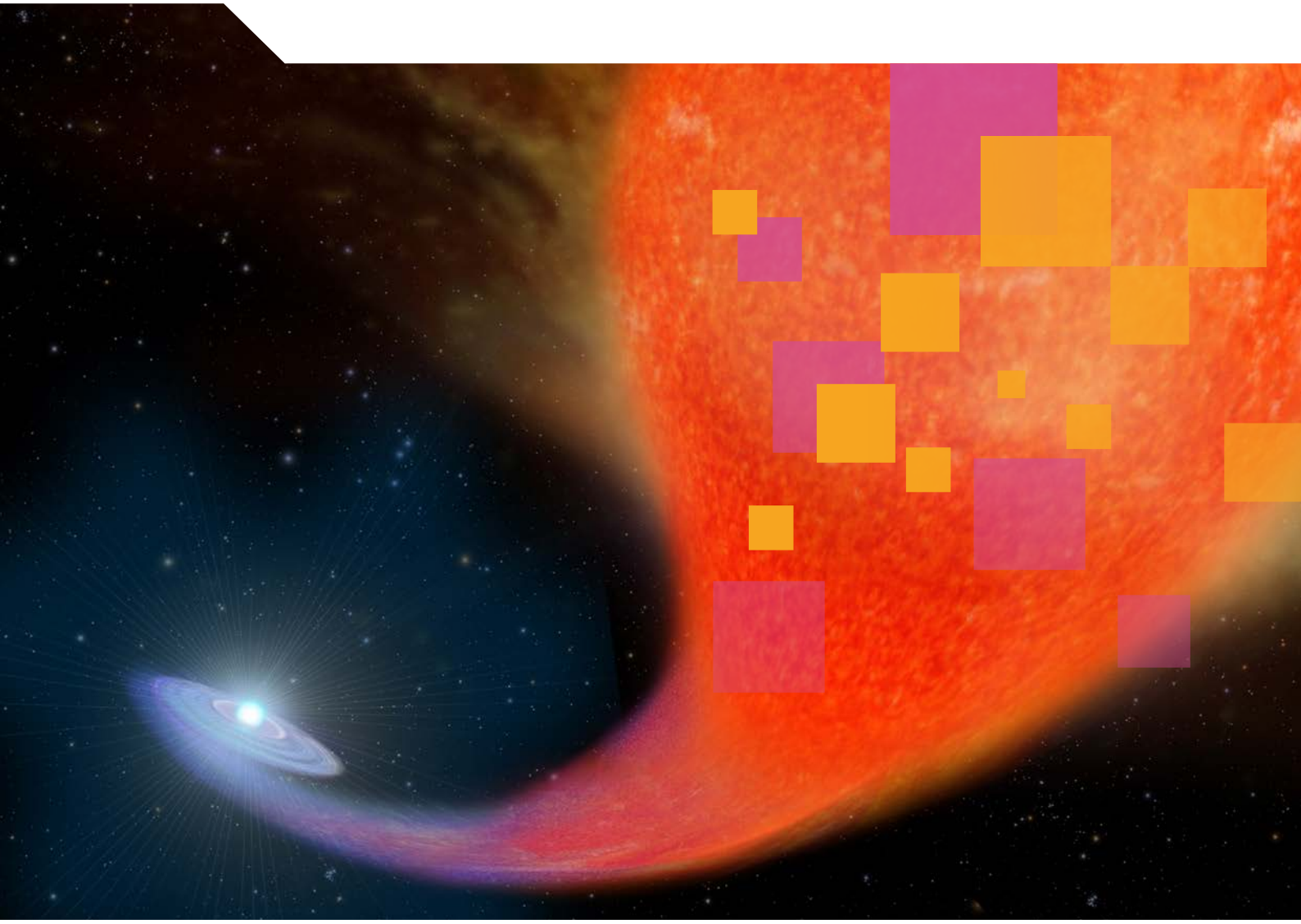
An Introduction to Online Platforms and their Role in the Digital Transformation



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Foreword

The impetus for this report is the 2016 Cancún Ministerial Declaration on the Digital Economy, which contains a commitment to study online platforms. Ministers declared they would seize the opportunities made possible by online platforms that enable innovations in production, consumption, collaboration and sharing, while studying the platforms' social and economic benefits and challenges as well as the suitability of relevant policy and regulatory frameworks. That aspect of the Declaration is in line with recent comments from the United States business community urging that policy makers should try to better understand the benefits and potential issues that arise in the context of the ongoing platform growth. This report, moreover, is an output under the OECD's Going Digital horizontal project.

This is by no means the first time that the OECD's work has touched on online platforms. For example, in 2011, the OECD issued a report on Internet intermediaries, a term that described a broader group of entities including service and hosting providers, search engines, e-commerce and Internet payment systems, and social web platforms. Since then, some types of Internet intermediaries have evolved into an even more prominent and still-expanding role in societies and economies, in which they are not only intermediaries but may also be direct service providers, employers, lenders and much more. These fall into the category of what the Cancún Declaration refers to as online platforms. Chapter 2 of this report proposes a definition of the term.

Certain online platforms have rapidly become especially important to economies and societies, having capitalised on innovative ideas, network effects, economies of scale and scope, low-cost and high-speed transactions, as well as the vast market reach facilitated by Internet openness, to achieve their success. In doing so, they have brought powerful benefits to consumers, businesses and governments, such as by helping them to interact with more individuals, trading partners and constituencies with greater ease and efficiency. They have created new opportunities for entrepreneurs, artists and workers. Some of them now play a vital role in how politicians and democracy itself function.

In fact, the benefits that online platforms have brought have been so significant that the most successful ones have grown at unprecedented rates and attracted hundreds of millions, or even billions, of users. The most frequently visited websites in the world are online platforms and the companies that operate them regularly rank among the world's most valuable.

Online platforms come in many sizes and varieties and perform a multitude of differing functions. This report will focus on the world's largest and best-known ones because they have had, and continue to have, the greatest impact on economies and societies. Yet even within this group, as will be shown, the differences in sizes and business models are vast.

A number of policy challenges have come with our increasing reliance on platforms. For example, some online platforms have disrupted or displaced incumbent offline firms, and that sometimes leads to questions about the applicability and suitability of regulations that were designed for older business models to today's online ventures. Furthermore, some online platforms have developed so quickly that policies and regulations are hard-pressed to keep up with them. For instance, online platforms on which users provide content (e.g. photos, videos, posts, or product information and offers) or, more specifically, publicise and distribute illegal and potentially harmful content and products, challenge traditional policy frameworks and raise difficult questions. That is especially so because unintended uses (or misuses) of some services and associated undesirable consequences often emerge suddenly and across jurisdictional boundaries. The questions raised concern, among other things, platform responsibility for curating user-generated content that other users see, and whether people who earn income from so-called "gig economy", "sharing economy" and "peer" platforms should be considered employees or self-employed entrepreneurs.

Moreover, several online platforms have attracted policy makers' attention following revelations about the misuse of user data by third parties to divide societies, influence elections, and undermine institutions and democracies. They have raised many questions about how the platforms collect and share users' personal data with third parties. Likewise, some online platforms have drawn the attention of competition authorities and other regulatory bodies for issues ranging from taxation to abuse of dominance.

Online platforms have therefore brought important benefits to economies and societies but also a new set of important policy questions and challenges. This report aims to illuminate these questions, challenges and benefits and bring them into focus by increasing understanding of the platform businesses themselves. It does not contain policy recommendations. Instead, it is intended to be a helpful, evidence-based starting point for more specific projects in the future, which may include policy recommendations. A particular objective of the report is to help discussions about online platforms to be more precise and relevant, and thus to facilitate a shift away from general discussions that implicitly suggest all online platforms are essentially the same and have a common set of impacts.

The main methodology behind the report was to gather publicly available information on a diverse set of 12 of the world's leading platforms, build profiles based on that information and then derive a catalogue of the platforms' main economic and social impacts, approaches to classifying the platforms, and insights about topics ranging from why and how the platforms succeed to what the future may bring where they are concerned. The information used to build the profiles was drawn primarily from the companies' public financial filings as well as questionnaire responses kindly provided by nine of the profiled firms. The profiles and the questionnaire are included in the Annex.

The report begins with a summary of previous, relevant work, followed by a definition of the term "online platform", which lays a foundation. A catalogue of the primary impacts (both benefits and policy challenges) that online platforms are having follows. The report's core is a set of profiles of online platform companies, mostly the world's leading ones but some smaller players are profiled, as well. The profiles explain the platforms' business models, why they have been successful, and how important they have become. Due to their collective length, however, the profiles are located in Annex A. The profiles inspired a set of possible typologies or classification systems for online platforms. Those come next in the main body of the report. Finally, the last chapter presents information and insights distilled from the profiles that bring the platforms into perspective, clarify some of their differences and similarities, and give a glimpse of how the future of online platforms may look.

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Permission to use the cover image was kindly provided by the National Aeronautics and Space Administration (NASA), the European Space Agency (ESA) and the Space Telescope Science Institute (STScI). It depicts the early life of a star called a blue straggler, also known as a vampire star, which has entered the neighbourhood of a star called a red giant. The aging, bloated red giant has swelled to several hundred times its original size, but the dense blue straggler has such a strong gravitational pull that it is able to draw matter away from the red giant. That process accelerates over time and the older star shrivels. Eventually, the blue straggler will become larger and brighter while the red giant withers into a white dwarf (a dying star). The process, although it occurs over a much longer timeframe, is a metaphor for what happens when some platforms appear and scale up in markets where a larger platform already exists.

