**Looking for Monopolies in Smart Mobile Device Markets – Emerging Narratives in the EU and the US.**

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# Introduction:

The purpose of this paper is to understand the legal controversies surrounding competition in small mobile device app distribution and payment processing services. A little bit after a decade since the creation of the first app store, both Android and iOS have pursued a business model that relies on monetizing app distribution in a manner that did not exist in the previous generation of personal computers such as PCs and Macs. iOS has vertically integrated hardware, operating system (OS), app store, and payment processing into a very lucrative bundle. In the EU and the US there are active legal controversies that Apple and Google have illegal monopoly power in these markets. This paper takes a critical look at the most recent case on this issue, Epic v. Apple in the Northern District of California, and compare the emerging narrative and legal analysis in this case to the legal analysis in the European Commission’s regulatory decision in Google Android. The purpose of this paper is to understand better what's an app store, the competing legal, business, and economic interests therein*.*

# Part I – Understanding an App Store

## What is an App Store?

An app store is a two-sided transaction platform.[[1]](#footnote-1) A multisided platform is an economic structure where an intermediary facilitates transactions between different user groups for a fee.[[2]](#footnote-2) In the case of an app store, the intermediary is the app store platform operator, and the two-sides are software users and software developers.[[3]](#footnote-3) In North America and Europe, the dominant app stores are Apple's App Store ('Apple Store') and Alphabet's (Google's parent company) Google Play Store ('Google Store'). Apple iOS had 15% of the global market share in smart mobile devices in 2020.[[4]](#footnote-4) Almost all of the remaining smart mobile devices run Google Android.[[5]](#footnote-5) Apple takes credit for having invented the app store concept in 2008, one year after the release of the first iPhone.[[6]](#footnote-6)

At this point, it is important to remember that iPhone is the world's first modern and commercially successful handheld computer to appreciate the technological disruption caused by the app store to the pre-existing software distribution models. In the days before app stores, the common practice for computers, regardless of the OS they ran, was to download installing packages directly from the developer's website, especially with regards to free software, or buy CDs and disks that held installing packages.[[7]](#footnote-7) The user would deal directly with the developer. The user would have to work through any compatibility issues between the software they are installing and their particular computer set-up. In addition, users would decide whether they trusted any specific app developer.

However, Apple reinvented how applications are distributed to users with the app store model. Within the two-sided transaction platform model, the operator interjects themselves in-between the developer and the user.[[8]](#footnote-8) The operator handles all payments and refunds in-between the developer and the user unless the software from which the payment originates falls within certain exemptions.[[9]](#footnote-9) Apple even indirectly controls the features a developer can incorporate into their software by giving developers selective access to the underlying hardware and operating system.[[10]](#footnote-10) The operator also restricts and regulates the communication between the developer and the user.[[11]](#footnote-11) The selling point for the app store from the users' perspective is the improved user experience. The user no longer has to worry about compatibility issues between their device, the OS, and the software they download.

There is an ongoing controversy in the US case *Apple v Pepper* regarding the nature of the legal relationship between the operator, user, and developer for purposes of US antitrust law. The plaintiffs allege that because they make payments to Apple, Apple is not merely a platform operator but also the seller of all software on the App Store.[[12]](#footnote-12) This would establish a direct sales relationship between users and Apple. A direct sales relationship would make Apple vulnerable to antitrust claims such as monopolistic overcharging. In contrast, some commentators and Apple allege that there is no direct sales relationship between users and Apple because Apple has no title to the third-party software sold on the platform.[[13]](#footnote-13) The issue of standing and whether the users had a direct or indirect purchaser relationship with Apple was decided in favor of users in the US Supreme Court.[[14]](#footnote-14) Unless the US Supreme Court overrules itself, we can add to our definition of an app store that the platform operators have a direct sales relationship with the users as a result of the fact that they force both the developers and the users to use the platform's propriety purchase system and that all transactions are remitted first to the platform operator.

There is a controversy about whether app stores are aftermarkets or part of a larger market. With regards to this issue, judicial opinion differs in Europe and US. In Europe, the leading case is the European Commission's ('EC'), the European Union's central administrative tribunal with appeals allowed to European Court of Justice, *Google Android* At.40099 decision in 2018. In the US, whether app stores are an aftermarket is an alive and important controversy in trial at both *Apple v Pepper*[[15]](#footnote-15) and *Epic v. Apple.*[[16]](#footnote-16) In *Google Android,* the EC decided that the Play Store was an aftermarket of the Android operating system.[[17]](#footnote-17) In the absence of an appeal from that decision, this is good law. In *Epic v. Apple,* the US District Court at the Northern District of California found that the Apple Store was not a mere aftermarket of the iOS operating system. This finding was a significant factor regarding the court's reluctance to find that Apple was a monopoly as defined in the jurisprudence of the Sherman Antitrust Act. *Apple v Pepper* is an ongoing case in the same district court, and part of the plaintiff's argument is based on the allegation that the Apple Store is an aftermarket of the iOS. It is yet to be seen whether the judge sitting in *Apple v Pepper* will agree with the reasoning of their colleague.

## Apple and the Apple Store

Within the iOS ecosystem, Apple has all but made it impossible for users to download software from any other source that is not the Apple Store in the following ways. First, iOS does not run apps without specific digital signatures that can only be acquired by participation in the Apple developer program and distribution through the Apple Store.[[18]](#footnote-18) Second, even if a user was technically skilled enough to 'jailbreak' the iOS to circumvent Apple's digital restrictions, such technological avoidance measures violate Apple's term of use and have adverse legal outcomes as a result.[[19]](#footnote-19) Third, since Apple does not license the iOS to third-party original equipment manufacturers (OEMs), Apple has complete control over what third-party software, if any, are permitted to be preinstalled on to the phone before sale. On iOS, preinstalling is limited to Apple's apps only.[[20]](#footnote-20) Fourth, Apple has made it very clear that they won't approve of any other app store application and won't preinstall any competitor's app store onto the iOS. As a result, the Apple store is a near-perfect bottleneck to app distribution on iOS.[[21]](#footnote-21) Through the Apple Store, Apple has unique regulatory and control powers over all other stakeholders in the iOS. This unique position of Apple as the app store operator is at the core of many of the ongoing antitrust criticisms targeting Apple in particular. Still, it applies to a great extent to Google as well.

## App store Stakeholders and Legal Concerns

The stakeholders in any given app store are app users, developers, and platform operators. These parties have divergent interests and purposes in the app store. Users bring in money and business opportunity to the app store. Users benefit the platform by creating a network effect that entices more developers to release applications on a particular store and even more users.[[22]](#footnote-22) Users help the developers by permitting developers to monetize their software through direct or indirect means.[[23]](#footnote-23) However, not all aspects of the users' relationship with the other two stakeholders are harmonious. Users have a natural interest in the privacy of their personal information. However, this is often at odds with the developers' and operators' interest in accessing the users' private information to monetize it by whatever means possible.

