Pros, Cons, and How to Make the Big Bucks, available at: https://uplandsoftware.com/localytics/resources/blog/subscription-based-apps-pros-cons-and-how-to-make-the-big-bucks/

[20] Barpanda S. and Seshadri V. (2021). How Can Mobile Apps Ride the Subscription Wave? Available at: https://www.chargebee.com/blog/mobile-apps-subscriptions/ ; Loranger M. (2017). Why apps with subscription models are taking over? App Developer Magazine, available at: https://appdevelopermagazine.com/5399/2017/7/24/why-apps-with-subscription-models-are-taking-over/ .

Figure 6: Total subscription app revenue (globally)



Source: Business of Apps (2022). App Revenue Data, available at: https://www.businessofapps.com/data/app-revenues/

Note: in 2019, several major apps (e.g., Netflix, Spotify and Epic Games) removed the option of subscription through app stores from both iOS and Android, which resulted in lower percentage growth.

In-app purchases start to be more ubiquitous on social media apps as well. For example, TikTok has special virtual currency (TikTok coins[21]) that are bought by users with real money and then can be converted into gifts (e.g., diamonds, emojis) to reward favourite content creators. Under certain conditions, content creators (but not regular users) can convert TikTok coins to real money and withdraw it from their accounts.[22] There is no clarity, however, about how the price of TikTok coins is determined and about the conversion rates between coins and other in-app items (e.g., diamonds, gifts).[23] It is also not clear how much TikTok earns on these transactions. TikTok has now been required by the Consumer Protection Cooperation (CPC) Network and the Commission to clarify its policies on the purchase and use of coins and to introduce pop-up windows to provide estimated price in local currencies for coins. It shall also grant a withdrawal right from the purchase of coins.[24] In-app virtual currencies is, however, a very profitable model[25] that is used in other apps as well. For instance, a new platform Octi has Octi coins that are earned by users and then used to buy digital items.[26] Twitch has Bits – animated cheering emotes – that can be used similarly to subscription to support favourite streamers or that can be used in chats to "cheer" in support of streams: the more Bits are used the stronger the support and the more different emotes can be used.[27] Bits can be purchased or earned by watching advertising. The language app Duolingo has virtual currency Gems/Lingots that can be earned or

[21] TikTok (n.d.). Purchasing coins, available at: https://www.TikTok.com/feedback?id=7078299679292660229&lang=en ; TikTok (n.d.). Virtual items policy, available at: https://www.TikTok.com/legal/virtual-items?lang=en .

[22] Stanton W. (2022). How To Cash Out Your Tik Tok Coins, Alphr, available at: https://www.alphr.com/cash-out-tik-tok/ .

[23] BEUC (2021). TikTok without filters, pp. 15-21, available at: https://www.beuc.eu/publications/beuc-x-2021-012_TikTok_without_filters.pdf .

[24] European Commission (2022). EU Consumer protection: TikTok commits to align with EU rules to better protect consumers, press release, available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3823.

[25] Williams R. (2019). TikTok's in-app purchases surge sixfold on digital coins, study finds, Marketing Dive, available at: https://www.marketingdive.com/news/TikToks-in-app-purchases-surge-sixfold-on-digital-coins-study-finds/556985/ .

[26] Octi (n.d.) Terms of service, available at: https://octi.tv/legal/terms-of-service .

[27] Twitch (n.d.). Cheer with Bits to celebrate and show support! Available at: https://www.twitch.tv/bits .

bought to purchase some additional features.[28] Moreover, other social media look to emulate such in-app purchases. It is reported[29] that Meta has plans to develop virtual coins, tokens and lending services to be used in Facebook and other company's offerings.

Loot boxes[30] that were a topic of a big controversy several years ago have become less problematic, according to all interviewed stakeholders, including national authorities, consumer organisations and industry actors. The 2020 study for the European Parliament found that loot boxes have become less frequent in mobile games.[31] As of 2022, very few games use loot boxes, not least because this is a difficult monetisation scheme to implement profitably and because the market and the business models moved in a different direction. Other factors that impacted it may include the regulatory and legislative action in several jurisdictions[32] and higher levels of awareness and knowledge of players and parents with regard to children's spendings. However, a recent report by the Norwegian Consumer Council discusses the problems of use of loot boxes for consumers, especially minors, on the example of a mobile game and a computer video game that are still using them.[33] This indicates that there are some unresolved problems with loot boxes that may require attention from consumer protection authorities and/ or legislators.