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Acronyms, abbreviations and units of measure

ACSI	American Customer Satisfaction Index
AI	Artificial intelligence
API	Application programming interface
AWS	Amazon Web Services
B2B	Business-to-business
B2C	Business-to-consumer
BAT	Baidu, Alibaba and Tencent
BEPS	Base Erosion Profit Shifting
BES	Baidu Exchange Service
C2C	Consumer-to-consumer
CCP	Committee on Consumer Policy (OECD)
CDA	Communications and Decency Act (United States)
CDEP	Committee on Digital Economy Policy (OECD)
CIECC	China International Electronic Commerce Centre
CPC	Cost per click
CPM	Cost per thousand impressions
CPNE	Cross-platform network effect
CRM	Customer relationship management
CTP	Centre for Tax Policy and Administration
DAUs	Daily active users
DMP	Data-management platform
DSP	Demand-side platform
FBA	Fulfilment by Amazon
FOSTA	Allow States and Victims to Fight Online Sex Trafficking Act (United States)
FTC	Federal Trade Commission (United States)
G20	Group of Twenty
G7	Group of Seven
GAFA	Amazon, Apple, Facebook and Google
GBP	British pound
GDP	Gross domestic product
GDPR	General Data Protection Regulation (European Union)
GIFCT	Global Internet Forum to Counter Terrorism
GMS	Gross merchandise sales
GMV	Gross merchandise volume
GST	Goods and services tax
HIT	Human intelligence task
IaaS	Infrastructure as a Service
ICT	Information and communication technology
IM	Instant messaging
IoT	Internet of Things
IP	Internet Protocol
IPO	Initial public offering
IPR	Intellectual property right
ISIC	International Standard Industrial Classification
IT	Information technology
km	kilometre

m^2	square metre
MAUs	Monthly active users
MIIT	Ministry of Industry and Information Technology (China)
NFC	Near-field communication
OEM	Original equipment manufacturer
OLI	Online Labour Index
P4P	Pay for performance
PPM	Peer platform market
QR	Quick response
R&D	Research and development
RMB	Yuan renminbi
ROI	Return on investment
SDK	Software development kit
SEC	Securities and Exchange Commission (United States)
SESTA	Stop Enabling Sex Traffickers Act (United States)
SMEs	Small and medium-sized enterprises
SSNIP	Small but significant non-transitory increase in price
SSP	Supply-side platform
TANX	Taobao Ad Network and Exchange
USD	US dollar
VAS	Value-added service
VAT	Value-added tax
VoIP	Voice over Internet Protocol

Executive Summary

Online platforms support so many of our daily activities that we have become dependent on them in our personal and professional lives. We rely on them to buy and sell goods and services, to find information, and to keep in touch with each other. We use them for entertainment, news, transportation, accommodation, finding jobs and employees, finding apps, and for many other purposes.

Online platforms have become so important that they are a frequent topic of discussion across many policy areas including labour and employment, taxation, competition, innovation, privacy, and consumer protection. However, online platforms can be more complex than they appear on the surface and they are not always well understood.

In response to a 2016 Ministerial request that the OECD study online platforms' economic and social benefits and challenges, this report examines 12 of the world's leading platform companies and offers insights on what these platforms actually do, how they do it, and why their approaches have brought them financial success. The report also offers a catalogue of the main impacts platforms have had and an array of typologies that could be used to categorise them for policy-making purposes. This is a fact-based and non-prescriptive report. It is meant to provide a broad introduction and an evidence base that sets the stage for further work, including possible policy recommendations.

The report defines online platforms as digital services that facilitate interactions between two or more distinct but interdependent sets of users (whether firms or individuals) who interact through the service via the Internet. This definition excludes businesses such as direct business-to-consumer (B2C) e-commerce and ad-free content streaming, as those serve only one set of customers. It does, however, include businesses such as third-party B2C e-commerce and ad-supported content streaming, because those services involve two separate sets of users.

Main messages include:

- **Online platforms have a number of common economic characteristics**. These characteristics include positive (in the sense that the networks become more useful as more users join them) direct and indirect network effects, cross-subsidisation, scale without mass potentially global reach, panoramic scope, generation and use of a broad set of user data to optimise their services, disruptive innovation, switching costs, and, in some markets, winner-take-all or winner-take-most tendencies. Although many of these characteristics are not unique to online platforms, their combination can magnify each of them and lead to explosive growth.
- **Online platforms are increasingly widespread in economies and societies**. They go well beyond the usual examples of B2C and consumer-to-consumer e-commerce, search advertising, and social media. Online platforms are a force in entertainment, news media, transportation, accommodation, job seeking, mobile payments, personal and small business financial services, the app economy, and many other sectors.
- **Online platforms have a broad array of social and economic impacts**. These range from economic impacts on businesses, consumers and public services to social impacts such as human health, polarisation, and misinformation. Other impacts relate to platforms' responsibility for user behaviour, their role in filtering content, effects on consumer protection, competition, labour and employment, and algorithmic transparency. Many of these impacts are only emerging now, and long-term impacts are difficult to assess, given the recent emergence of the platform economy.

- **All online platforms are, however, not the same**. Even the group of 12 profiled companies varies widely on a number of different axes (such as size, functionality or profitability) and cannot be compartmentalised into just a few categories, let alone a single sector. Furthermore, there are many other online platforms besides the ones profiled here. There is a corresponding diversity in approaches that can be used to categorise them for the purpose of matching selected impacts with relevant platforms. There is no one-size-fits-all approach. Which typology is best depends on the issue at stake, which has implications for tailoring policies to different kinds of online platforms.
- **The leading platforms do not all succeed for the same reasons**. Some excel because of exceptional business acumen, which enabled them to anticipate market trends or build trust where it was previously weak, for example. Others have outdistanced their rivals by focusing on expansion, customer loyalty and innovation more than profit for many years. All platforms create and rely on user data, but some make more use of it than others. A number of leading platforms built momentum by using other, more established platforms in one way or another when they first started out. Moreover, for some Chinese platforms, government protectionism was a significant factor in their growth.
- **The major Chinese platforms still have a low profile within the OECD, but they are innovative, consolidated, large, scalable and expanding to global markets. They deserve more attention**. So far, BAT (Baidu, Alibaba and Tencent) do not have a strong presence in markets outside of the People's Republic of China (hereafter "China"). They continue to earn the vast majority of their revenues domestically. That is likely to change. BAT's international expansion and the resulting changes to the competitive landscape among global platforms raise several important questions for policy makers. For example, is the coming competition from Chinese platforms likely to be a net benefit for OECD countries? How, in any event, should they prepare for it? How should policy makers react if the future is one of Chinese-American platform alliances rather than Chinese-American rivalries?
- **Chinese platforms may eventually lead a shift towards mobile payments in OECD countries**. China's big cities are already nearly cashless societies thanks to the popularity of the mobile payment platforms WeChat Pay (owned by Tencent) and Alipay (co-owned by Alibaba). In this regard, China is far ahead of OECD countries. China's online mobile payments market had a volume of USD 8.8 trillion in 2016. That was 50 times larger than the volume in the United States, for example (11.5 times larger on a per capita basis, but 80 times larger on a GDP-adjusted basis). In about the same time it took Apple's mobile payment service, Apple Pay, to amass 12 million users (roughly 3 years), Alipay amassed 450 million users. Nevertheless, WeChat Pay is now in the process of surpassing Alipay.
- **Policy making for online platforms now requires a broader geographical perspective**. Within the OECD, US-based platforms have garnered considerable media and policy attention. This has been accompanied by a relative neglect of Chinese-based platforms, which have entered the global arena more recently. The information presented here reveals that, to understand the current and future direction of online platforms, the focus needs to be widened.
- **There is no shortage of important topics connected to online platforms that could be addressed in future work**. To begin with, a broader set of profiles could be assembled, this time including some smaller platforms as well as some in the public sector. Tracking more categories of information, such as R&D spending, could also be helpful. There could be an in-depth focus, including measurement, analysis and policy recommendations, on one or two of the impacts identified in Chapter 3 of the present report (e.g. competition and regulation, disruption, and jobs). Alternatively, a forward-looking theme could be taken up, such as how best to prepare for and capitalise on the rise of mobile payments.

Chapter 1
PREVIOUS WORK

Summary

Building on a 2011 report on the role of Internet intermediaries in advancing public policy objectives, a wider range of aspects and policy issues relating to online platforms has recently been examined by the OECD. First, in three meetings, the Competition Committee discussed key aspects of online platforms and related implications for competition policy: multi-sided (platform) markets, big data, and algorithms and collusion. Second, the supply side of online platform markets has been examined with a focus on new forms of work, while separate work on the demand side has been carried out with a focus on consumer protection in peer platform markets (PPMs). Third, online platforms are among the digital businesses that affect taxation frameworks, which are being addressed in a key work stream of the OECD/G20 Inclusive Framework on Base Erosion Profit Shifting (BEPS). Fourth, in 2016 the Committee on Consumer Policy published a background paper exploring the policy issues relating to consumer protection and innovation in peer platforms, which informed the discussion of these platforms at the Cancún Ministerial. Lastly, in 2017, the Committee on Consumer Policy released the findings of a survey on consumer trust in PPMs and held a workshop to discuss key findings from the survey and their implications for policy approaches.

Other relevant outputs by the OECD and member countries set the stage for this report

This report builds on previous and ongoing work by the OECD related to online platforms. This chapter summarises the most relevant outputs and makes reference to selected work on online platforms carried out by OECD countries.

Focusing on the role of Internet intermediaries in advancing public policy objectives, a 2011 OECD report presented an in-depth discussion of policy issues related to Internet intermediaries. This report laid an important foundation for further OECD work on online platforms. Key findings of the report include that Internet intermediaries are a source of economic growth, innovation, competition, employment and entrepreneurship, but also that they raise policy issues, e.g. regarding the extent of their responsibility for the content or services they carry, especially those provided by third-party users. It notes that limitations on the intermediaries' liability for the actions of users have encouraged the Internet's growth, but also that the intermediaries' incentives do not always align with public policy goals. Finally, the report presents a series of case studies focused on selected themes, such as the global free flow of information, security, child protection, Internet gambling, copyright, counterfeiting, and consumer protection (OECD, 2011[1]).

A key feature of an online platform is its multi-sided nature. The OECD Competition Committee held a hearing in 2017 to discuss whether traditional tools to define markets, to assess market power and efficiencies, as well as effects of exclusionary conduct and vertical restraints, are sufficient to address competition questions arising in multi-sided markets (OECD, 2017[2]). The hearing found that a multi-sided market can be characterised as one in which a firm acts as a platform and sells different products to different groups of consumers, while recognising that the demand from at least one group of customers correlates positively with the demand from another group. That is to say, a key feature of multi-sided markets is cross-platform network effects (CPNEs). In the presence of CPNEs, competition agencies should consider adopting a multisided analytical approach and, if they do not, they should explain their rational for not doing so.

Algorithms help online platforms to function. In 2017, the OECD Competition Committee also held a roundtable on "Algorithms and Collusion" to discuss concerns about the possibility that algorithms could be used to achieve and sustain collusion – possibly without even needing any formal agreement or human interaction. The background paper for this roundtable focuses on whether algorithms can make collusion without an express agreement to collude ("tacit collusion") easier. It addresses in particular the questions of whether antitrust agencies should revise the traditional concepts of agreement and tacit collusion for antitrust purposes and how traditional antitrust tools might be used to tackle some forms of algorithmic collusion. Recognising the multiple risks of algorithms and machine learning for society, the paper also raises the question of whether there is a need to regulate algorithms and the possible consequences that such a policy choice could have on competition and innovation. It concludes that despite the risks that algorithms pose for competition, this is still an area of high complexity and uncertainty where lack of intervention and overregulation could impose serious costs on society. An

area identified for further work is the lack of empirical evidence on the effects that algorithms have on actual price levels and on the degree of competition in real markets (OECD, 2017[3]).