App developers, on the other hand, produce content in the hopes that it will be attractive to users. Developers monetize their apps using the following economic models. The free monetization model is where the developer provides the app for free. Monetization is achieved by selling ad space in the app to other businesses so that the users will see the ads whenever they use the free software. A developer that has access to user data can help the users match with more relevant ads and attract higher-paying advertisers. It would even be possible for the free app developer to further monetize the user by selling user data. The freemium monetization model is where the developer provides the app for free but then provides in-app purchases that improve the user experience or unlock additional content. The premium monetization model is where the user must pay before downloading the app. Once inside, there may or may not be further in-app purchases that improve the user experience or unlock additional content. App developers using the freemium or premium monetization model must use the services of a payment processor. As it stands, many app stores, including the Apple Store, require developers to use the payment processor services of the platform provider.[[24]](#footnote-24)

Platform operators are the glue that brings developers and users together. As a bare minimum, the platform operator permits the developers to showcase their software to potential users. Common app stores services include a search tool, product page, and categorization of apps by utility.[[25]](#footnote-25) Most app stores also provide security functions that protect users against malware and social engineering attacks such as phishing and data theft.[[26]](#footnote-26) Finally, most game stores also provide payment transaction services, including in-app payment services.[[27]](#footnote-27) The operator–user relationship is governed by the terms of service of the app store, which no one reads. The operator–developer relationship is governed by the operator's developer program licensing agreement ('DPLA'), which developers better read.[[28]](#footnote-28) The DPLA is a standard form agreement that even other large businesses have difficulty negotiating.[[29]](#footnote-29) The DPLA governs the annual subscription fee to list software on the app store and access the OS specific application programming interfaces and the commission owed to the operator on most sales that take place on the platform or in-app. DPLAs also include various non-competition clauses that require the developers to only use the payment services provided by the platform owner unless their apps fall within certain exempted categories. Their communications with users must adhere to certain restrictions beneficial to the operator's interests.[[30]](#footnote-30)

There are several points of conflict between developers and platform operators. First, platform owners are the ultimate arbiters of what apps get listed on the app store. The operators publish guidelines on what is required of developers and apps for the opportunity to get listed on an app store.[[31]](#footnote-31) The approval process causes delays of varying amounts of time depending since different operators have different review and approval procedures.[[32]](#footnote-32) A primary concern regarding these guidelines is that they are vague and unclear and result in arbitrary decision-making. For example, Apple often cites non-compliance with developer guidelines as the reason for delisting apps from the Apple Store without giving any further reasons.[[33]](#footnote-33) Developers complain that Apple uses the app guidelines to limit the ability of products that would compete with Apple's products.[[34]](#footnote-34) In the Google Ads decision, the French Competition Authority found that lack of clarity in platform guidelines where the platform operator enjoys a position of monopoly is a serious antitrust problem.[[35]](#footnote-35) They decided that imprecise guidelines are sanctionable as 'unfair terms and conditions' if they are drafted imprecisely and give the platform operator broad discretion in their interpretation.[[36]](#footnote-36)

Second, the platform operator restricts the marketing and business strategies available to developers. For example, developers cannot guide users to their browser-based, OS agnostic websites where the users can buy the same service for cheaper, and developers can avoid the operator's payment processor services and the commission. As a result, the user is charged an excessive amount for the same service. In addition, operators restrict how developers can use the contact information of the users they acquire through their apps downloaded from the app store. A developer is forbidden from providing information regarding discounts available on the browser app to the users who first sign-up through a mobile app. Even though Apple doesn't have a means of policing general communications that are not OS specific, such communications are nevertheless included in Apple's Guidelines as grounds for delisting an app if discovered.[[37]](#footnote-37)

Third, platform operators are vertically integrated technology companies. Developers are concerned that the operators have access to critical business information due to their self-imposed intermediary position.[[38]](#footnote-38) Developers allege that both Apple and Google use the business information of the developers to make strategic decisions on which digital services to enter. Therefore, successful innovators often find that the platform owner is also a direct competitor in the downstream offering similar services to users. Examples that come to mind are Apple Music competing with Spotify[[39]](#footnote-39), Apple's FindMy iPhone competing with Tile[[40]](#footnote-40), and Apple's screen time feature competing with third-party screen time and parental control apps such as Kidslox and Qustodio[[41]](#footnote-41). Developers also complain that Apple changes its conduct vis-à-vis the incumbent innovators in manners that harm their business and ability to compete with Apple. For example, Apple disallowed Spotify from using the sound command capabilities of Siri, even though Apple Music was fully integrated with iOS voice command functions.[[42]](#footnote-42) In the Apple–Tile dispute, Apple implemented a recurring and immutable warning to users of the Tile app that Tile was accessing their location after introducing FindMy. A GPS tracking app needs access to user location, and the immutable warning significantly reduced the useability of Tile's app. FindMy users, on the other hand, never received similar warnings.[[43]](#footnote-43) Furthermore, if a user turns on FindMy in their settings, they will be automatically barred from using other competing services.[[44]](#footnote-44) In the case of Apple's dispute with third-party screentime and parental control apps, Apple removed those apps from the Apple Store after rolling out its screentime control features in June 2018.[[45]](#footnote-45) Apple tried to justify that these apps violated its guidelines and potentially accessed sensitive user data. Amid regulatory pressure, Apple changed its stance on this issue in 2019 and relisted the third-party apps. However, affected businesses lost business income and lost the head start and network effect they had for being innovators providing novel security services.[[46]](#footnote-46) Another important concern is that operators seem to promote their apps over competitors'. For example, a general query such as 'video' or 'music' will return Apple products before listing any major third-party product such as Netflix, Amazon Video, or Spotify.[[47]](#footnote-47) It is even more troubling that Apple will often turn off the rating system of their products if they are rated poorly and continue to rank higher in the search results their products over the much more popular and highly ranked third-party software.[[48]](#footnote-48)

Fourth, most developers allege that the 30% commission rate is a prima facie anti-competitive. There are two competing theories on the purpose of the commission. The first theory is that the commission is compensation paid to Apple for its services to developers, ongoing maintenance of the app-store[[49]](#footnote-49), and Apple's rent for being innovative and creating the app store model.[[50]](#footnote-50) If this theory is correct, it is difficult to justify a commission rate as high as 30%. Operators already charge an annual subscription fee to use the app store.[[51]](#footnote-51) App stores are further monetized by the option to pay the operator fees to promote apps.[[52]](#footnote-52) Furthermore, it is not equitable that only 16% of the apps on the Apple Store pay any fees.[[53]](#footnote-53) Vast majority of the remaining apps are free apps, and the remaining minority are commission-exempt apps and operator-owned apps.[[54]](#footnote-54) In Europe, this has raised antitrust concerns that 16% of the apps subject to the commission effectively subsidize the Apple Store fees of the remaining 84% of apps. This could constitute excessive charging and charging an amount not related to the services provided under European Union's antitrust laws.[[55]](#footnote-55) An additional antitrust allegation made against operators on the issue of the commissions is that it is an anti-competitive policy whenever a third-party developer competes with an app produced owned by the operator in a downstream industry. For example, a music app distributed on Apple Store has to pay the 30% commission whereas Apple Music that provides a similar service, pays no commission to Apple Inc. The alternative theory on the purpose of the app store commission is that it is the operator's service charge as a payment processor. The antitrust concern if this theory is correct is that 30% commission is much higher than the 1-5% commission charged by major payment processors such as PayPal and Visa. [[56]](#footnote-56)