One new business model for gaming apps is play-and-earn.[34] The games work on distributed ledger technologies (DLTs) and allow their players to earn cryptocurrency while playing the game. This means that players can earn value in the game and potentially transfer it into the real world (e.g., sell items for cryptocurrency and/ or real money) both via the gaming platform itself and outside of it. Players can earn various assets, from game tokens and game currency to non-fungible tokens (NFTs) and established cryptocurrencies (like Bitcoin or Ethereum). Typically, players need to make an upfront investment by buying game-specific tokens or cryptocurrency,[35] which can then be used up in the game and traded with other players. The growing ownership of digital assets partially drives play-to-earn games: it is expected that players stay in the game and not leave *en mass*, selling all of their game value.[36] It shall be noted that, being DLTs based, these games are

[28] Duolingo (n.d.). What are Gems/ Lingots? Available at: https://support.duolingo.com/hc/en-us/articles/360035917472-What-are-Gems-Lingots-#:~:text=Gems%20are%20the%20virtual%20currency,meet%20your%20daily%20XP%20goal.

[29] Murphy H. (2022). Facebook owner Meta targets finance with 'Zuck Bucks' and creator coins, Financial Times, available at: https://www.ft.com/content/50fbe9ba-32c8-4caf-a34e-234031019371 .

[30] A recent general overview of the problem and the state of the research is provided in Cerulli-Harms A., Münsch M., Thorun Ch., Michaelsen F. and Hausemer P. (2020). Loot boxes in online games and their effect on consumers, in particular young consumers, Study for the European Parliament's IMCO Committee, available at: https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2020)652727 .

[31] Cerulli-Harms A., Münsch M., Thorun Ch., Michaelsen F. and Hausemer P. (2020). Loot boxes in online games and their effect on consumers, in particular young consumers, Study for the European Parliament's IMCO Committee, available at: https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2020)652727.

[32] For the overview see Chapter 5 in Cerulli-Harms A., Münsch M., Thorun Ch., Michaelsen F. and Hausemer P. (2020). Loot boxes in online games and their effect on consumers, in particular young consumers, Study for the European Parliament's IMCO Committee, available at: https://www.europarl.europa.eu/thinktank/en/document/IPOL_STU(2020)652727 .

[33] Forbrukerrådet (2022). Insert coin: How the gaming industry exploits consumers using loot boxes, available at: https://fil.forbrukerradet.no/wp-content/uploads/2022/05/2022-05-31-insert-coin-publish.pdf.

[34] Grguric M. (2022). Play-to-Earn Games 101: How Do They Work? Udonis Blog, available at: https://www.blog.udonis.co/mobile-marketing/mobile-games/play-to-earn-games .

[35] For example, to play on one of the most popular platforms Axie, an upfront investment of over USD 1000 is necessary. See Farrington R. (2021). Play-To-Earn Gaming Is Driving NFT And Crypto Growth, Forbes, available at: https://www.forbes.com/sites/robertfarrington/2021/12/13/play-to-earn-gaming-is-driving-nft-and-crypto-growth/?sh=4bed9cf4c2dc .

[36] Nagarajan S. (2022). Play-to-earn crypto games have exploded onto the scene and are shaking up gaming business models. Here's how they work, and where the value comes from for investors, Business Insider, available at: https://markets.businessinsider.com/news/currencies/play-to-earn-crypto-axie-infinity-business-model-gaming-value-2022-1.

decentralised, meaning that the developer cannot completely control what happens in the game.