The capacity of algorithms to perform complex functions and to constantly learn and improve the service they provide depends on (big) data that online platforms collect, analyse and use. Beyond delivering innovative services, algorithms and big data may also be used to increase market power and enable anticompetitive conduct. In 2016, the Competition Committee organised a hearing on big data's effects on innovation and market power, its implications for competition law enforcement, and whether other regulations should be applied or even substitute for competition policy in digital markets. Participants at the hearing found that big data could be incorporated into competition law enforcement by treating data as an input or asset that can be used to enhance market power and engage in exclusionary conduct; that the effects of big data on quality should be considered; and that enforcers could respond to market failures resulting in a loss of trust through closer cooperation between competition, data protection and consumer policy authorities (OECD, 2016[4]).

On the supply side, online platforms affect the organisation of production, including the organisation of work. Keeping transaction costs low, online platforms enable individual suppliers to enter markets that were previously dominated by firms requiring economies of scale to compete. An OECD paper (2016[5]) prepared for the Cancún Ministerial examines new forms of service supply and, more specifically, new forms of work emerging in online platform service markets. It examines opportunities and challenges of such work and provides insights on trends of the work carried out in platform markets as well as more general trends of nonstandard work in OECD countries. The main findings include that while workers in online platform markets often benefit from low entry barriers and high flexibility, pay, job security, social protection, and upskilling options tend to vary greatly for nonstandard workers and may be poorer than for standard employees. In addition, workers may not be covered by collective bargaining arrangements and/or some labour regulations in many countries. A forthcoming report will examine in more detail the specific aspect of wages in platform markets and the possibility of applying piece-rate minimum wages in such markets (OECD, 2019[6]). Additional work in this area on measurement is underway.

On the demand side, online platforms have induced new consumption behaviours and have fuelled the trade in goods and services among peers. A key feature of such PPMs is that, in contrast to consumers in traditional markets, consumers often take on a more active role, for example by providing reviews of or by producing and/or selling goods or services themselves (sometimes called "prosumers"). Peer transactions and peers that act both as buyers and sellers challenge traditional consumer protection frameworks. Key consumer policy issues arising in PPMs are identified in an OECD paper (2016[7]) prepared for the Cancún Ministerial that focuses, among other things, on how trust is generated in PPMs through ratings and reviews. Following this work, the Consumer Policy Committee released a survey of consumer trust in and attitudes towards PPMs (OECD, 2017[8]) and held a workshop (OECD, 2018[9]) to discuss key findings from the survey and their implications for policy approaches.

Many online platforms run business models that enable practices that are not always accounted for in existing taxation frameworks. To take just one example, many marketplace platforms facilitate low prices, but there is a debate about whether those low prices are due to the failure of sellers to pay appropriate levels of tax in some instances, or to something else such as a high degree of competition. Recent reports in the United Kingdom suggest that over GBP 1.5 billion has been lost due to the failure of some sellers who export to the United Kingdom to charge and pay value-added tax (VAT) (Giles, 2018[10]; House of Commons Committee of Public Accounts, 2017[11]). As part of BEPS, the OECD started work on addressing the Tax Challenges of the Digital Economy in 2015 (2015[12]), and released an interim report in 2018. This report provides an in-depth analysis of the main features frequently observed in certain highly digitalised business models and value creation, including online platforms, as well as the potential implications for the existing international tax framework. The report describes the complexities of the issues involved and the positions that different countries have in regard to these features and their implications, which drive their approach to possible solutions. In addition, it discusses interim measures that some countries have indicated they would implement, believing that there is a strong imperative to act quickly. Member countries agreed to undertake a coherent and concurrent review of the "nexus" and "profit allocation" rules – fundamental concepts relating to the allocation of taxing rights between jurisdictions and the determination of the relevant share of the multinational enterprise's profits that will be subject to taxation in a given jurisdiction (OECD, 2018[13]).

The report also identifies new areas of work that will be undertaken without delay. Given the availability of big data, international co-operation among tax administrations should be enhanced, in particular, as regards the information on the users of online platforms as part of the gig and sharing economies, to ensure taxes are paid when they are due. The Forum on Tax Administration will develop practical tools and co-operation in the area of tax administration and will also examine the tax consequences of new technologies (e.g. cryptocurrencies and blockchain-distributed ledger technology). An update on this work will be provided in 2019, as the Inclusive Framework works towards a consensus-based solution by 2020 (OECD, 2018[13]).

The OECD has undertaken additional work on the role of platforms in collecting VAT/goods and services tax (GST) on online trade. A 2017 report summarises jurisdiction-by-jurisdiction descriptions to support the work of developing guidance on possible best practices on the role of digital platforms in the collection of VAT/GST on online trade. The report discusses definitions of digital platforms, including those used by the jurisdictions that have enacted (or consider enacting) a VAT/GST digital platform regime; provides an overview of the elements that tax authorities have considered as relevant in determining the scope of VAT/GST digital platform regime; outlines the roles of digital platforms in the VAT/GST collection processes allocated under VAT/GST digital platform regimes; and provides further detail on the scope of existing VAT/GST digital platform regimes. The report is purely descriptive and does not make any recommendations (OECD, 2019[14]).

The Committee on Consumer Policy recently carried out a survey of consumers regarding the drivers of trust in so-called "peer platform" markets (OECD, 2017[8]). The key takeaway from the survey is that trust mechanisms are working well in PPMs and consumers are not decreasing their reliance on peer platforms due to a lack of trust. The survey and its findings are discussed in more detail in the Section "Consumer Protection and Privacy" in Chapter 3.

Beyond work undertaken by the OECD, several members have done substantial work on policy implications related to online platforms. For example, the US Federal Trade Commission organised a workshop in 2015 on "The 'Sharing' Economy: Issues Facing Platforms, Participants, and Regulators", the findings of which are summarised in (2016[15]) and the US Department of Commerce released a definition of specific types of online platforms it calls "Digital Matching Firms" (2016[16]). The UK Parliament held a session in 2015 on "Online Platforms and the Digital Single Market", followed by a report on the same topic (2016[17]). The German Federal Ministry for Economic Affairs and Energy published a White Paper on Digital Platforms in 2017, based on prior Green Paper and public consultations on the topic (BMWi, 2017[18]). The Communications Regulatory Commission of Colombia released a report (2017[19]) that highlights the absence of criteria for regulatory action in two- or multi-sided markets based on technological platforms, including online platforms. Japan's Ministry of Economy, Trade and Industry, the Japan Fair Trade Commission, and the Ministry of Internal Affairs and Communications jointly issued a set of fundamental principles to address the rise of digital platform businesses (2018[20]). The principles indicate that the Japanese government will advance measures to ensure transparency, fair competition and the sound development of digital platform businesses. At the same time, it will pursue international harmonisation concerning the goals of those disciplines.

In 2016, the European Commission released a European agenda for the collaborative economy (2016[21]) and conducted a fact-finding exercise (European Commission, 2016[22]) which indicated that some online platforms engage in trading practices that could harm professional users. The following year, in its Digital Single Market Mid-Term Review, the Commission committed to prepare actions to address unfair contractual clauses and trading practices identified in platform-to-business relationships (European Commission, 2017[23]). A proposal for a regulation on promoting fairness and transparency for business users of online platforms followed in 2018 (European Commission, 2018[24]). Meanwhile, the Commission also conducted a study on consumer protection issues in PPMs (European Commission, 2017[25]). Currently, the European Commission is carrying out an analysis of the challenges and opportunities emerging in algorithmic decision-making. This work is supported by a 16-month study that began in March 2018. The study will examine, in particular, how algorithms shape, filter or personalise the information flows that they intermediate.

Note

1. Online platforms can be considered as one form of Internet intermediaries.

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Chapter 2

WHAT IS AN "ONLINE PLATFORM"?

Summary

The term "online platform" has been used to describe a range of services available on the Internet including marketplaces, search engines, social media, creative content outlets, app stores, communications services, payment systems, services comprising the so-called "collaborative" or "gig" economy, and much more. In this report, an online platform is defined as a digital service that facilitates interactions between two or more distinct but interdependent sets of users (whether firms or individuals) who interact through the service via the Internet. This chapter explains that definition and presents some economic characteristics that are common among online platforms.

Definition

Online platforms have some important things in common, including the use of information and communication technologies (ICTs) to facilitate interactions between users, the collection and use of data about those interactions, and network effects. They drive innovation and play a vital role in digital economies and societies. But what *are* they?

This chapter defines the term online platform as it is used in this report. Although the online aspect is fairly straightforward, a definition for platform is not immediately obvious. As Vice President of the European Commission Ansip has observed, "we do not even have a single definition of platforms accepted by everyone. We have hundreds of good definitions … [so] when different people are talking about platforms, they have a totally different understanding" (House of Lords, European Union Committee, 2016[1]). Software engineers, for example, may think of a platform as a common set of technologies or interfaces that are available to a broad base of users who build things with it and on it. To them, a platform includes operating systems for computers or mobile phones, for example. Merchants, on the other hand, may think of a platform simply as a convenient forum in which products and services are bought and sold. To them, online platforms could include all of e-commerce. At the same time, a number of jurisdictions have come forward with different legal definitions in the context of specific regulatory interventions.

This report focuses on online entities that serve at least two different sets of users simultaneously, bringing them together and enabling interactions between them that can benefit the users as well as the platform itself. The two-sided or, in some cases multi-sided, nature of these entities has much to do with both the benefits they bring and the degree of difficulty of the policy challenges they present. Therefore, in this report, a requisite condition for qualifying as a "platform" is serving two or more distinct sets of users who interact in at least one direction through the service. Taking an example from the offline world, traditional print newspapers are platforms that serve both advertisers and readers. The advertisers interact with the readers by paying the newspaper to place advertisements, which at least some of the readers see. Thus, the users' interactions flow in one direction through the platform: from the advertiser side to the reader side. Advertisers typically do this because some of the readers will then purchase goods or services from them, but those transactions take place outside of the newspaper platform. The newspaper example, incidentally, shows that the term "user" can refer to businesses and individuals.

Stock exchanges are platforms on which the users' interactions flow in two directions. The exchanges serve both stock buyers and stock sellers. They interact through the exchange by signalling the prices at which they are willing to buy and sell. Of course, both newspapers and stock exchanges have evolved into online platforms, too.