## Economics of an App Store

What would have motivated a billion-dollar video game company like Epic to break a multimillion-dollar arrangement with Apple and risk paying millions of dollars for breach of contract? The answer is that in-app payments are a multibillion-dollar market, and Epic does not want to share revenues it earns from in-app purchases after players have already downloaded an Epic game on their device. If Epic can break Apple's monopoly on app distribution on iOS and force the Apple Store to distribute the Epic Store, that's a bonus. In 2020, estimates showed that the Apple app store earned between $64 – 72.3 billion from app store purchases, digital subscriptions, and in-app payments combined.[[57]](#footnote-57) Of this amount, more than 75% was attributable to video games and in-app purchases.[[58]](#footnote-58) Video game in-app purchases attributed for 98% of all the in-app purchases made on the Apple app store during the year.[[59]](#footnote-59) A similar picture could be drawn looking at other app stores such as the Google Play Store. In 2021, Google play made $47.9 billion of digital transactions.[[60]](#footnote-60)

Apple extracts billions of dollars through the terms and conditions of the DPLA. Developers pay a 30% commission to Apple on all app store purchases and in-app purchases. There is a lower commission on annual subscriptions after the first year. After the *Epic v. Apple* lawsuit, major app store operators Apple, Google, and Amazon implemented a small-developer program that imposes a sub-20% commission on developers whose revenue, including in-app sales, is less than $1 million.[[61]](#footnote-61) The operator commission revenues are much higher than any operating cost, and research and development costs are attributable to the app store.[[62]](#footnote-62) Even though 30% commission is pretty much standard in European and North American store operators, there is a greater variation in the commissions charged by platforms in China where there is greater competition and choice for what app stores to use on the Android OS. In particular, operators that are themselves large financial institutions charge lower commission rates. Types of politically discouraged apps, such as games, are subject to remarkably higher commission rates than politically encouraged games, such as those for education.[[63]](#footnote-63) As a result, the average commission rate on video games in China is within the 55% - 40% range[[64]](#footnote-64) and is subject to even harsher criticism from Chinese app developers. As a result, app store startups such as TapTap are looking to disrupt the app store economics by doing away entirely with the commission system. TapTap's monetization scheme is inspired by digital marketplaces for physical goods such as Amazon. The platform sells services to the goods suppliers, such as being ranked higher in a search and ad-space in prominent parts of the platform and the community newsletters.[[65]](#footnote-65)

### Exemptions from the Commission and Controversies

The operator commission is only levied on the sale of 'digital goods'; however, developers complain that what is a digital good and what is a physical good is defined imprecisely and often applied arbitrarily. The biggest problem concerns personal services delivered virtually. For example, Apple initially categorized a Chinese medical counseling app as a digital service. Under massive public pressure, this medical counselling app was recategorized as a physical good.[[66]](#footnote-66) Under the pandemic, online education services are a booming industry. Initially, Apple's position was that any service that streamed live classes was a physical good. Unsurprisingly, this met strong pushback. Apple eventually settled on a compromise that if the online class is 1-on-1, then it is a physical good, but if it is a group class, then it is a digital good.[[67]](#footnote-67) Developers with particularly strong hands, such as Zoom, negotiated an exemption from the payment processing services all together. However, this means that they are not permitted to make any sales on iOS.[[68]](#footnote-68) Apple's conduct vis-à-vis these virtual counseling and education services where there are two services (online streaming and access to information) is one of the most robust examples demonstrating the ambiguities in Apple's guidelines. Apple's position seems to be that these are primarily video streaming services. However, from the perspective of the content producers, users, and developers, these are educational services akin to physical activities such as going to a doctor's office, the gym, or the classroom. The compromise position is even less principled since there is no difference in the nature of the service when a class is offered 1-on-1 as opposed to 1-on-many. Similarly, it is difficult to explain why car-share apps such as Uber and Lyft are considered physical goods. The basic service provided by the app is online match-making. Freelancers perform physical services.

Apple argues that the physical-digital dichotomy is based on Apple's ability to verify that a transaction took place. However, this explanation is not very convincing. For example, Apple has no way to confirm whether an online lecture or counseling session has taken place or not. As it stands, Apple does not request the developers to report to Apple whether an online session is delivered or canceled.[[69]](#footnote-69) If such a requirement were in place, it would be an overreach of Apple into the affairs of another business. The best Apple could do is implement a program where Apple's agents could schedule sessions to implement a sampling study to convince itself that the app in question functioned as advertised. Apple has no such program.[[70]](#footnote-70) But if Apple were to go this far, it could do the same regarding most physical services. For example, Apple could hire undercover investigators to take Uber rides or attend online classes. In practice, Apple has admitted that there is an unofficial differentiation between whether the services are being offered to individual users or other businesses or large groups within the digital goods category. This means that an email reading app that licenses accounts to companies and similar large groups is exempted from the commission. A similar app that sells licenses to individuals pays the 30% commission.[[71]](#footnote-71) These ambiguities and inconsistencies could be a reason for antitrust action in Europe, as was explained earlier in this paper.

# Part II - *Epic v. Apple* – A case study on App Distribution and In-app Payment Services Monopolization

In *Epic v. Apple*, Epic brought comprehensive claims of anticompetition against Apple and the Apple Store. The claims are as follows: Apple's restrictions on iOS app distribution are unlawful, restrictions on in-app purchase payment processing services are an unlawful requirement, Apple maintains an unlawful monopoly on iOS app distribution, Apple maintains an unlawful monopoly on in-app payment solutions, Apple unlawfully ties its in-app payment solutions to the Apple Store, and that Apple's policies on iOS app distribution, or in-app payment solutions, or both constitute unfair competition. The first four claims were brought under both federal law (the Sherman Act) and California state law (the Cartwright Act), and the last one was brought only under California state law (Unfair Competition Law). The preliminary questions on the bench were: what is the relevant market, did Apple have monopoly market power in the relevant market, did Apple's conduct cause harm, and did Apple have a reasonable justification for its conduct.