The play-to-earn business model is very popular in some countries of Asia and Latin America and is being widely discussed in media and on the internet. It is expected to gain more following with the development of the metaverse. It is widely advertised as a possibility of additional earnings while having fun or letting children play games and earn money to pay real-world expenses or save for college.[37]

According to all interviewed stakeholders, this business model has not yet gained a foothold in Europe. The interviewed industry stakeholders also indicated that the push for this game model comes from the cryptocurrency industry and is used by it as a vehicle for popularisation and usage of cryptocurrency (i.e., games are used to get people to invest in cryptocurrency). Some industry interviewees were also doubtful about the extent to which play-to-earn games can gain traction in Europe due to the different socio-economic and cultural contexts. Also, such games might work only for certain audiences but not for the gaming community. There is one indication that this might be true: the successful French game developer Ubisoft tried to introduce an NFT-based game but met a complete renunciation by the players.[38]

In terms of emerging technological trends, one should watch out for cloud gaming and esports on mobile devices. These are possible at the moment only on PC and consoles due to the high requirements for latency. However, with the deployment of 5G and edge computing, these are expected on other devices as well.[39] 5G together with the development of AR/VR devices, will allow for new immersive experiences in all types of apps, including shopping, health and cosmetics, and will change how consumers interact with businesses.

A change in business models and the market is likely to be caused by the changing legal framework. The interviewed stakeholders mentioned the potential crucial changes that may happen in the app industry once the Digital Markets Act (DMA) is formally adopted.[40] According to several interviewed industry stakeholders, the DMA will affect the core of the business model of the two app stores (while iOS would be affected more). App developers are apprehensive, anticipating big changes to app stores that will affect their business models in turn. Moreover, the stakeholders mentioned that the formal adoption of the Digital Services Act (DSA) will also introduce new obligations, especially for Apple and Google (the two biggest app stores), however they do not consider those changes to impact the sector as much as the adoption of the DMA.

[37] For the industry narrative see Farrington R. (2021). Play-To-Earn Gaming Is Driving NFT And Crypto Growth, Forbes, available at: https://www.forbes.com/sites/robertfarrington/2021/12/13/play-to-earn-gaming-is-driving-nft-and-crypto-growth/?sh=4bed9cf4c2dc .

[38] Knapp M. (2022). Ubisoft Exec on In-Game NFT Backlash: Gamers 'Don't Get It', PCMag, available at: https://www.pcmag.com/news/ubisoft-exec-on-in-game-nft-backlash-gamers-dont-get-it .

[39] Ericsson (2021). Mobile cloud gaming – an evolving business opportunity, available at: https://www.ericsson.com/en/reports-and-papers/mobility-report/articles/mobile-cloud-gaming; International Mobile Gaming Awards (2021). The 5G future of mobile games, available at: https://developer.qualcomm.com/system/files/qc_imga_wp_021821_d28_final.pdf .

[40] At the time of writing the Digital Markets Act was still in the state of a proposal and negotiated by the EU lawmakers. European Commission (2020). Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), COM(2020) 842 of 15.12.2020, available at: https://eur-lex.europa.eu/legal-content/en/TXT/?uri=COM%3A2020%3A842%3AFIN .

2.2. Changes in consumer behaviour

The changing consumer behaviour and expectations with regard to in-app and in-game purchases interplay with the technological and market (i.e., refinement of business models) developments.

According to Eurostat, the use of mobile devices in the EU grew from 48% in 2014 to 73% in 2019.[41] Statista reported that the monthly smartphone data traffic per smartphone in Western Europe increased from 2.65 GB in 2019 to 11.23 GB in 2020.[42] This means that people also used mobile apps more, as the numbers on app downloads and spending quoted above suggest.

For video games, the number of players using mobile devices is increasing in Europe: in 2020, 60% said they used a smartphone or tablet for gaming, and in 2021 it was 63%.[43] According to all interviewed stakeholders, consumers now expect to try games without making monetary payments or even to play a whole game without making monetary payments, and not to pay money in advance. At the same time, consumers are now familiar with and well aware of in-app/ in-game purchases, so they may also have more realistic expectations for free-of-monetary-payments products and for paid versions.[44] Players also expect regular updates, sequels and extensions to their favourite games.