An example exclusively from the online world is video-sharing services. These are platforms that can have at least three sets of users who interact in multiple directions. The users include those who upload videos, those who watch them, and those who pay the platform to place advertisements. Interactions flow from video uploaders and advertisers to video consumers, but they also flow from consumers back to the uploaders in the form of ratings and comments. In addition, they can flow from consumers to other consumers (again in the form of comments, which themselves may receive positive or negative feedback).

Studying platforms by concentrating on services that have two or more separate sets of users that interact with each other is a well-established approach among economists. They typically use a definition of platforms that revolves around the concept of multi-sided markets: platforms are facilitators of exchange between different types of consumers that could not otherwise transact with each other; they mediate transactions across different but interdependent user groups subject to network effects (Rochet and Tirole, 2003[2]; Rochet and Tirole, 2006[3]; Evans, Hagiu and Schmalensee, 2006[4]).

That definition needs to be modified not only to focus on platforms that operate online, but also to express more accurately what online platforms can do. First, the word "exchange" suggests that the interaction between platform users is always bi- or multi-directional. It is not. Even in the offline world of newspapers, this aspect of the definition needs some adjustment because readers do not necessarily exchange anything with advertisers. Instead, advertisers reach readers through the newspaper platform. There is often no return action or message from the reader to the advertiser, and even when there is, it takes place outside the setting of the newspaper. Thus, the interaction on the platform occurs in only one direction.

Moreover, not all participants on online platforms are consumers in the sense that the word is usually used by, say, consumer protection authorities. Consider the example of a major company maintaining a profile on WeChat or Facebook as a way to interact with the public. Describing such companies as consumers is unnecessarily confusing. It is better to refer to the people and entities that use online platforms as clients or simply users of the platform.

Additionally, limiting the definition to cases where users could not interact in any other way is overly restrictive. For example, eBay users in some cases could also interact if they live in the same area and find each other by placing and responding to an advertisement on a bulletin board. It is more accurate to say that online platforms facilitate interactions. Finally, at least in this report, "online" means connected to the Internet.

Therefore, the definition used in this report is that **an online platform is a digital service that facilitates interactions between two or more distinct but interdependent sets of users (whether firms or individuals) who interact through the service via the Internet**.

This definition can accommodate government, non-profit and other non-commercial online platforms, as well as commercial ones, provided the word "user" is given a reasonably flexible interpretation. For example, some governments – as trusted sources of personal identification and public information – have already built online identity and access management platforms that are used by public administrators on one side and citizens seeking access to government applications and information on the other (European Commission, n.d.[5]; OECD, 2011[6]). It is possible that businesses will eventually be able to use these platforms to verify identities in the course of commerce, too. Such platforms are encompassed by the proposed definition.

Moreover, it is not only appropriate, but necessary, that the word "users" be interpreted in a reasonably broad manner in this definition. Among those who use and benefit from online platforms are not just individual consumers, but also employees, governments, and businesses both large and small, which may be acting as buyers, sellers or employers.

A couple of examples of businesses that do *not* qualify as online platforms under the above definition may be helpful. One is cloud services providers. These businesses are online but they are not platforms because they serve only one set of users: those who pay for the ICT resources that the provider is renting out. Another example is traditional radio stations before the advent of streaming. They were platforms because they served two sets of users (listeners and advertisers), but they were not online.

It bears emphasis that this definition is provided for the purposes of this report, not as a universally and permanently correct definition. Markets and businesses change, especially the ones discussed here, eventually making any definition obsolete. The one in this report clarifies which kinds of entities are being covered and helps to keep the report's scope manageable. Consequently, the term "online platform" is really more of an engineered concept than a natural and unchanging fixture of digital economies and societies. What the Committee on Digital Economy Policy (CDEP) considers to be an "online platform" may therefore change over time.

2.1. What is the difference between an online platform and a digital ecosystem?

In this report, an online platform is distinct from a digital ecosystem, which is a broader concept that can include online platforms. Digital ecosystems are combinations of interoperating applications, operating systems, platforms, business models and/or hardware, and not all components of the ecosystem must be owned by the same entity. In fact, a digital ecosystem may involve thousands of different businesses. Amazon's Fire tablets, their version of the Android operating system, the Kindle app store, and interoperable Kindle apps and e-books are an example of part of a digital ecosystem. So are Apple's iPhones and iPads, their iOS operating system, Apple TV, the app stores for iOS devices, and interoperable apps – including, incidentally, the Kindle app, which brings parts of the two ecosystems together.

Components within digital ecosystems are often linked through data, which may be collected or used differently by each component. Shared use of data within an ecosystem helps it to function better and creates opportunities to expand the ecosystem while engaging customers more deeply. Ecosystems can offer users ease of use, convenience, and a familiar look and feel with which they may grow comfortable.

However, ecosystems have varying degrees of openness towards competitors and third parties. Opening up to competitors may create benefits from shared network effects across firms. For example, Amazon's Fire OS is a specialised version of Google's Android. That facilitates porting apps from Android to Fire even though Amazon maintains control of the Fire OS. Alternatively, some ecosystem operators limit interoperability with hardware and/or software owned by other entities. If a business wants to maintain an official account on Tencent's WeChat, for example, it cannot use any payment solution other than WeChat Pay. That raises the cost of switching to a different payment solution, which in principle could help Tencent to fend off competitors even if they were to introduce a better payment service.

Common economic characteristics of online platforms

Positive direct network effects. For certain kinds of online platforms, the utility that users on one side derive depends on the number of other users on that same side. This is called a direct network effect. The effect is both positive and direct when utility increases as the user base on the same side of the platform grows. Examples of online platforms with direct network effects include social media and instant messaging (IM) platforms. Both applications are virtually useless to the consumer if he or she is the only person using them, but their value increases as the number of other users grows. Positive direct network effects can be more subtle on certain other kinds of online platforms. For example, a search engine's algorithm may become better at predicting what users are looking for – and the improvement may occur faster – as the number of searches carried out on the platform increases. Positive direct network effects can lead to rapid and formidable growth, as they create a kind of virtuous circle: the more users there are on one side, the more valuable the service becomes, which attracts even more users to that side, etc. Incidentally, the presence of direct network effects does not necessarily indicate that a business is multi-sided (consider telephone networks, for example). By the same token, not all platforms have positive direct network effects (freelancing platforms, for example) and some even have negative direct network effects (e.g. dating platforms).

Positive indirect network effects. In contrast, all platforms have positive indirect network effects, and if indirect network effects exist, then the entity or market in question must be two-sided or multi-sided. Positive indirect network effects occur when a group of users (say, third-party sellers on a business-to-consumer platform) benefits more as the number of people in another group of users (buyers who use the same platform) increases, and possibly vice-versa. Thus, if a platform provides better service to one side of its market, it increases the demand for its service on the other side(s). When indirect network effects operate in both directions of a two-sided market, another type of growth-driving virtuous circle arises because as more users join one side, the platform becomes more attractive to users on the other side(s), which leads more users to join that side, thereby increasing the appeal of the first side, etc. Where positive indirect network effects exist, platforms provide a valuable service by solving a co-ordination problem between two or more sides that stand to benefit if they can be united and helped to interact. That, in turn, can be a lucrative business for the platforms.

It is important to understand that when indirect network effects are present, the volume of demand for the platform's services will depend not only on the magnitude of the prices it sets, but on the structure of those prices across the sides of its market (in some circumstances that result is also possible without indirect network effects) (Rochet and Tirole, 2006[3]). In other words, a platform might charge price A on one side and price B on the other. But it may turn out to be the case, for example, that it will generate more income if it charges price A+B on one side and nothing at all on the other side.

Positive indirect network effects are not a happenstance that automatically bestows riches on lucky firms that enter certain markets. Platform operators first have to perceive that indirect network effects are present in a market. That may be more difficult than it sounds. After all, the market may not even have existed until a platform firm conceived of and created it. Then the firms have to figure out how to capitalise on the network effects. This is all a bit like doing the work necessary to discover that oil reserves exist below the ground in a certain area, and then figuring out how to extract the oil. But because platforms are multi-sided, there is another layer of complexity that is not present in the oil sector. As Evans and Schmalensee (Evans and Schmalensee, 2017[7]) explain, using YouTube as an example:

> *Since some people are more likely to upload videos and others are more likely to watch videos, YouTube had to court both types of people to make the network successful [.] Recognising that network effects are often indirect is important for understanding platform businesses, including those that prop up the new economy. Multisided platforms can't come galloping out of the gates as envisioned by simple winner-take-all stories. They have to figure out how to get all sides on board in order to create any value at all. Starting a new platform is more like trying to solve a hard math problem than running a 5k. YouTube didn't win the race to become the leading video sharing platform because it was first or because it got a nose ahead and vaulted to victory. It won because it figured out, over a very difficult start-up period when it could well have failed, the right formula for getting people to upload videos and getting people to view them.*

Nevertheless, for those platforms that are able to capitalise on them, positive network effects can make a major difference. They are one of the accelerants that ignited the rapid growth of certain online platforms.

Cross-subsidisation. Because of the previous point about price structures, one of the common ways in which online platforms try to reach at least a viable size is by capitalising on the multi-sided nature of their markets. Specifically, to increase the user base on one side of their business (ideally by setting in motion a whirlwind of direct and/or indirect network effects), many platforms subsidise it. At first, they might accomplish this by taking on debt, but if the business grows enough, they will eventually rely on revenues from the other side. In many cases this subsidisation is absolute in a pecuniary sense, i.e. subsidised users do not pay any monetary price to use the platform. Among the types of platforms that employ this strategy are, for example, most or all of the leading search engines, social media platforms and IM platforms, where advertising revenues make it possible to offer free services to users on the other side of the platform's business. Other types of platforms, such as C2Cs (sellers subsidising buyers) and dating sites (usually men subsidising women), also tend to cross-subsidise.

Scale without mass. This term (Brynjolfsson et al., 2008[8]) reflects the possibility to grow extensively, and to do so quickly and inexpensively in comparison to scaling up in physical goods markets, due to the extremely low and still dwindling unit costs for processing, storing, replicating and transmitting data (OECD, 2019[18]). That cost structure means that once online platforms absorb fixed costs for things like computer hardware and initial software development, they can serve many additional users while incurring extremely low or negligible marginal costs. That enables the platforms to grow – even to the point where they are serving hundreds of millions or possibly billions of people – without increasing investments in tangible assets or taking on new employees at anywhere near the same growth rate.