## Defining the relevant product market

### Court Rejects the Foremarket - Aftermarket Model

Epic legal theory was based on the argument that the app stores (or app distribution in general) are an aftermarket of mobile operating system markets,[[72]](#footnote-72) and in-app payment solutions are an aftermarket of either app distribution solutions market. This legal theory was similar to the findings made by the European Commission on *Google Android.[[73]](#footnote-73)* In the US, an appellant that alleges the defendant is illegally restraining trade at or monopolizing an aftermarket must argue the following to survive a motion to dismiss: (1) the relevant market is wholly derivative from and dependent on the primary market; (2) the illegal restraints on trade and illegal monopolization related only to the aftermarket; (3) defendant did not achieve market power in the aftermarket through contractual provisions with its consumers in the foremarket (ie. did consumers know and consent to enter a monopolized aftermarket); (4) competition in the initial market does not discipline anti-competitive practices.[[74]](#footnote-74) Additionally, the plaintiff must show that the primary market the alleged aftermarkets derive from actually exists. To this end, Epic argued that (1) iOS apps and iOS payment processing derive from Apple's operating system and the relevant foremarket is a global marketplace for mobile phone operating systems; (2) Restraints related to app distribution and payment processing do not relate to the primary market for mobile phone operating systems; (3) Consumers do not contractually agree to obtain apps only through the Apple Store when they purchase an iPhone in the primary market for operating systems. Instead, apple's monopoly market power in the derivative markets derives from its illegal restrictions on the developers through the DPLA and unilateral measures; (4) Due to difficulties in switching from iOS to Android, the choice of an operating system has strong lock-in effects. Strong lock-in effects exist both vis-à-vis developers and users. As a result, there isn't sufficient competition in the primary operating system market to discipline Apple's conduct in the primary market to discipline Apple's conduct in the aftermarkets. Case law requires the plaintiff to show evidence of unfair conduct such as a change in policy in the aftermarket after users are locked-in and that the restrictions in the aftermarket were not sufficiently disclosed.[[75]](#footnote-75)

### Court Finds That There Isn't a Global Marketplace for OSs

The court summarily finds that the foremarket – aftermarket model is unpersuasive because Apple does not license the iOS to third-party OEMs. The court finds that there cannot be a market for something that cannot be licensed or sold to anyone.[[76]](#footnote-76) The analysis further finds that competition exists for smartphones, but not for OSs. It seems that the court found, without much elaboration why, that competition in smartphones was mainly driven by hardware features such as battery life, durability, ease of use, cameras, and performance as opposed to the OS.[[77]](#footnote-77)

It is unclear whether this reasoning is at odds with EC's reasons in *Google Android.* In that decision, EC found that some OSs are developed by vertically integrated OEMs such as Apple and the iOS, and Blackberry Ltd. and Blackberry OS for captive use in their own devices. Such O.S.s area collectively called 'non-licensable smart mobile OSs". In contrast, some OSs are licensable to OEMs, such as the Google Android and Windows Mobile. When an OS is licensed, the licensing constitutes an economic activity.[[78]](#footnote-78) EC found that non-licensable OS products do not belong to the same product market as licensable mobile OSs.[[79]](#footnote-79) This differentiation was warranted on the basis that third party OEMs cannot make use of non-licensable OSs. In the competition analysis, EC looks at both the supply-side demand-side when making a market analysis. Even though non-licensable OSs and licensable OSs compete on the supply side to attract more people to use smartphones running one platform or the other.[[80]](#footnote-80) EC found that the primary consumers of OSs on the demand-side are OEMs, and that there can't be competition between what is available and what is not available to an OEM. Similarly, the OEM cannot substitute a non-licensable OS for a licensable OS during production. In other words, EC might agree that licensing is a prerequisite for saying that a market exists for a particular OS product.

However, I would be more hesitant than the *Epic v. Apple* court to conclude that there is no marketplace for the iOS. Even following an OEM demand-side analysis, it can be argued that from the perspective of vertically integrated OEMs, there is still a marketplace for an OSs. Every time Apple manufactures an iPhone, they have a choice to license Android or use iOS. That Apple makes the same choice each time, does not mean that it was not an economic decision or that Google Android was not an available choice. There is nothing special in the hardware of an iPhone that would make it reject any other OS. Another way to look at the iOS and the iPhone would be to argue that from a vertically integrated OEM perspective, their propriety non-licensable OS constitutes a natural monopoly. It would go against all schools of economics to say that where there is a natural monopoly, there is no market for the monopolized good. It would make no sense to argue that water is a non-product because a single company monopolizes the water distribution market in a particular city. A monopoly is a market with a single supplier. For Apple, iOS is the only OS supplier to iPhones.

If the *Epic v. Apple* court had found that iOS nevertheless constituted a market, one which it didn't share with other OS's following the reasoning in *Google Android*, iOS app stores were an aftermarket based on the iOS market. The most apparent reason why the Android Store cannot be a substitute for the Apple Store is that the Android store is that you can't install both on the same device unless Apple provides an Android-compatible version of the Apple Store, or vice-versa. From a business perspective, there is no reason for Apple to do so because the network effect of quality apps on the Apple Store greatly benefits the iOS and increases the competitiveness of iPhones compared to Android phones. Therefore, the only relevant app store market would be those app stores that can run on iOS.[[81]](#footnote-81) If this were the case, the Apple Store would necessarily be an artificial monopoly. Apple artificially erects impossible barriers to entry to the iOS app distribution market by disallowing sideloading, preloading, and listing on the Apple Store. Some commentators interpret the Google Android case to mean that each OS constitutes a market by itself and that app stores constitute OS-specific aftermarkets, as I also argue.[[82]](#footnote-82)

### Court Would Have Granted Summary Dismissal as Epic Failed to Show Lock-In in the Aftermarket for Video Game App Distribution Markets

A review of legal writings in Europe suggests that Apple pursues policies that tend to lock-in users. When switching from iOS to Android, users face switching costs such as buying new hardware, learning the software to become proficient with it, redownloading and/or repurchasing all their apps. Some apps may not be available on Android, and even if they were, it might not be possible to migrate account data from a profile created on iOS to Android.[[83]](#footnote-83) All these contribute to great user inertia, which could be described as lock-in.[[84]](#footnote-84) Furthermore, developers are also in a situation where they cannot switch their business from one OS to another. First, iOS and Apple use different programming languages. It can be costly for a small developer to recreate their app in a second programming language.[[85]](#footnote-85) Second, developers go where most users are to run a profitable operation. Most users only have one phone, and as a result, they singlehome. As a result, if a developer were to migrate its services from one OS to another, they would lose all the customers they already have and the network effect they had already built in the OS they leave.[[86]](#footnote-86) Even for developers that are already multihome, the economic impact of terminating services to a popular OS is equally devastating. They would lose all their current customers in the OS they exit. Perhaps even more concerning from a business perspective is that they would be vacating a significant market share for another business to occupy and build a competing network that can eat into the incumbent's remaining business in other OSs.[[87]](#footnote-87) Even though most apps could be remade as an OS-agnostic webapps, this doesn't make for a suitable substitute either. Such webapps offer a diminished user experience because they are slower. Certain apps that need access to hardware parts, such as a GPS tracker are entirely impossible to rebuild as a webapp.[[88]](#footnote-88) In particular, developers complain that the in-app payment services have the greatest potential for lock-in because of their restrictive effects on the transferability of user accounts from an iOS device to an Android device. For example, HEY! is a popular email app in Europe available both on iOS and Android. However, HEY! users on iOS cannot transfer their accounts to Android even if they were to buy a new phone because their old account is locked-in with Apple's in-app payment service.[[89]](#footnote-89)

In *Epic v. Apple*, the court acknowledged that there are switching costs but found that there is no lock-in for the following reasons. First, the court found that even recognizing all the aforementioned switching costs, there was not enough evidence to prove that the iOS users' low rate of change to Android was not due to their satisfaction with Apple's products and brand loyalty.[[90]](#footnote-90) Second, the court found that barriers to switching OSs were on a downwards trend, especially in the context of video games. The court reached this conclusion based on improving cloud-based data storage and increasing the multihoming of many app developers. In the case of Epic, there was evidence that in reaction to Apple delisting Fortnite, Fortnite players picked up the slack on their non-iOS tablets, phones, and PCs. This evidence was particularly damaging to Epic's case that iOS users were locked-in. A particularly innovative argument on this topic was that the court said that developments in webapp based video game streaming were an emerging technology that will likely disrupt OS-based video game app distribution.[[91]](#footnote-91) Developers can supply OS agnostic mobile video games, and users can enjoy OS-agnostic mobile gaming as webapps. In the reasons for judgment, there isn't a discussion whether all video games can be supplied through webapps or whether users view the gaming experience on a webapp as a substitute to OS native gaming experience.