Consumer spending on in-game purchases is growing in Europe, mainly due to more people playing more games.[45] But the increase in in-game spending can be observed mainly in the age group of 45–54-year-olds: in 2019, they made up 13% of in-game spending, but in 2021 already 18%. The group that spends the highest in-game amounts are 35–44-year-olds. Children of 11–14-year-old spend the least on in-game purchases (EUR 28 in 2019, EUR 33 in 2020).[46] In Europe, average spending on in-game purchases per year amounts to EUR 110.

There are considerable changes with regard to children playing video games and parental involvement. The GameTrack children’s in-game spending survey[47] that has been run for almost a decade found that the proportion of parents stating that their children do not spend money on in-game purchases has been steadily increasing over time, reaching 74% in 2020. Only 19% of parents say that their children spend money on in-game purchases. The highest percentage of in-game spendings is on cosmetic items that do not impact the gameplay. Most parents have agreements with their children about in-game spending, and

[41] Eurostat (2021). Digital economy and society statistics - households and individuals, available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_households_and_individuals .

[42] Statista (2022). Mobile data traffic per smartphone in Western Europe from 2011 to 2027, available at: https://www.statista.com/statistics/1133863/western-europe-monthly-data-traffic-per-smartphone/ .

[43] ISFE and EGDF (2021). Key facts 2020: the year we played together, available at: https://www.isfe.eu/wp-content/uploads/2021/10/2021-ISFE-EGDF-Key-Facts-European-video-games-sector-FINAL.pdf ; ISFE and EGDF (2022). Key facts 2021, not published yet.

[44] Deloitte (2015). Mobile games in Europe: Innovation in European Digital Economy, p. 5, available at: https://www.isfe.eu/wp-content/uploads/2018/11/deloitte_report_isfe_2015.pdf .

[45] The data on spending is based on ISFE and EGDF (2022). Key facts 2021, not published yet.

[46] Ipsos MORI (2021). Children’s in-game spending, p. 6, available at: https://www.isfe.eu/wp-content/uploads/2021/12/GameTrack-In-Game-Spending-2020.pdf.pdf .

[47] All annual reports of the survey are available at: https://www.isfe.eu/gametrack/ .

many use parental controls[48] that are widely offered by device manufacturers and software producers and publicised more.

The interviewed industry stakeholders pointed out that consumers now have higher expectations of transparency towards game developers and publishers and often even want to get involved in some business decisions. It is expected that the gaming industry is clearer on privacy and data protection arrangements, their business model and even on the game development itself.[49] Game developers need to put a lot of effort into communicating, for example, about changing their business model from free-to-play to subscription.

2.3. Covid-19 impacts

Due to the pandemic-related lockdowns, people were in general using more online services and digital products and, hence, used various apps more. All interviewed stakeholders indicated that the pandemic has intensified or accelerated all digitalisation trends that have already been ongoing.

The usage of apps in general increased, including by consumers and brands/ companies that were reluctant to do so before the pandemic (e.g., traditional/ local brick-and-mortar stores, public services). Globally, the time spent on mobile apps increased by 40% year on year in 2020.[50] Many brands tried to create a blended online-offline experience for consumers, mixing interaction via apps with services delivered in the real world. Companies tried out apps to manage work-related processes for remote work or even developed the necessary apps. Certain categories of apps have become more popular, for example, fitness and health-related, business, entertainment, education, online delivery and banking.[51] All this led to a huge demand for app development.

With regards to gaming, lockdown led to people playing more video games on any devices (24% growth) and also specifically on smart devices (14%), making smart devices the most popular way to play video games.[52] The mean time spent by players aged 6-64 years old playing all video games on any device (i.e., including mobile) grew by 1.5 hours per week. However, most players returned to their usual playtime duration once the restrictions were lifted. This did not translate, however, into significantly higher spending on in-game purchases. Only 6% of all players claimed to spend more on in-game extras.

During the lockdown, more educational video games were played (e.g., 18% of parents played such games with their children). Playing games was also used to communicate,

[48] See also Smahel D., Machackova H., Mascheroni G., Dedkova L., Staksrud E., Ólafsson K., Livingstone S. and Hasebrink, U. (2020). EU Kids Online 2020: Survey results from 19 countries. EU Kids Online, pp. 112-113, available at: https://www.eukidsonline.ch/files/Eu-kids-online-2020-international-report.pdf .