Potentially global reach. Thanks to the end-to-end interoperable design of the Internet (to the extent that technical Internet openness is respected [OECD, 2016[9]]), online platforms have the possibility to attract customers all over the world. Moreover, thanks to scale without mass, online platforms can grow quickly and efficiently to meet the demand that those customers generate.

Panoramic scope. Some platform companies benefit from economies of scope because of complementarities between two or more of the services they provide on a given platform, or across platforms. In some cases, development costs and/or data can be shared across business lines and

applications can be given a common look and feel so that users gain familiarity with "sister" platforms more quickly. That can help a company's newer platforms to gain users faster, possibly giving them a competitive advantage that new "solo" platform companies would not have. Of course, offering more services may also keep users connected to a particular company's offerings. That, in turn, means the company can collect more user data, which may be used to further refine the platforms' services and make them even more valuable to users, or to enable the company to enter another market more easily and effectively. In some instances, those other markets are vertically related to one in which the platform company already operates. That can lead to a number of efficiencies, but it may also enable the company to engage in anti-competitive conduct towards downstream business users.

Generation and use of user data. While online platforms are by no means the only types of businesses that generate and capitalise on user data, they may be distinguished by the richness of their user data, the sheer amount of it at their disposal, and the sophisticated ways in which they use it. There are differences in the degree to which various platforms create and rely on user data as well as in the degree of openness of that data. Some use it only to improve their own service, while others make insights gleaned from the data, or even the data itself, available to others. Nevertheless, as the profiles in Annex A show, the importance of generating and working with user data is a common feature of online platforms that sets them apart from other businesses.

Disruptive innovation. While not all online platforms share this trait, all of the most successful ones do. What is disruptive innovation? First, disruptive innovations *disrupt*, which is to say they drastically alter markets or create new ones. They are not incremental technological developments, like the introduction of a new pharmaceutical that is marginally more effective than current ones. They are not regular, predictable improvements, either, such as the gains in microprocessor speeds predicted by Moore's Law. Instead, they are breakthroughs that bring major changes that were unforeseen and occur irregularly. Furthermore, disruptive innovations typically reduce the market shares of incumbent firms (e.g. the displacement of established mobile handset leader Nokia by Apple's iPhone and smartphones using Google's Android system), in some cases causing them to exit the market (e.g. the disappearance of video rental chain Blockbuster following the disruptive entry of Netflix), or create new markets (e.g. television). Increases in digital cameras' pixel density are not disruptive; the introduction of digital photography itself was. Second, disruptive innovations include not only new products and manufacturing processes, but new business models. Disruptors like Airbnb and Uber, for example, are not new technologies so much as they are new business models that leverage the Internet and smartphones to match excess capacity in private durable goods with demand.

Switching costs. Some, but not all, online platforms require or encourage investments by users that, once made, are not easily transferable to other platforms. For example, in the context of social media, such investments may include setting up and personalising an account profile, uploading content including photos, videos, posts, or product information and offers, and establishing a community of friends, followers or customers. More broadly, these investments may include simply becoming familiar with a platform's look and feel and developing trust or confidence in it. When such investments are not easily transferable and are substantial enough, they could discourage users from switching to another platform, even if prices rise, quality declines, or the service provides less privacy (OECD, 2012[10]). Furthermore, when their data is tied not only to a particular platform, but to a whole ecosystem of which the platform is just one part, users may be even less willing to switch.

Winner-take-all or winner-take-most. Primarily as a result of the confluence of positive network effects and economies of scale and scope, some markets in which online platforms operate exhibit winner-take-all or winner-take-most tendencies (Iansiti and Lakhani, 2017[11]; Frank and Cook, 1996[12]). Successful platforms in such markets can experience hyper growth that is all but impossible for even innovative companies to achieve in physical product markets. Facebook, for example, reached 100 million users just 4.5 years after its launch. In comparison, it took 16 years for mobile phones to gain 100 million users, while wired telephones needed 75 years to reach that mark (Boston Consulting Group, 2015[13]).

On the one hand, positive network effects and economies of scale and scope, especially where there are also strong first-mover advantages and substantial switching costs, may stifle competition by entrenching the market positions of the winners they helped to create. Specifically, a first-to-market platform in a winner-take-all or winner-take-most market may become so strong so fast that it quickly leaves other entrants far behind and facing a more challenging set of obstacles to their growth. The

entrants' path could be more difficult because, unlike the first firm, they are trying to enter a market that already has a large and growing incumbent that is benefiting from scale economies and network effects.

On the other hand, network effects, scale without mass and the non-rivalrous nature of digital information are also factors that make it *easier* for entrants offering a better service to displace incumbents quickly. In other words, some of the same characteristics that once helped a platform to assume a leading position in a market may eventually shift in favour of an entrant and start to work against the incumbent, turning it from the disruptor into the disrupted. Each user that leaves a platform with positive network effects makes other users more likely to leave, too. This was the case with MySpace, for example, when Facebook displaced it as the leading social media platform, as well as for Yahoo! when Google entered Internet search advertising and upended it. MySpace even had switching costs working in its favour. That did not matter, though, because when positive network effects began to work in Facebook's favour due to the superior quality of its platform, the switching cost advantage was overwhelmed. Consequently, becoming a leading online platform – even in a winner-take-all market – does not come with a guarantee that the leading position will be maintained permanently or that it is invulnerable to competition.

Furthermore, not all markets in which online platforms operate have winner-take-all or winner-take-most characteristics. The network effects need to be strong, switching costs must be high, and users must find it difficult or undesirable to multi-home (which means they tend not to use multiple, rival platforms simultaneously). Moreover, it is crucial to bear in mind that even holding a dominant position in a market is not, by itself, a violation of competition laws. Dominance should not, in other words, be confused with *abuse* of a dominant position.

Looking at each of the characteristics that have just been described, one may notice that many of them are not unique to online platforms. Network effects, for example, existed long before it was even possible to build an online platform. The same is true of economies of scale and scope, switching costs, and disruptive innovation. But when some or all of these traits are present in combination, they can magnify each other and lead to explosive growth. For example, the potential impact of strong network effects on online platforms is greatly extended by scale without mass, along with the fact that roughly half of the world's population now has Internet access.

For more information on the economics of multi-sided markets, see materials from the OECD's CDEP (OECD, 2015[14]), Competition Division (OECD, 2017[15]) and Centre for Tax Policy (OECD, 2018[16]).

Note

1. This definition of online platforms is roughly similar to one used by the European Commission, which describes an online platform as an "undertaking operating in two (or multi)-sided markets, which uses the Internet to enable interactions between two or more distinct but interdependent groups of users so as to generate value for at least one of the groups" (European Commission, 2015-16[17]).

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Chapter 3

PRIMARY IMPACTS OF ONLINE PLATFORMS ON ECONOMIES AND SOCIETIES

Summary

Online platforms are a diverse group of entities that have had, and continue to have, a wide array of effects on economies and societies. This chapter identifies and describes the main impacts in that array. It presents most of them holistically, meaning that it discusses the benefits, risks and policy challenges brought by online platforms or in connection with them.

Objectives

This chapter includes impacts that are specific or at least especially germane to online platforms. Consequently, while some of the impacts do not arise exclusively in the setting of online platforms, they are particularly important in that setting. For example, privacy issues come up in many online contexts. Currently, however, the ten most visited websites in the world are all platforms. The third-ranked site has more than 2 billion monthly active users. The largest platforms therefore have a strong practical impact on privacy.

Moreover, the chapter does not list every possible type of impact but aims to include the most important and obvious ones. However, there are likely to be significant differences in the depth of certain effects from country to country. They may vary, for example, depending on whether a country is one in which the platform is legally registered, one where it has local operations, one where there are just users of the platform, or one where it does not yet operate at all.

The purpose of this chapter is not to measure or analyse the impacts, or to issue policy recommendations about them. Instead, it is to flag the main impacts so that a typology of online platforms (several are presented in Chapter 4) can eventually be put to use. That would involve an exercise that matches the impacts with the categories of online platforms to which they are relevant. The present chapter may also serve as a reference for possible future work that could undertake a deeper analysis of a specific impact or impacts.

Economic impacts

Macroeconomic impacts

Innovation and productivity

Online platforms contribute to innovation and productivity in many ways, but most of them can be summed up by the observation that online platforms make learning about, sharing and profiting from good ideas and information easier and faster. Examples include instant Internet search and how-to videos that people can stream from video-sharing platforms.

Some online platforms, such as the leading app stores, provide application programming interfaces and software development kits as well as enormous, pre-existing customer bases. By making it easier for developers all over the world to create and profit from their ideas and innovations, the app stores raise the incentive for app developers to invest in innovating. This is not only beneficial for small and medium-sized enterprises (SMEs), but for the platforms' ecosystems, too, because having more apps makes the ecosystems more useful and attractive to users. In other words, app stores can facilitate virtuous circles. Moreover, online platforms such as Github promote innovation by facilitating open-source work.

Of course, the platforms themselves can be major innovators, too. In 2014, nine US platforms were together granted 11 585 patents (Evans and Gawer, 2016[1]). But platform innovations do not only take the form of new or improved products and services; some of their most important innovations are new and improved business models, which can have especially far-reaching effects, some of which are becoming apparent only now. Consider how Uber has changed taxi markets, for example, or how Spotify is changing the way we enjoy music.

In addition, online platforms enhance productivity by helping economies to allocate resources faster and more efficiently. This occurs not only because of broad influences that are part of the overall digital transformation, such as instantaneous global communication, but also because of the enhanced competitive pressure that online platforms bring to many markets by making it possible for more buyers and sellers to participate in them. Then there are improvements that are specific to certain types of online platforms. For example, so-called peer or collaborative economy platforms allow people to put idle or underused resources – including themselves in some cases – to more productive uses. Moreover, several kinds of platforms boost productivity because they are so efficient at matching one side of a market with another side (e.g. buyers with sellers, advertisers with consumers).

In contrast, it is possible that there are instances in which online platforms slow or discourage innovation. For example, if they acquire a nascent but promising new rival, they might prevent it from blossoming into a successful and innovative competitor. Those types of problems are, however, microeconomic issues rather than macroeconomic ones. That is, such problems are more likely to have a bearing on the performance of specific markets rather than to have economy-wide effects. They are therefore discussed below in the Section "Competition Law and Policy".

Growth

Economic growth benefits from stronger innovation and productivity. Furthermore, the greater market access for retailers made possible by some online platforms translates into those retailers being able to contribute more to gross domestic product (GDP). In addition, the greater competition in both input and output markets leads to lower prices as well as greater production and consumption. That, too, contributes to higher growth.