### Court Decides that the Relevant Market is Global Market for Mobile Game Transactions

Instead, the court found that the relevant market was the global marketplace (except China) for mobile video game transactions. Based on the following findings, the court reached this conclusion: Epic and the Epic Store were video game app developers and distributors. Even though Epic introduced a few non-video game apps into the app store, the Epic Store was essentially a video game app store.[[92]](#footnote-92) Second, Apple Store was also primarily a video game store. The court made this conclusion because video game app sales and in-app purchases accounted for the vast majority of the Apple Store revenues.[[93]](#footnote-93) Third, both the Epic Store and the Apple Store promoted video game apps and other apps in distinct categories, which suggested that both the users and the app stores considered video game apps to be distinct products.[[94]](#footnote-94) Finally, having rejected the proposal that the iOS constituted a market of its own, the court concluded that Apple Store belonged to the global (except China) marketplace for video game app stores. It competed for other video game app stores regardless of the OS.[[95]](#footnote-95) However, the court restricted the relevant video game app store based on the hardware such that while tablets and mobile phones were in the same market,[[96]](#footnote-96) consoles, PCs, and webapps did not belong to this market.[[97]](#footnote-97) Yet, the court put in the caveat that certain consoles such as the Switch was similar to a tablet and competed to some extent with tablets.[[98]](#footnote-98) Similarly, the court noticed that video game streaming was making in-roads to the mobile video game market.[[99]](#footnote-99) Within this market, the court found that Apple did possess significant market power enough to continue with the monopoly market power analysis in the Sherman Act, but that it fell short of establishing prima-facie monopoly power.[[100]](#footnote-100)

## Epic Unable to Establish Liability Under the Sherman Act

### Sherman Act Section 1 and Section 2 Unreasonable Restraint of Trade Legal Tests

Under section 1 of the Sherman Act, the plaintiff must prove (1) the existence of an agreement, and (2) that the agreement was in unreasonable restraint of trade.[[101]](#footnote-101) Under section 2 of the Sherman Act. Even though section 1 is mainly intended to target illegal cartels, it can also be used against unilateral conduct if the conduct is particularly injurious.[[102]](#footnote-102) Since the terms of the Apple Store and participation in the Developer Program are both unilaterally imposed on the users and the developers, the court proceeded under the unilateral conduct of section 1 of the Sherman Act.[[103]](#footnote-103) The practical effect of this branch is that the burden of proof on the plaintiff becomes more stringent. Unreasonable restraints are anti-competitive and harmful to consumers.[[104]](#footnote-104) As for section 2 of the Sherman Act, the plaintiff must show that (1) the defendant has monopoly power in the relevant market, (2) the monopoly power is acquired or maintained willfully, and (3) the defendant caused an antitrust injury.[[105]](#footnote-105) Proving an antitrust violation under section 2 is more exacting than proving an antitrust injury under section 1.[[106]](#footnote-106) Both section 1 and section 2 use the same burden shifting mechanism: the plaintiff shows prima facie unreasonable restraints. The defendant provides reasonable business justifications. The plaintiff must rebut the reasonable justifications by presenting reasonable alternative measures that avoid the alleged harms.[[107]](#footnote-107) Since proving liability under section 2 is more exacting, courts try section 1 claims first.[[108]](#footnote-108) If the plaintiff fails under section 1, they also fail under section 2 since the legal test is the same.

### Alleged Harms That Make App Distribution and In-app Payment Services Unreasonable

Epic alleged that Apple's restrictions and monopoly on iOS app distribution and in-app payment services have caused the following harms: foreclosure of competition, increased consumer app prices, decreased output, and decreased innovation. Epic was largely unsuccessful in convincing these arguments as follows:

* Foreclosure of competition: Epic presented evidence that Nvidia (GeForce Now Store) and Microsoft (xCloud Store) applied to list video game app stores on the Apple Store. Apple rejected both applications. Nevertheless, the court found that GeForce Now and xCloud managed to circumvent Apple Store by offering webapps and streamed video game services.[[109]](#footnote-109)
* Increased consumer app prices: the court agreed based upon expert evidence, comparisons with PC video game stores, and video game developer testimony that iOS game distribution restrictions have increased the price for developers. However, it found that there wasn't sufficient evidence that this increased cost was passed on to app consumers. The court seems to think that the relevant prices are those incurred by the app consumers.[[110]](#footnote-110)
* Decreased output: given the rapid increase in the number and economic size of the iOS market, the court finds it difficult to find a negative impact.[[111]](#footnote-111)
* Decreased innovation: the court agrees that if Apple Store had to compete with other app stores, it would likely provide better features that already exist in Android app stores but missing on the Apple Store.[[112]](#footnote-112)

### Business Justifications

In response to Epic's complaints regarding restrictions on iOS app distribution and in-app payment services, Apple presents the following justifications:

* Security: Court agrees that restrictions on app distribution have allowed Apple to implement human app review, which protects the user against social engineering attacks.[[113]](#footnote-113) These restrictions have also allowed Apple to demand a high level of protection for user data, protect users from objectionable content (such as pornographic and other apps unsuitable for children), piracy.[[114]](#footnote-114) In-app payment services provide additional but limited protection against fraudulent money claims against users.[[115]](#footnote-115)
* Commission collection: Court agrees with Apple that restrictions on app distribution and in-app payment services are the most efficient way for Apple to collect its commission. However, the court says that there is no evidence that the 30% commission is based on the services it provides to developers[[116]](#footnote-116) or the value or cost of its intellectual property.[[117]](#footnote-117) Court also takes notice that a small number of developers seem to be subsidizing the majority of the developers participating on the Apple Store under the current model.[[118]](#footnote-118)
* Intrabrand competition: Apple argues that some users want a tailored app experience because they feel more secure. Whereas Google provides the environment for users who are adventuring or desirous of an open ecosystem, Apple's selling point is that iOS allows for a streamlined and secure user experience. The court finds this argument convincing.[[119]](#footnote-119)

### Epic's Alternative Solutions

Epic argues that Apple could achieve similar results under an 'enterprise program' model, or a 'notarization model'. Under the 'enterprise model,' Apple would certify other businesses to distribute apps in their app stores. In other words, other app stores would still need Apple's permission to enter the iOS. Still, so long as they comply with Apple's standards regarding privacy and security, they would be permitted on iOS. Essentially, Apple could force policies similar to those on the Apple Store and rely on trusted app store partners to perform the necessary due diligence in their competing app stores.[[120]](#footnote-120) Under the notarization model, iOS would permit apps to be distributed freely, but a developer could voluntarily submit its app for human review. An app doing so will receive a trust certificate from Apple if it complies with specific privacy and security requirements. Users who are conscious of security would know which apps comply with Apple's stringent security requirements, but the user body in general would have the option to adventure out and install any app they want.