[49] There are many news reports about players being dissatisfied with certain developments in the game, following which the game developers have to change the game. See, for example, GameNews24 (2021). Controversial Battlefield 2042 skin to be renamed following players backlash, available at: https://game-news24.com/2021/11/14/controversial-battlefield-2042-skin-to-be-renamed-following-players-backlash/ .

[50] Kristianto D. (2020). Mobile apps usage reached an all-time high amidst stay-at-home measures due to Covid-19 pandemic, Data.ai, available at: https://www.data.ai/en/insights/market-data/mobile-app-usage-surged-40-during-covid-19-pandemic/ .

[51] Torok G. (2020). Pandemic Potential: Four App Development Trends In A Post-Covid-19 World, Forbes, available at: https://www.forbes.com/sites/forbestechcouncil/2020/09/10/pandemic-potential-four-app-development-trends-in-a-post-covid-19-world/?sh=7d23dab8492f ; Bugsnag (2020). Software Bugs Don't Shelter in Place: What app usage and error data reveal during Covid-19, available at: https://www.bugsnag.com/covid-19-app-usage-error-data-report .

[52] The description of the Covid-19 effects on gaming is based on the Ipsos/ ISFE report that looked specifically into this issue. Ipsos and ISFE (2020). Video gaming in lockdown: The impact of Covid-19 on video game play behaviours and attitudes, available at: https://www.isfe.eu/wp-content/uploads/2020/09/IpsosMori-Gaming-during-Lockdown-Q1-Q2-2020-report.pdf .

interact with other people and bring people together. In particular, 20% more parents played video games together with their children, and 18% more players said that they played multiplayer games with their friends, family or other players. It appears that such communal playing helped people feel less isolated.

It is difficult to say which of the trends are there to stay. The market data[53] shows that some categories of apps (i.e., travel and hospitality) have not yet recovered their pre-pandemic volumes of download and use. At the same time, business-related, health and fitness and education apps continue to be popular well above their pre-pandemic levels.

3. Challenges for consumers and consumer protection authorities

Besides the increased consumer expectations for more transparency, privacy and data protection, the interviewed industry, national authorities and consumer protection stakeholders did not mention any particular issues with consumer protection and infringement of consumer rights in relation to in-app/ in-game purchases. They mentioned, however, that the onus is now on the app developers who need to find ways to ensure the required level of data protection and privacy to comply with the information requirements while not drowning the consumer in lengthy texts. Many app developers are looking for ways to obtain meaningful informed consumer consent, provide sufficient information on the app/ game before it is used and, thus, secure the trust of their audience.

As mentioned above, loot boxes do not seem to represent a significant problem anymore. The interviewed industry, consumer protection, self-regulation stakeholders and national authorities felt that there are in general very few problematic cases of loot boxes, limited to certain games, not least due to the increased parental controls. In addition, several countries introduced legislation on loot boxes. In Belgium and the Netherlands, loot boxes are strictly regulated under gambling legislation, while other EU Member States do not consider them gambling because most loot boxes do not award players with content that has any monetary value.[54] In July 2022, Spain published a draft law to regulate specifically loot boxes.[55] The draft considers loot boxes akin to gambling and will prohibit access to them by minors.

Some available data supports the view that loot boxes do not represent a significant consumer protection issue. According to the Belgian Gaming Commission, less than 0.8% of all their complaints in 2021 referred to loot boxes. The authority monitors complaints on loot boxes as part of social gaming for which they received 15 complaints. Not including loot boxes as a standalone category would indicate that issues surrounding loot boxes are becoming less significant. Furthermore, according to the 2019 Swedish consumer study,[56] there were few complaints where children spent money on in-game purchases, though it

[53] Perez S. (2022). How the mobile app ecosystem adapted to the Covid-19 pandemic in 2021, TechCrunch, available at: https://techcrunch.com/2022/01/10/how-the-mobile-app-ecosystem-adapted-to-the-covid-19-pandemic-in-2021/ .