Moreover, as the financial data in the profiles makes clear, the platforms themselves are also making substantial, direct contributions to GDP growth through their own businesses.

International trade

The major online platforms boost international trade not only by operating as multinational enterprises themselves, but in some cases by making it easier for other businesses to expand into foreign markets without necessarily having to open a plant or a storefront in them. The result is that online platforms operating across borders not only increase the supply of products, services, labour and jobs, but also increase access for those who want them. That translates into more cross-border commerce than would otherwise take place.

To illustrate, approximately 300 000 third-party sellers who participated on Amazon's Marketplace platform exported goods from the United States to other countries in 2017. They were by no means all major multinational companies – just the opposite. Most of them were smaller, domestic businesses that rely on Marketplace's digital presence outside the United States to reach foreign buyers. Thus, it is no longer the case that a company has to be a large, global player to engage in cross-border trade. This topic is discussed more fully in the companion OECD report *Unpacking E-Commerce: Business Models, Trends and Policies* (OECD, forthcoming[2]).

Development

Firms in developed countries like the United States are not the only ones who are capitalising on online platforms to participate in international commerce. SMEs in emerging economies are also using platforms to gain entry into global value chains (e.g. via third-party businesses-to-businesses like Alibaba.com), to access customers outside their own countries (e.g. MercadoLibre, eBay), and for easier communications and collaboration. Some platforms (e.g. Freelancer) also give workers living in emerging economies access to more opportunities from other economies. All of those activities promote economic development.

Regarding workers, emerging economies are among the largest suppliers of online labour on the outsourcing platforms tracked by the Online Labour Index. Together, India, Bangladesh, Pakistan and the Philippines account for more than half of the supply of online labour (Kässi and Lehdonvirta, 2016[3]). Based on Upwork data, Agrawal et al. (2015[4]) found over 10 times more employers in high-income

countries than low-income ones, and 4.5 times more providers in low- as compared to high-income countries. The top hiring countries on Freelancer are also mainly high-income (ordered by share of projects completed in 2015): the United States, Australia, the United Kingdom, India, Canada and Germany (Freelancer, 2016[5]).

Impacts on businesses

Greater, more efficient access to new markets for inputs and outputs not only helps trade and growth statistics, it helps individual businesses. For example, Amazon's Marketplace is a huge distribution platform that provides third-party retailers instant access to consumers around much of the world. Alibaba.com is largely the same but for wholesale inputs as well, serving as a virtual superstore where businesses from all over the world can transact with one another for supplies. Online platforms can also simplify and reduce the costs of logistics and payment processing, enhance communications between suppliers and/or consumers, and offer the possibility to target buyers with tailored advertising.

These benefits flow to new businesses as well as existing ones. Thus, online platforms can spur entrepreneurship by making it easier for new firms to gain an immediate online presence and generate revenue in a broad, even global, marketplace. They can also provide entrepreneurial opportunities for vertically connected businesses, such as app developers. Online platforms can bring small businesses new sources of financing, too, such as through crowdfunding sites (OECD, 2015[6], OECD, 2015[7]). Moreover, firms of all sizes rely on search engines to promote their products and services.

An overall effect of these benefits is to democratise markets: "Platforms provide SMEs as well as large companies [with] a distribution channel, and in many ways can help level the competitive playing field between the two, ensuring small companies can get the same exposure to potential customers as the larger companies." (House of Lords, European Union Committee, 2015[8]). For more information on how online platforms provide benefits to SMEs, see the 2016 House of Lords report on online platforms (House of Lords, European Union Committee (testimony of Professor Annabelle Gawer), 2016[9]) and the forthcoming OECD report *Unpacking E-Commerce: Business Models, Trends and Policies* (OECD, forthcoming[2]).

On the other hand, it is also true that online platforms have put many companies, large and small alike, out of businesses or have substantially dented their performance. That is sometimes a consequence of the disruptive innovation that many successful online platforms have brought to markets. It is beneficial, even essential, in the longer term for less efficient firms to exit markets and be replaced by more efficient ones because that increases consumer welfare and raises productivity, as long as this happens within a competitive environment. In addition, just as successful online platforms produce winners, they can also create losers, and governments need to help their economies re-absorb displaced workers and capacity.

Naturally, not all negative consequences for other businesses are benign, though, even in the longer term. That would be the case, for example, if those consequences result from anti-competitive conduct. Some competition authorities have been looking into concerns that leading platforms may be taking advantage of market power to impose unfair or anti-competitive terms and conditions on other firms, particularly SMEs, whether they are producers, service providers, retailers or some other type of business. These policy concerns are discussed below in the Section "Competition Law and Policy".

Another frequently mentioned example is the disruption of the recorded music industry brought about by streaming services, some of which qualify as online platforms under the definition used in this report. The consumer shift from compact discs to digital downloads and then to streaming also shifted power away from artists and record labels. Some streaming services did not remunerate rights holders at all, while others did so but at reduced rates. Artists and record labels saw a substantial drop in their collective earnings. Although free or less expensive music has been a boon to consumers in the short run, it may not work out that way in the long run if compensation is so low that it cannot support a vibrant, creative and high-quality recorded music industry (Ghafele, 2016[10]). On the other hand, some streaming services (including some that count as online platforms) such as Deezer and Spotify negotiate licenses with rights holders prior to distributing music and have helped to bring about a partial reversal of fortunes for the recording industry. See OECD (2015[11]: 44-46) for more information.

Impacts on consumers

Thanks to online platforms, consumers who shop on the Internet have lower search costs, can compare prices and products from different sellers more easily and comprehensively than offline consumers, and can transcend the constraints of distance by buying from far away sellers. They also provide consumers with new options to obtain goods and services such as shared work spaces, short-distance transportation services, food delivery and meal sharing, and a variety of freelance and staffing services at a local level. These capabilities give consumers more information, convenience, choice and competition, which drive prices lower and quality higher.

Alibaba, Amazon's Marketplace, and MercadoLibre, for example, are beneficial to consumers insofar as they increase competition among sellers and bring products from far away sellers to local buyers' fingertips. Airbnb enables individuals to find and book home rentals remotely, often across borders, and with better and more accessible information, as well as more secure payment options than were possible before. BlaBlaCar offers similar advantages with respect to long-distance ride-sharing services. Moreover, many platforms give away a service on one side of their market(s) at no (pecuniary) charge. That is, many of them do not charge one set of their users a pecuniary price, though generally this type of consumer is allowing the platform to collect his or her personal data. Baidu searches are free in a financial sense, as is using a Facebook account.

The economic value to users of such "free" platform services should not be underestimated or taken for granted, even though it can be difficult to quantify. For example, Google Maps is a financially free (for end users) service that embeds and integrates many features that increase users' convenience, including transportation directions, travel time estimates, ratings, reviews and information about businesses and destinations on the maps, etc. Users are able to save time and fuel by selecting the fastest routes, have more productive shopping trips and more enjoyable meals by relying on the information embedded in Maps, and travel more safely thanks to real-time crowdsourced traffic and road hazard notifications, help in finding police stations, and the possibility to share their location with family or friends. Calculating a monetary value for these conveniences is difficult, however, because users have different needs and preferences. They would therefore assign different valuations to the service. Nevertheless, Brynjolfsson and Oh (2012[12]) did estimate the average incremental consumer surplus in the United States from the free digital services (not limited to online platforms) available on the Internet between the years 2007 and 2011. They came up with a figure of about USD 106 billion per year, or 0.74% of annual GDP. Incidentally, and for similar reasons, calculating a monetary value for the price paid by consumers in terms of platforms using their personal data can also be highly difficult.

The benefits to consumers of e-commerce platforms in particular are also discussed in the report *Unpacking E-Commerce: Business Models, Trends and Policies* mentioned above (OECD, forthcoming[2]).

This is not to suggest that the impacts of online platforms on consumers have been exclusively beneficial. There is a host of privacy and competition law concerns, some of which have solidified into investigations, pending court cases, and final judicial decisions as well as legislation to protect consumers. Many of these concerns are discussed in the sections "Consumer Protection and Privacy Issues" and "Competition Law and Policy" below.

Impacts on public services

Online platforms are assuming functions performed by public broadcasting services, civil defence agencies, the post office, libraries and public meeting places. They provide basic "public" services such as maps, mail, messaging, emergency messages and job listings. This suggests a need to reconsider how existing public services should be adapted where the rationale for public intervention may have eroded or otherwise changed. In some cases, governments may consider developing or supporting platforms that meet specific public needs, such as those developed by Estonia for health, voting and taxes (Enterprise Estonia, n.d.[13]). In other cases, governments may collaborate with proprietary platforms to implement public services, such as using platforms to easily access real-time government data on weather, traffic and pollution levels, or to conveniently pay traffic fines or highway tolls (Information Office of Shanghai Municipality, 2012[14]).

Making markets work more efficiently

Online platforms can make markets work more efficiently by lowering transaction costs and enabling new types of transactions. The term "transaction costs" commonly refers to certain frictional costs of doing business, apart from the price of producing or buying a good or service. Such costs may include: 1) finding reliable information on sellers, buyers, products and services; 2) negotiating a price or contract; and 3) monitoring and enforcing transactions. Online platforms can reduce all of those transaction costs markedly in comparison to brick-and-mortar businesses.

In general, online platforms make it easier and less costly for two or more sides of a market to reach or co-ordinate with each other. For instance, social media platforms provide advertisers with an effective way to reach exactly the type of potential customers they are looking for, while online dating platforms make it easier for people to find partners. That increases market efficiency (absent some type of anti-competitive conduct).

Moreover, some types of platforms excel at addressing consumers' needs better than incumbent firms. The success of so-called peer or collaborative platforms such as BlaBlaCar, CurrencyFair and Airbnb is due in large measure to the fact that consumers were not fully content with the way traditional businesses in the transportation, foreign currency exchange and accommodation markets were functioning.

Furthermore, some types of platforms balance supply with demand far more quickly and efficiently than offline markets. Uber, for example, constantly adjusts its fare pricing in real time so as to encourage more drivers to enter the pool and fewer passengers to request rides when demand is high. When demand is low, Uber reduces fares to motivate some drivers to exit the pool while encouraging more passengers to use the service. In this manner, capacity is kept in line with demand, as opposed to the inefficiency of prolonged idle capacity (long lines of taxis but few passengers at taxi stands) or unfulfilled demand (long lines of passengers but few taxis at taxi stands).

However, prices that fluctuate rapidly and frequently can play havoc with consumer spending and the stability of workers' earnings, so it is not necessarily desirable from their point of view. In addition, the fact that price surges and reductions are implemented and removed unilaterally without any consultation with the drivers could make them especially vulnerable.