The court rejects both proposals enterprise and notarization models on the grounds that they wouldn't scale well because of the increased burden on human app review time and decreasing security which is a major selling point of the iOS.[[121]](#footnote-121) Regarding the concerns re: human app review, it is difficult to follow the court's reasoning since Apple already has human app review in place. Furthermore, it sounds counterfactual that making human app review voluntary under the notarization model or outsourcing it under the enterprise model would increase Apple's volume of human app review requests. Nevertheless, these alternatives were neither 'virtually as effective' as the current practices nor implementable without significantly higher costs.[[122]](#footnote-122) Some commentators have argued that Apple could collect its commission as effectively by requiring that the app API report to Apple each time a purchase was made. Obviously, Apple can ensure that this code is implemented correctly as part of its app review process before listing an app on the Apple Store. This API would conveniently permit apple to calculate the commissions it is owed by the developers.[[123]](#footnote-123) Unfortunately, this possibility was not argued by Epic, and it was not explored in the reasons for judgment.

## Sherman Act Section 1 Tying Claim

Under section 1 of the Sherman Act, the plaintiff must establish that the product in question is an independent product rather than an artificial construction to bring an unlawful tying claim. The court found that the in-app payment services are not a separate product because it is not something that is bought or sold but something integrated into the iOS. It provides key services in the ecosystem, such as a seamless e-commerce experience, and makes it possible for Apple to collect the commission.[[124]](#footnote-124) The court found it akin to a franchise requiring its customers to use the franchisees to use the franchisor's own payment system, which does not constitute illegal trying.[[125]](#footnote-125) Furthermore, as mentioned previously, Epic did not propose any alternative means via which Apple could collect its commissions. One can't help but ask whether Epic, as a fellow app store operator, is reluctant to champion the API-based commission tracking and invoice system that was described above and recommended by European commentators.

## Sherman Act Section 2 Denial of an Essential Facility Claim

As for the Section 2 essential facility claim, the plaintiff must prove as a prerequisite that access to the facility or resource is truly essential in the sense that competitors cannot simply duplicate it or find suitable alternatives, and that absent access, competitors' ability to compete will be substantially constricted.[[126]](#footnote-126) It is not entirely clear, but Epic's claim seems to be that denial of the right to distribute Fortnite or any other Epic software affected by Apple's termination of services constituted denial of service regarding iOS app distribution services. The court has decided against Epic on this allegation because Epic could distribute Fortnite as a webapp or through other games stores.[[127]](#footnote-127)

The analysis regarding this question is lacking and unsatisfactory. The only way Epic could distribute Fortnite as a webapp is by recreating the game in a new language, assuming that it is possible to run a game as complex as Fortnite as a webapp. Alternatively, the court suggests that Epic could start a new business in internet game streaming to circumvent the Apple Store. In either case, the costs and complexities are tremendous, and neither should be seen as a suitable alternate. As for other video game stores, it is evident that there are no other app stores on iOS. The court has based this decision either on the hard to accept proposition that distribution on Android is the substitute to distribution on iOS. This is a fallacy since Epic can't sell its game to any iOS users via the Google Play Store. Most iOS users are singlehoming users and use the iOS on all their phones and tablets. Monopolizing the entirety of a user's digital experience is a core aspect of Apple's business strategy. Alternatively, the court suggests that Epic should collaborate with existing internet game distribution services such as xCloud or GeForce Now. If that's the case, the court is contradicting itself. Previously, the court had found that online game streaming was not a part of the relevant market because the technology was unproven. However, this unrelated market is now employed suggested as a suitable alternate means for app distribution on iOS. Even if we ignore the contradictions in the court's reasoning, the feasibility of onboarding a massively online multiplier game such as Fortnite on another web service was not exhaustively analyzed. Court's analysis on the essential facilities is based upon the questionable proposition that the relevant market for video game app distribution on iPhones was all video game app stores.

## California's Cartwright Act Antitrust Claims

Finally, the court found that Epic fails on its claims based on the Cartwright because an allegation that does not survive the test under the Sherman Act also fails under the Cartwright Act because the two have the same scope.[[128]](#footnote-128) In particular, the test under the Cartwright Act is whether a restraint of trade is unreasonable within the rule of reason of the court. Both the Cartwright Act and Sherman Act punish unreasonable restraints of trade.[[129]](#footnote-129) Since a successful defense under the Sherman Act necessarily demonstrates procompetitive reasons and undefeated business justifications, the same defense would also satisfy the rule of reason test under the Cartwright Act.[[130]](#footnote-130)

## California's Unfair Competition Law (UCL)

Epic also brought a final claim under the 'unlawful' and 'unfair' provisions of the UCL as a last attempt at legal relief and won an injunction against the requirement to use Apple's in-app payment services and rules against anti-steering provisions in the DPLA.[[131]](#footnote-131) To bring a claim under the UCL, the plaintiff must prove economic injury and that the economic injury resulted from the unfair business practice.[[132]](#footnote-132) Unfair business practice is defined very broadly and includes any act or practice that is not equitable.[[133]](#footnote-133) The court found that the following unequitable: 30% commission was excessive because it did not reflect any reasonable cost, investment, or value-added to the developers; Apple's anti-steering rules prevented developers from communicating lower prices on other platforms, which caused economic injury to app users; Apple's restrictions on user-developer communication prohibiting developers from talking about the existence of the 30% commission fee as well as cheaper payment options on other losses deprived the users of an opportunity to make informed consumption decisions creating confusion for the users that benefit Apple.[[134]](#footnote-134) These rules that obfuscate the flow of transparent financial information prevent informed choice among users of the iOS platform, which is recognized as a violation of antitrust law.[[135]](#footnote-135) The court further found that an injunction was an appropriate remedy under the circumstances because Apple benefitted from its unfair practices without offering any reasonable justification regarding why it adopts these communication rules, and that monetary damages to users of iOS would be too difficult to calculate.[[136]](#footnote-136) As a result, the court issued two nationwide injunctions, enjoining Apple (1) from prohibiting developers from including in their apps and metadata buttons external links or other calls to action that direct customers to alternative purchasing mechanisms, and (2) from prohibiting developers from using information acquired voluntarily account registration to communicate with customers.