[54] Forbrukerrådet (2022). Insert coin: How the gaming industry exploits consumers using loot boxes, p. 49, available at: https://fil.forbrukerradet.no/wp-content/uploads/2022/05/2022-05-31-insert-coin-publish.pdf

[55] Pehlivan C. (2022). Spain – Breaking new ground with loot box regulation, *Linklaters*, available at: https://www.linklaters.com/en/insights/blogs/digilinks/2022/july/breaking-new-ground-with-loot-box-regulation

[56] Konsumentverket (2019). Kartläggning av konsumentskyddet vid lotteri- eller kasinoliknande inslag i datorspel (Fi2019/01630/KO), pp. 9-10, available at: https://www.konsumentverket.se/contentassets/83509d8dffff48559d44de6546ecc362/kartlaggning-av-konsumentskyddet-vid-lotteri--eller-kasinoliknande-inslag-i-datorspel-fi-2019-01630-ko.pdf .

was not clear if those were loot-box-related. By contrast, a recent report by the Norwegian Consumer Council highlighted a number of problems connected to loot boxes on the example of two mobile and computer games that are still using them.[57] Loot boxes can employ deceptive design to exploit cognitive biases of consumers, use aggressive marketing to push sales, use opaque algorithms and skewed probabilities of getting awards, use virtual currencies to distort the real monetary value of the loot and use many other misleading practices.

If a refund question arises – related to loot boxes or any other in-app purchases, cross-border or not – all app developers and app stores have efficient mechanisms for handling reimbursements. For example, Apple sends a receipt to the customer for every in-app purchase accompanied with all relevant information for the consumer including how to manage the purchase and how to withdraw from the purchase. For subscriptions, consumers get regular bills by email, to make sure that they do not forget, for what they have subscribed and how much they are paying. Apple also has a consumer support service specifically for in-app transactions, which also handles refunds. Refunds are organised automatically via a "report a problem" platform.[58] Apple would reimburse for errors in purchases or when a minor did a purchase and similar issues. Google Play allows to request refunds for a faulty in-app purchase or a purchase that does not correspond to its description on Google Play if they have been done within the last 48 hours. The decision on the refund takes up to 4 days. However, the consumer can also contact the app developer directly if an in-app purchase has not been delivered. Unauthorised purchases can be reported to Google Play for 120 days.[59] Therefore, the interviewed stakeholders felt that there are no specific difficulties in this regard.

Despite the increased use of apps and mobile gaming during the pandemic-related lockdowns, none of the interviewed stakeholders could report an increase in complaints. PEGI stated that they saw more visits to their website, which indicated that people wanted to learn more about the games and their age ratings, but there was no increase in complaints to PEGI. Similarly, the Belgian Gambling Commission explained that they did not see an increase in complaints or voluntary exclusion requests during the pandemic (in fact, the figures even went down).

4. Compliance of traders

4.1. Impact of the CPC regulation and actions on the compliance of companies

All interviewed stakeholders considered that companies' compliance with consumer protection rules has been improving. However, compliance is still a challenge for small companies and freelance developers that do not have enough resources. The interviewed industry stakeholders mentioned that consumer protection is a complex area with many rules that are difficult to comprehend and that differ from country to country. The efforts to

[57] Forbrukerrådet (2022). Insert coin: How the gaming industry exploits consumers using loot boxes, available at: https://fil.forbrukerradet.no/wp-content/uploads/2022/05/2022-05-31-insert-coin-publish.pdf.

[58] Apple (n.d.). Request a refund for apps or content that you bought from Apple: available at: https://support.apple.com/en-us/HT204084

[59] Based on Google Play (n.d.). Learn about refunds on Google Play in EEA countries and the UK, available at: https://support.google.com/googleplay/answer/7659581; Google Play (n.d.). Learn about refunds on Google Play, available at: https://support.google.com/googleplay/answer/2479637?hl=en&ref_topic=1266308

increase transparency towards consumers about the presence of in-app/ in-game purchases continue, and industry associations are playing an important role in informing companies about (new) legal requirements, organising training events and providing advice.

The 2014 Common position on in-app purchases found wide support in the industry and was implemented efficiently and comprehensively for several reasons.