Another efficiency factor is that many types of online platforms offer access and support to local geographic markets without having to bear the costs of operating locally. That can benefit not only local businesses who gain an entrée to global value chains and markets, but local consumers who find themselves with far more choices and perhaps lower prices than before. In other words, the efficiency is that previously unmet demand is being fulfilled by online platforms. In particular, even though some local markets cannot sustain traditional business models, e.g. many locations cannot support vibrant bookshops, music stores or transportation services, platforms offer other ways to meet local needs. This can also be true for niche markets, for which the matching between sparse sellers and buyers can be greatly facilitated by online platforms.

More generally, platforms operating across multi-sided markets are not a new phenomenon. They provide a co-ordination function that, before the emergence of the digital economy, has been fulfilled by other institutions such as village markets, newspapers, and radio or television programmes. But digitalisation enabled the development of online platforms, and they have lowered the costs of information exchange and transacting business, thereby raising market efficiency to a new level.

Consumer protection and privacy

Consumer protection in online platform markets generally

It is clear that platforms are subject to consumer protection responsibilities with respect to their own, direct interactions with consumer users. Less clear is the extent to which platforms should be required to play a role in addressing the harmful actions of a party on one side of a transaction. For example, if a third-party seller fails to deliver a product purchased on an online platform, should the platform help to resolve the dispute or provide redress? What responsibility do online platforms have to ensure the trustworthiness of ratings and reviews posted by users?

In practice, such legitimate concerns could be addressed, at least when actual or potential competition exists among platforms, because market forces may provide the incentive needed for platforms to do so voluntarily. Indeed, many platforms have established trust-building mechanisms that respond to consumer concerns about payment processes, dispute resolution, and information asymmetries. When well designed and implemented, such mechanisms can serve to address some of the problems that consumer protection laws and regulations aim to solve. Obtaining the evidence needed to assess their effectiveness can, however, be difficult.

Whether competition can be fully relied upon to serve a consumer protection function or not, however, it is important for consumer protection principles to apply in the context of online platforms. Given the prevalence of "free" services on them, though, some expansion of traditional conceptions about the applicability of consumer protection principles was needed. Therefore, when the OECD modernised the scope of the revised OECD *Recommendation of the Council on Consumer Protection in E-Commerce* (OECD, 2016[15]) it included non-monetary transactions, a change intended to reflect the emergence of such free services, and to ensure that core consumer protection principles (e.g., fair business, advertising and marketing practices) apply to non-monetary as well as monetary transactions. The E-commerce Recommendation also calls on governments and stakeholders to consider "how to provide redress to consumers in appropriate circumstances involving non-monetary transactions."

With respect to privacy, while users may understand that, in return for their use of certain platforms, they are providing personal information that the platforms and advertisers may use (OECD, 2019[137]) in full respect of the applicable legal frameworks for privacy and data protection, users and even data controllers in some instances may nevertheless be unaware of the full extent of the collection and use of user data (OECD, 2015[16]: 216-227). More generally, it may be difficult for users to understand how platforms monetise the personal information they provide in exchange for services.

Consumer trust in "peer" platforms

Consumer trust is often cited as a prerequisite for widespread adoption of new business models. But trust is not a monolithic concept and the factors that establish trust may vary. Because consumers have increasingly relied on online platforms to fulfil many of their needs, one might conclude that trust in the platforms has not been an obstacle (though in reality this may also have to do with factors such as a lack of awareness that certain problems exist (see Subsection "The collection and use of personal data"), or a lack of alternatives due to strong network effects, which could prevail over trust issues. The Committee on Consumer Policy (CCP) recently tested that hypothesis through a survey of 10 000 consumers in ten OECD countries on the drivers of trust in a category of online platform markets referred to as peer platform markets (PPMs) or alternatively as the "sharing" or "collaborative" economy (OECD, 2017[17]). Those terms are all meant to include markets in which individuals use platforms to find, select and purchase goods and services, such as accommodation, transportation and assistance with personal tasks, that are sold or provided by other individuals.

The survey results show that trust mechanisms are working well in PPMs and that consumers are not decreasing their reliance on peer platforms due to a lack of trust. In fact, consumers' trust in peer platforms often exceeds their trust in conventional businesses. The survey results also showed that even when consumers experienced a problem with a transaction on a platform, this did not necessarily decrease their trust in the platform itself. These results are similar to those of a survey recently commissioned by the European Commission (European Commission, 2016[18]).

Furthermore, an important finding from the CCP survey is that although the majority of consumers value reviews and ratings when considering whether to use a seller/provider, consumers recognise that reviews and ratings cannot always be trusted. This scepticism about reviews, however, did not seem to have an effect on their trust in PPMs as a whole. Indeed, the consumers who responded that they had seen dishonest reviews showed overall levels of trust in PPMs that were similar to the whole sample (OECD, 2017[17]). That suggests that there might not be a great need for major changes to ratings and review systems, although it continues to be desirable for peer platforms to adhere to general truth-in-advertising laws and standards (e.g. requiring content providers on platforms to disclose material connections with advertisers in their reviews) and better ratings design (such as increased use of bilateral feedback mechanisms).

The survey also shows that consumers differentiate among different types of online platforms with regard to data collection and use. The surveyed consumers generally believe peer platforms (e.g. for accommodation, transport, buying items) are more likely to treat their data responsibly than their mobile networks or other online companies such as large businesses-to-consumers (B2Cs), search advertising firms, or especially social media companies (OECD, 2017[17]).

Consumer product safety on online platforms

Consumer product safety is a policy concern for items sold on online platforms just as it is for items sold offline. One difference between the offline and online space, however, is that online platforms not only need to be monitored for product safety problems, but they can be a means of accomplishing the surveillance, too. They therefore present both a challenge and a benefit with respect to the same issue. In fact, some platforms such as Amazon, eBay and Gumtree already take measures to raise consumer awareness of product safety issues (including posting links to the OECD's *Global Recalls* portal [OECD, n.d.[19]]), serve as points of contact for removing goods identified by product safety authorities as non-compliant, and provide automated blocking of banned goods via keyword technology (OECD, 2018[20]; OECD, 2018[21]). This is especially important where platforms intermediate between sellers and buyers in different jurisdictions, which may or may not have common rules for product safety.

Another difference is that, unlike physical retailers, online marketplace platforms do not take ownership of the products being offered for sale and typically are not held liable for any unsafe products that are sold through the platform without their knowledge. However, in the European Union for example, if platforms wish to benefit from an exemption from liability, they must remove infringing listings or disable access to them expeditiously once they have obtained knowledge of the existence of such illegal listings on their platform (European Commission, 2000[22]; European Commission, 2017[23]).

The collection and use of personal data

How can policy makers effectively address the issue of protecting the personal data collected and used by platforms, such as search advertising platform data about what people are looking for online, transportation platform data about where people are going and when, and B2C platform data about what people are buying and how much they are willing to pay?

One privacy challenge is that users may not adequately understand the ways in which platforms collect and use their personal data. The use of data analytics to make inferences from the data that is collected may present another challenge (OECD, 2015[16]: 41). These issues are commonplace across digital services for consumers and thus are not unique to platforms. What is different about platforms is that the number of users that some of them have, and the extensive data that some platforms collect, highlight the importance of robust privacy programmes built on the basis of scrupulous respect for the applicable legal frameworks for privacy and data protection.

Many online platforms have taken measures to give users more control over the data they share and to increase transparency and trust. Some platform operators give users the ability to opt out of tailored ad preferences or of sharing their location and other personal data, etc. The effectiveness of those measures will need to be assessed over time.

Currently, there is a trend towards stronger privacy regulations, such as Europe's General Data Protection Regulation (GDPR) (European Commission, 2016[24]) and ePrivacy Regulation Proposal (European Commission, 2017[25]). The latter will affect platforms that provide electronic communications services, even as an ancillary service, as well as those that use cookies or other mechanisms to track their users, e.g. to deliver targeted advertising. The Regulation aims to further increase the level of protection of citizens' communications data, but it may also have a significant impact on business models based on behavioural advertising.

There is a major exception to that trend, though: the People's Republic of China (hereafter "China"). If anything, China is moving in the opposite direction and to some extent it is using data harvested from online platforms to do so. The government is developing a system in which citizens will have a "social credit score" based on their routine behaviours, including their online habits. Although the system is

not expected to be fully operational until 2020, people with poor social credit scores are already feeling the consequences, from being denied plane tickets to being cut off from dating websites. Meanwhile, those with good social credit scores are rewarded with benefits such as preferential interest rates, faster access to healthcare and discounted utility bills (Rollet, 2018[26]).

The data that is driving these reward/punishment decisions comes in part from private sector online platforms. For example, parents who purchase diapers with Alipay are considered more responsible and thus are given a higher social credit score than those who, say, spend hours and hours playing online games (Karsten and West, 2018[27]).

The interplay among privacy, digital security and competition

One challenge that calls for a dialogue among stakeholders, including enforcement officials with different areas of responsibility, is the interplay among privacy, digital security and competition concerns about data. For example, concern that the non-transferability of data from one platform to another harms competition in some instances by creating customer lock-in effects may lead to suggestions that customers should be allowed to transfer their data to other services. Alternatively, concerns that a platform may hold an insurmountable competitive advantage due to its stock of customer data could lead to calls for competition authorities to force the platform to share that data with competitors. But even if moving their data into a new party's hands is something that users want to do, it can still raise digital security and privacy concerns. If the data transfer or sharing is mandated by a government body that is focused on competition alone, then users' worries may be even greater.

Ideally, approaches for addressing these challenges would advance each of the three policy interests without unnecessarily impinging on the others. That will require decisions that balance what is necessary, and to what extent, among the three areas while promoting the essence of the interests. It also presupposes an answer to the question, "Who owns the data, anyway?" Furthermore, even if one assumes that the data belongs to users and not the platforms, practical questions would remain. For example, how can platforms that vary in size and capability all fulfil requests for access to the compiled data of potentially thousands or even millions of users? A certain level of standardisation might facilitate the implementation of such services.

Companies and governments alike have already taken steps to facilitate customer-driven data sharing with other services. Google, for example, has implemented a programme that allows users to export copies of the data (e.g. location history, search history, or part of the browsing history) they have provided to Google products such as e-mail, calendar, and photo storage (Google, n.d.[28]). The European Union's General Data Protection Regulation, which went into effect in May 2018, contains a data portability provision that requires companies to make data that individuals in the European Union have provided on the basis of consent or a contract available to transmit, upon their request, to other companies (European Commission, 2016[24]).