# Conclusion

This paper shows that are critical differences in the European and American legal narratives with respect to the state of the global marketplace for mobile smart device operating systems and the relationship that exists between mobile smart device operating systems and app stores. The court in *Epic v. Apple* made the controversial finding that iOS did not constitute a market for mobile smart device operating systems. There is a strong argument that iOS could instead be classified as a monopoly on Apple brand mobile smart devices. This alternative line of legal reasoning seems to be mainstream in Europe. However, the court has signalled that even if it had found that iOS was a foremarket and iOS app distribution was an aftermarket, Epic’s claims would have still failed for want of lock-in. On this point, the court paid particular attention to competition from OS-agnostic webapps. In 2018 when *Google Android* was decided in Europe, the E.C. made the finding that mobile web browsers do not belong to the same product market as mobile web browsers.[[137]](#footnote-137) However, the analysis is rather cursory. Given the improvements in cloud based computing, especially with regards to video game apps, regulators and legal commentators should no longer presume that webapps are not a suitable alternative to OS native apps. As a final note, Epic was not the best plaintiff to bring monopoly claims against Apple, because Epic follows a substantially similar business model in the Epic Games Store. The similarities in the business models could be the reason why Epic have not made arguments that API based transaction tracking could reasonably substitute for in-app payment services integrated into app stores. In Europe, regulators are actively developing this field of antitrust and competition law. Having similar regulatory actions in US could enable more principled reasoning going forward.

Looking forward, an appeals court have stayed the injunction permitting developers to integrate alternative payment methods into iOS apps, but have permitted the injunction against Apple’s restrictions un user-developer communications. Overall, this is a big win for users and developers alike and a pyrrhic victory for Epic until an inevitable appeals hearing is made.