First, all interviewed stakeholders considered a smart decision by the CPC Network to involve platforms (App Store and Play Store) to become a part of the solution. These platforms play a key role in the industry and can ensure the compliance of all developers who want to distribute their apps through them. The centralised regulatory action coupled with the political will and the right leverage were the main guarantees of success.

Second, the Common position on in-app purchases referred to the Principles for online and app-based games of the UK Office of Fair Trading (now UK Competition and Markets Authority) of 2013-2014.[60] The latter document was perceived as best practice by the industry and was widely adopted by European game developers. The Principles were further referred to in the 2016 Guidance on the implementation/ application of the Unfair Commercial Practices Directive,[61] which meant consistency in interpretation of consumer protection rules and legal certainty for the companies.

In addition, there were also self-regulatory efforts. PEGI introduced the in-game purchase descriptor for online video games (and later for all types of video games).[62] The descriptor needs to be displayed next to the game in the app store, informing the consumer, prior to downloading the game, of the presence of in-game purchases in a game. The descriptor was updated in 2021 specifically to provide information on whether in-game purchases include random items or not.[63] It is important in this context that PEGI's efforts were supported by Play Store which agreed to apply their age rating (which includes in-game purchases descriptor) in 2015.[64]

In 2015, the Dutch, Norwegian and Danish regulators evaluated whether Apple and Google have kept to the agreement not to label games with in-game purchases as "free", to explicitly ask users to choose their payment settings and to ask users for each purchase separately.[65] They concluded that the compliance was widespread. The low number of complaints about loot boxes (see Section 2 above) indicates that the compliance in the industry is fairly high and/or loot boxes are less used, but research by some consumer protection authorities (e.g., Norway) indicates that problems with loot boxes persist, though probably for smaller number of games. Complaints about other issues related to in-app/ in-game purchases were unknown to the interviewees and could not be established via desk research. The 2015 evaluation by Dutch, Norwegian and Danish regulators found that the

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[60] See this and other relevant documents at UK Office of Fair Trading (2013). Children's online games, available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20140402175104/http://oft.gov.uk/OFTwork/consumer-enforcement/consumer-enforcement-current/childrens-online-games/ .

[61] Commission Staff Working Document (2016). Guidance on the Implementation/application of Directive 2005/29/EC on Unfair Commercial Practices, COM(2016) 320 Final, available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016SC0163 .

[62] PEGI (2018). PEGI announces new content descriptor: in-game purchases, available at: https://pegi.info/news/new-in-game-purchases-descriptor .

[63] Robertson A. (2021). New PEGI information for in-game 'random items', available at: https://www.askaboutgames.com/new-pegi-information-for-in-game-random-items#:~:text=PEGI%20has%20been%20assigning%20the,of%20optional%20in%2Dgame%20purchases.

[64] Kelion L. (2015). Google Play revamps its Android apps' age ratings, BBC, available at: https://www.bbc.com/news/technology-32882136 ; Apple uses its own system: Section 3.1.1 of App Store Review Guidelines, available at: https://developer.apple.com/app-store/review/guidelines/#in-app-purchase .

[65] ACM (2015). Apple and Google no longer promote games as 'free', available at: https://www.acm.nl/en/publications/publication/14881/Apple-and-Google-no-longer-promote-games-as-free .

contact details of app developers for refunds were not always present or clear. This issue seems to have been resolved as the interviewees explained that refunds – just as any other payments – run via the app store itself.

4.2. How the compliance of companies can be improved

Although compliance in the mobile app industry have improved, there are still some app and game design practices regarding in-app purchases that are problematic from a consumer protection point of view. The interviewed stakeholders from the industry see the need further to improve compliance with consumer protection in in this regard. They see several ways how this can be done.

In line with the previous successful experience with the Common position on in-app purchases, it is necessary and welcome if authorities adopt a centralised, European approach. App business does not stop at any border; hence the industry fears fragmented decisions and individual actions by national authorities that would complicate the situation.

The various industry stakeholders noted that the revised CPC Regulation (EU) 2017/2394 was a step in the right direction to enhance cooperation between national authorities. However, they wish that such cooperation would be even stronger and more regular and that there are more exchanges between national authorities to make national interpretation and application of consumer protection rules more consistent. In addition, cooperation with other authorities from adjacent fields (e.g., data protection, competition) should be ensured. The cooperation between different (consumer) authorities would allow raising the level of digital skills/ knowledge within some national authorities. All this would help to avoid fragmentation and inconsistencies across the EU and, therefore, make it easier for companies to comply with the rules and to provide for an equal level of protection for consumers.

In the same vein, it has been suggested, especially by industry stakeholders, that EU/EEA national authorities and the European Commission cooperate with the European authorities beyond the EU/EEA as it would be important to avoid fragmentation in the region as a whole. In particular, cooperation with the UK authorities would be beneficial because they are perceived as progressive and innovative.[66]

It would be also useful to identify issues that are or can be controlled by the platforms and then leverage the power of these multipliers to ensure compliance throughout the app developing industry. Just like with the Common position on in-app purchases, such an approach would be more efficient, not least due to its ability to reach even the smallest app developers and greater opportunities for subsequent control. However, such an approach should be taken in a centralised manner (i.e., through the European Commission and the CPC Network).

Last but not least, more communication and dialogue with the industry and consumer protection NGOs are desirable at the national level. The interviewed industry and consumer protection stakeholders stated that the dialogue at the EU level is going well, but it is often too high-level for day-to-day business purposes. Companies (in particular SMEs) have a lot of specific questions about the practice of consumer protection in relation to apps; they

[66] See, for example, the new Guidance on advertising in-game purchases by the UK Committee of Advertising Practice, available at: https://www.asa.org.uk/static/b0c13026-825b-4015-8b5287d339813801/Guidance-on-advertising-in-game-purchases-draft.pdf .

want to know what the best practices are and what they do wrong. Frequently, they are not able to get answers or advice from national consumer authorities and they do not understand how to comply or why exactly they are non-compliant. It would be useful and effective to have more practical information (e.g., guidance, guidelines and similar, written in a clear, simple language)[67] for the industry and an ongoing dialogue with national authorities, in addition to other types of CPC actions.

5. Conclusion

Consumer protection authorities via the CPC network have played a pivotal role in the development of the app industry. The CPC 2014 Common position on in-app purchases found wide support in the industry and was followed by important changes in this business models, induced also by the major app stores. This Common position also improved the protection of consumer rights in the sector.

However, the CPC network needs to step up its work to deal with the upcoming challenges in the sector. The app industry is in anticipation of considerable changes due to the expected adoption of the DMA that will significantly impact the business models of the two main app stores, which will then also influence app developers. The changes to come may have implications for consumers and they will add complexity to the legal framework. The issue of loot boxes continues to come in some jurisdictions and may need a common solution. In addition, technological and market developments also lead to new business models (e.g., play-and-earn, linked to NFTs) and products (e.g., in cloud computing, VR/AR). In-app purchases continue to be a very popular business model that has been widely adopted by all kinds of apps, including social media apps.

To keep pace with the developments in technology and on the market, the CPC network should engage more with stakeholders. Especially industry stakeholders wish for more guidance on the expectations of consumers and authorities and requirements of consumer protection regulation and its interplay with data protection and privacy rules. In the latter context, cooperation between consumer protection authorities and data protection authorities is desirable. The cooperation of authorities within the CPC network is seen by stakeholders as an opportunity to prevent market fragmentation and to enable economies of scale. The inclusion of national authorities beyond the EEA is desirable to share best practice examples and expertise.

[67] On this point, the example of tax authorities was given that in many countries focus more on prevention through information and advice than on enforcement. Also, the example of the communication campaign and information materials about the GDPR was given.

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6.2. List of interviews

Type of organisation	Name of organisation	Interview date
Consumer protection NGO	BEUC	12.04.2022
Industry association	Developers Alliance	19.04.2022
Industry association	European Games Developer Federation (EGDF)	20.04.2022
National authorities	Belgian Gaming Commission	25.04.2022
Industry association	Interactive Software Federation of Europe (ISFE)	28.04.2022
Self-regulation organisation	Pan European Game Information (PEGI)	28.04.2022
Industry	Apple	12.05.2022
EU institutions	European Commission	13.05.2022