1. Damien Geradin and Dimitrios Katsifidis, “The Antitrust Case Against the Apple App Store,” *Journal of Competition Law & Economics* 17, no.3 (5 April 2021): 536. [↑](#footnote-ref-1)
2. Friso Bostoen and Daniel Mandrescu, “Assessing abuse of dominance in the platform economy,” *European Competition Journal* 16, no. 2-3 (19 August 2020): 438. <https://doi.org/10.1080/17441056.2020.1805698>. See also, Epic Games, Inc. v Apple Inc., 4:20-cv-05640-YGR (N.D. Cali. 2021) at 121 [herein after *Epic v. Apple*]. [↑](#footnote-ref-2)
3. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 436. [↑](#footnote-ref-3)
4. *Epic v. Apple*, at 46. [↑](#footnote-ref-4)
5. European Commission Competition Department, CASE AT.40099 Google Android: Antitrust Procedure pp-pp (2018) [hereinafter *Google Android*]. [↑](#footnote-ref-5)
6. *Epic v. Apple*, at 72. [↑](#footnote-ref-6)
7. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 545. [↑](#footnote-ref-7)
8. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 531. [↑](#footnote-ref-8)
9. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 517-521. [↑](#footnote-ref-9)
10. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 574-578. See also, Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 453. [↑](#footnote-ref-10)
11. For history of case see US District Court Northern District of California Case no.: 11-cv-06714-YGR, and RE Apple IPhone Antitrust Litigation, 876 F.3d 313. The US Supreme Court agreed with the appeal’s court that users who purchase apps on the Apple Store are direct customers of Apple, rather than indirect costumers who are not protected under the US Anti Trust laws. This milestone decision at the USC arguably over turns the indirect customer rule formulated in the precedent *Illinois Brick Co v Illinois* (1977), 431 US 729. Columbia Law Review Forum. See also, Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 521-523. See also, Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 453. [↑](#footnote-ref-11)
12. See In Re Apple Iphone Antitrust Litigation, 11-cv-06714-YGR (N.D. Cali, 2013). See also, Apple Inc v. Pepper et Al, 587 U.S. \_\_\_ (2019) No. 17-204 (U.S. Supr. Court, 2019). [↑](#footnote-ref-12)
13. For example, Angerhofer and Blair argue that the commission is not an indicator of Apple’s ownership of the goods sold. Instead, it is equivalent to a sales tax. Tirza J. Angerhofer and Roger D. Blair, “Economic Reality at the Core of Apple,” *The Antitrust Bulletin* 66, no.2 (2021): 309. [↑](#footnote-ref-13)
14. Ibid. [↑](#footnote-ref-14)
15. Supra, at 12. [↑](#footnote-ref-15)
16. Supra, at 2. [↑](#footnote-ref-16)
17. *Google Android Decision*, at 268-322. [↑](#footnote-ref-17)
18. *Epic v. Apple*, at 28-33. [↑](#footnote-ref-18)
19. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 513. See also, Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 471. [↑](#footnote-ref-19)
20. Ibid. [↑](#footnote-ref-20)
21. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 443. [↑](#footnote-ref-21)
22. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 535-536. [↑](#footnote-ref-22)
23. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 516. [↑](#footnote-ref-23)
24. Ibid. [↑](#footnote-ref-24)
25. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 511-512. [↑](#footnote-ref-25)
26. Ibid. [↑](#footnote-ref-26)
27. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 516-517. [↑](#footnote-ref-27)
28. Apple v Epic, at 28-33. [↑](#footnote-ref-28)
29. Apple v Epic, at 29. [↑](#footnote-ref-29)
30. Apple v Epic, at 28-33. [↑](#footnote-ref-30)
31. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 512 [↑](#footnote-ref-31)
32. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 433. [↑](#footnote-ref-32)
33. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 451. [↑](#footnote-ref-33)
34. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 453, [↑](#footnote-ref-34)
35. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 476. [↑](#footnote-ref-35)
36. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 469. [↑](#footnote-ref-36)
37. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 522. [↑](#footnote-ref-37)
38. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,”560-563. [↑](#footnote-ref-38)
39. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,”565. [↑](#footnote-ref-39)
40. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 575. [↑](#footnote-ref-40)
41. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 572. [↑](#footnote-ref-41)
42. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 453. [↑](#footnote-ref-42)
43. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 577. [↑](#footnote-ref-43)
44. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 578. [↑](#footnote-ref-44)
45. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 571-572. [↑](#footnote-ref-45)
46. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 572. [↑](#footnote-ref-46)
47. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 578-581. See also, Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 454-457. [↑](#footnote-ref-47)
48. Ibid. [↑](#footnote-ref-48)
49. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 449-457. [↑](#footnote-ref-49)
50. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 469-.473 [↑](#footnote-ref-50)
51. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 544. [↑](#footnote-ref-51)
52. Approximately $2 billion in 2020. Ibid. [↑](#footnote-ref-52)
53. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 449-457. [↑](#footnote-ref-53)
54. Ibid. [↑](#footnote-ref-54)
55. Ibid. [↑](#footnote-ref-55)
56. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 543. [↑](#footnote-ref-56)
57. Kif Leswing, “Apple’s App Store had gross sales around $64 billion last year and it’s growing strongly again,” CNBC, https://www.cnbc.com/2021/01/08/apples-app-store-had-gross-sales-around-64-billion-in-2020.html. See also, Jonathan Borck, Juliette Caminate and Markus von Wartburg, “How Large Is the Apple App Store Ecosystem,” *Analysis Group* (15 June 2020). [↑](#footnote-ref-57)
58. *Epic v. Apple*, at 43. [↑](#footnote-ref-58)
59. *Epic v. Apple*, at 124. [↑](#footnote-ref-59)
60. *Worldwide gross app revenue of Google Play from 2016 to 2021,* Statista, https://www.statista.com/statistics/444476/google-play-annual-revenue/. [↑](#footnote-ref-60)
61. Apple, *App Store Small Business Program,* Apple Developer, https://developer.apple.com/app-store/small-business-program/. [↑](#footnote-ref-61)
62. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 449-457. See also, *Epic v. Apple*, at 146. Apple’s operating margins are consistently above 75%. See also, Epic v. Apple, at 41. [↑](#footnote-ref-62)
63. 崔鹏，腾讯华为之争背后，一个时代正在落幕, JieMian, www.jiemian.com/article/5549500.html. (Behind the Tencent – Huawei Controversy, the Curtains Fall on an Era, translation by me). See also, 华为应用市场联运服务协议 (Huawei App Market Transaction Services Agreement, translation by me). [↑](#footnote-ref-63)
64. Ibid. [↑](#footnote-ref-64)
65. Qiu Lan Liang, LeadLeo Research, *2021 Bilibili and XD Inc. Comparative Research Report*, https://pdf.dfcfw.com/pdf/H3\_AP202105191492602489\_1.pdf. [↑](#footnote-ref-65)
66. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 524. [↑](#footnote-ref-66)
67. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 524 – 529. [↑](#footnote-ref-67)
68. Ibid. [↑](#footnote-ref-68)
69. Ibid. [↑](#footnote-ref-69)
70. Ibid. [↑](#footnote-ref-70)
71. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 555 – 558. [↑](#footnote-ref-71)
72. *Epic v. Apple*, at 127. [↑](#footnote-ref-72)
73. Supra, at 17. [↑](#footnote-ref-73)
74. *Epic v. Apple*, at 129. [↑](#footnote-ref-74)
75. *Epic v. Apple*, at 128-130. [↑](#footnote-ref-75)
76. *Epic v. Apple*, at 45. [↑](#footnote-ref-76)
77. Ibid. [↑](#footnote-ref-77)
78. *Google Android,* at 83. [↑](#footnote-ref-78)
79. *Google Android*, at 238. [↑](#footnote-ref-79)
80. *Epic v. Apple*, at 243. [↑](#footnote-ref-80)
81. For a general discussion, see, *Google Android,* at274-322*.* [↑](#footnote-ref-81)
82. Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 440. [↑](#footnote-ref-82)
83. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 537. [↑](#footnote-ref-83)
84. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 538. [↑](#footnote-ref-84)
85. [↑](#footnote-ref-85)
86. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 538-540. See also, Bostoen and Mandrescu, “Assessing the abuse of dominance in the platform economy,” 479. [↑](#footnote-ref-86)
87. Ibid. [↑](#footnote-ref-87)
88. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 515-516. [↑](#footnote-ref-88)
89. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 532, at footnote 133. [↑](#footnote-ref-89)
90. Epic v Apply, at 48-50. [↑](#footnote-ref-90)
91. *Epic v. Apple*, at 80-82. [↑](#footnote-ref-91)
92. *Epic v. Apple*, at 14-117. [↑](#footnote-ref-92)
93. *Epic v. Apple*, at 122-124. [↑](#footnote-ref-93)
94. Ibid. [↑](#footnote-ref-94)
95. *Epic v. Apple*, at 125-126. [↑](#footnote-ref-95)
96. *Epic v. Apple*, at 72-74. [↑](#footnote-ref-96)
97. *Epic v. Apple*, at 80-81. [↑](#footnote-ref-97)
98. *Epic v. Apple*, at 76-79. [↑](#footnote-ref-98)
99. *Epic v. Apple*, at 80-81. [↑](#footnote-ref-99)
100. *Epic v. Apple*, at 134-139. [↑](#footnote-ref-100)
101. *Epic v. Apple*, at 140. [↑](#footnote-ref-101)
102. *Epic v. Apple*, at 139-141. [↑](#footnote-ref-102)
103. *Epic v. Apple*, at 141-143. [↑](#footnote-ref-103)
104. *Epic v. Apple*, at 140. [↑](#footnote-ref-104)
105. *Epic v. Apple*, at 151. [↑](#footnote-ref-105)
106. *Epic v. Apple*, at 152. [↑](#footnote-ref-106)
107. *Epic v. Apple*, at 153. [↑](#footnote-ref-107)
108. *Epic v. Apple*, at 151-152. [↑](#footnote-ref-108)
109. *Epic v. Apple*, at 95. [↑](#footnote-ref-109)
110. *Epic v. Apple*, at 98 – 99. [↑](#footnote-ref-110)
111. *Epic v. Apple*, at 99 – 100. [↑](#footnote-ref-111)
112. *Epic v. Apple*, at 101 – 102. [↑](#footnote-ref-112)
113. *Epic v. Apple*, at 106 – 107. [↑](#footnote-ref-113)
114. *Epic v. Apple*, at 108 – 110. [↑](#footnote-ref-114)
115. *Epic v. Apple*, at 116 – 117. [↑](#footnote-ref-115)
116. *Epic v. Apple*, at 102. [↑](#footnote-ref-116)
117. *Epic v. Apple*, at 113 – 114. [↑](#footnote-ref-117)
118. Ibid. [↑](#footnote-ref-118)
119. *Epic v. Apple*, at 145-146. [↑](#footnote-ref-119)
120. *Epic v. Apple*, at 111. [↑](#footnote-ref-120)
121. *Epic v. Apple*, at 147-148. [↑](#footnote-ref-121)
122. *Epic v. Apple*, at 149. [↑](#footnote-ref-122)
123. Geradin and Katsifidis, “The Antitrust Case Against the Apple App Store,” 550. [↑](#footnote-ref-123)
124. *Epic v. Apple*, at 66-67. [↑](#footnote-ref-124)
125. *Epic v. Apple*, at 154. [↑](#footnote-ref-125)
126. *Epic v. Apple*, at 159. [↑](#footnote-ref-126)
127. *Epic v. Apple*, at 159. [↑](#footnote-ref-127)
128. *Epic v. Apple*, at 156. [↑](#footnote-ref-128)
129. *Epic v. Apple*, at 157. [↑](#footnote-ref-129)
130. Ibid. [↑](#footnote-ref-130)
131. Ibid. [↑](#footnote-ref-131)
132. *Epic v. Apple*, at 160. [↑](#footnote-ref-132)
133. *Epic v. Apple*, at 163. [↑](#footnote-ref-133)
134. *Epic v. Apple*, at 163-164. [↑](#footnote-ref-134)
135. *Epic v. Apple*, at 164. [↑](#footnote-ref-135)
136. *Epic v. Apple*, at 166 [↑](#footnote-ref-136)
137. *Google Android,* at 377 – 380. [↑](#footnote-ref-137)