Competition and regulation

Regulatory parity

The issue is whether and under what circumstances regulations that apply to traditional businesses should also apply to their online platform competitors, and vice-versa. In some cases, online platforms are subject to longstanding requirements, including privacy and data protection laws and regulations, consumer protection and commercial laws, competition laws, intellectual property laws, and sector-specific regulations. However, regulations designed for traditional businesses are not always a good fit for online platforms. In certain other cases, online platforms might not be subject to existing regulations because of the way the regulations are drafted, even though there may be good reasons for the regulations to apply. Regulations and strategies for enforcing them need to be periodically reviewed to ensure that they are appropriate for evolving economies and societies, and online platforms are important contributors to that evolution.

For example, if a jurisdiction requires traditional taxis to carry a certain amount of extra insurance in comparison to what ordinary drivers carry, should drivers who use ride-sharing services have to carry the same amount of extra insurance? See for example, the technical guidance document *Modernizing*

Regulation in the Canadian Taxi Industry (Competition Bureau (Canada), 2015[29]), which calls on regulators to modernise taxi industry regulations. The taxi industry is regulated at the municipal and provincial levels in Canada. While taxi companies are subject to these regulations, ride-sharing services are not. The guidance document states that this distorts competition in taxi markets. Another example is whether online advertisements should be subject to the same regulatory controls as advertisements on traditional media (e.g. mandatory disclosure of the identity of the party that paid for a political advertisement).

Alternatively, traditional banks are often legally required to monitor transactions for suspicious activity like money laundering. Should new fintech platforms providing services like currency exchange have similar obligations?

Competition law and policy

As with all the other topics mentioned in this chapter's first section, those related to competition law and policy are not accompanied by literature surveys or deep analytical discussions. The main objective is simply to identify key issues and briefly explain them so that they can eventually be matched with relevant categories in a typology of platforms. Thus, member countries' views on these issues may differ and this report does not take a position on any of them.

There are quite a few competition-related issues, so this subsection is longer than most. The topics are broken down into broad questions and concerns about particular types of conduct.

Broad competition questions

- **How should relevant markets be defined when online platforms participate in them**? Traditional market definition concepts, particularly the small but significant non-transitory increase in price (SSNIP) test, look only at the effects of a hypothetical price increase on demand in one side of a market, ignoring effects on demand in the other side. That makes them less useful in some markets where platforms operate, particularly when the service on one side is offered for free. When is it appropriate to look at all of a market's sides at once, as opposed to one at a time, and how can that be done when defining markets?
- **Is online platform competition just a click away**? The answer to this question turns in large part on one's conclusions about how significant entry barriers, network effects and switching costs are in a given market. For example, one might look at the variety of Internet search engines that exist and conclude that with Google, Bing, Yahoo! and others available, there is plenty of competition. Others might consider the persistently high share of one search engine and circumstances such as the expenditure of billions of US dollars to develop a different one, network effects, switching costs and other factors, and conclude they suggest that a given search engine has a dominant position.
- **What does competition look like in markets that exhibit strong positive network effects and scale without mass**? As explained in the Section "Common economic characteristics of online platforms" of Chapter 2, some online platforms operate in markets with those characteristics and they occasionally lead to rapid growth and possibly to winner-take-all or winner-take-most outcomes. It was also mentioned, though, that if an entrant has a substantially superior product or service, the advantages of network effects and scale without mass may hop from the incumbent to the entrant and help it to overtake the market leader. Thus, although network effects and scale without mass can lead to less static competition in some markets, it is also sometimes the case that platforms rise and fall in Schumpeterian fashion. That is to say, some markets in which online platforms operate may see a succession of firms periodically displacing their predecessors and taking over the top spot. This is not competition in the classical static sense, with several rivals simultaneously competing mainly on the basis of price. Instead, it is dynamic competition, based on innovation and occurring over time.
- **What is market power for an online platform that does not charge a price on one side of its market**? In any investigation or case involving possible abuse of dominance, one factor that is always considered is market power. Traditional approaches to gauging market power usually consider price in one way or another. Does a company have the power to control market prices? Has it been able to maintain high profit margins for a long period? For online platforms whose service is nominally free on one side, what does market power mean?
- **Are market shares less relevant to market power for online platforms**? Another consideration in traditional approaches to gauging market power is market shares. But when firms can grow as quickly as online platforms can, and when history has shown that meaningful competition tends to come

from firms whose service or business model differs from the incumbent's rather than coming from me-too firms, does it still make sense to pay as much attention to current and historic market shares? Or should the market power analysis be more prospective, focusing on the risk of successful entry by a different type of player?

- **Can data confer market power**? Is it possible that online platforms can accumulate market power by gathering data about users? In particular, is there such a thing as a data-driven network effect, under which each user's utility from using a platform increases whenever others use it, too, because by doing so they are helping to teach the platform's algorithms how to become better at serving users? Should competition authorities who wish to evaluate market power assess how much data a firm has, the rate at which it gathers data and/or the quality of that data, instead of (or in addition to) traditional considerations such as market shares based on revenues and output, profit margins over time, and the history of entry and exit in the market? Alternatively, does data exhibit sharply diminishing marginal returns, or is it so non-rivalrous and easy to acquire that entrants can capture the bulk of any learning-by-doing advantages that data has to offer without having to amass a large stockpile? In an initial examination of these questions, France's Autorité de la Concurrence and Germany's Bundeskartellamt (Autorité de la Concurrence and Bundeskartellamt, 2016[30]) acknowledge that the use of data by businesses is not new, however "technical progress and the digitalisation of the economy have expanded the nature (e.g. real-time location data fed by smartphones), sources (e.g. cross-device tracking of a user's web journey), applications (e.g. machine decision-making and learning) and volume of data" (Autorité de la Concurrence and Bundeskartellamt, 2016[30]: 52-53).
- **Is big bad again**? The rise of some very large online platforms has contributed to the resurrection of a debate that had long seemed dead: Is high market concentration alone enough to warrant competition law intervention? There was a time when it was. US antitrust laws, which first appeared in the 1890s, were born largely out of concern about the influence over government that vast business trusts wielded. The suspicion that big was bad continued to influence competition policy for decades, including outside of the United States. It was not until the 1980s that competition policy's focus began to shift decisively towards a consumer welfare standard, where it has remained ever since. But lately, arguments that market concentration alone should draw scrutiny under the competition laws – or at least that the impact of firm size and market concentration on factors other than consumer welfare should play a larger role in guiding the analysis – have started to resurface, as have counterarguments. These can be seen, for example, in papers by the team of Ariel Ezrachi and Maurice Stucke (2018[31]), Lina Khan (2017[32]; 2018[33]), Richard Langlois (2018[34]), Carl Shapiro (2018[35]), as well as in the US Congressional Democrats' "Better Deal" platform (US House Democrats, 2017[36]). In essence, one side argues that standard competition law enforcement based on economics and the consumer welfare standard does not work well in digital markets (because measuring consumer harm is difficult without pecuniary prices, because those markets evolve faster than competition law cases can be completed, etc.) and that this has allowed the platform giants to become too economically and politically powerful. That side wants to widen the aims and tools of antitrust, or at least step up enforcement. The other side asserts that the status quo has mostly served consumers well, and that competition law and analysis's present toolbox can handle any problems that come up, including any that the major online platforms present. Regardless of how that debate progresses, it will have to take into account that the nature of online platforms is such that size does bring some clear benefits to users when there are substantial network effects and no interoperability between platforms or no wholesale market for anonymised collected data. For example, the quality of a search algorithm increases as more people use it; it is now possible to find and connect, or reconnect, with the majority of people in OECD countries because Facebook is so popular; and shoppers can find virtually everything on Amazon and Alibaba – often for a lower price than they could find it anywhere else. On the other hand, the debate will also have to take into account that quite a few years have passed since a major online platform was displaced or seriously challenged.
- **What are the competition implications of multi-platform ownership**? When one company owns two or more online platforms and they interoperate, economies of scope may be created that can boost consumer welfare by increasing value and convenience. For example, when eBay owned the payments platform PayPal, eBay customers benefited from the integration and ease of use that PayPal offered. Another perspective, however, is that the interoperating platforms raise entry barriers by increasing the size of the investment and the complexity of the business model that are necessary for entry to succeed. This can lead to questions about what qualifies as an entry barrier, as well as how to test whether unilateral conduct that capitalises on economies of scope, such as service bundling, constitutes "competition on the merits" or not (OECD, 2005[37]; 2005[38]). An additional potential concern arises when

companies own vertically related platforms, as this may create the possibility for them to disadvantage downstream rivals through unilateral upstream conduct (such as a margin squeeze). Another, more recent, perspective is that multi-platform conglomerates – especially the largest ones – do not compete in individual markets, one at a time. Instead, they compete at the ecosystem level, and they do so three-dimensionally, oligopolistically and simultaneously across several product and service markets. This is what Petit calls "moligopoly" (2016[39]). If courts and competition authorities ignore this larger kind of cross-market ecosystem competition and focus only on one market at a time, Petit argues, they could be making a mistake.

- **How can one distinguish healthy, procompetitive innovation by online platforms from anti-competitive evasion of sectoral regulations that apply to traditional businesses? By the same token, how can legitimate interventions by sectoral regulators against online platforms be distinguished from actions by captured agencies that serve to protect incumbents from competition**? Whenever innovative firms enter existing markets with disruptive technologies or business models, they inevitably pose a threat, at least in the short term, to incumbent firms. From a society-wide perspective, apart from concern about displaced workers, there is nothing inherently worrisome about that. Just the opposite: it enhances efficiency and motivates incumbent firms to meet the competition by lowering their prices, improving their quality, and perhaps innovating further. But threatened incumbents do not always react in that manner. Instead, they sometimes try to turn sectoral regulators into strategic tools that thwart entrants. Specifically, incumbent firms sometimes respond to disruption by lobbying for existing regulations to be applied to the disruptor even when the regulations are not well-suited to its approach. Rightly or wrongly, incumbents may claim that the disruptor will have an "unfair" competitive advantage unless the regulations are applied to it. Incumbents may also lobby for new regulations that are a pretext for blocking entry. But because sectoral regulations usually serve other, legitimate policy objectives even when they block, deter, or retard entry by disruptive firms, they present competition authorities with a challenging task.
- **Can competition enforcement be mistaken for protectionism**? On the other hand, sometimes competition enforcement leads to accusations of protectionism. Such accusations have been directed at the European Union, for example, where several high profile fines for competition law violations and the possibility of imposing special regulations on platforms have led to accusations of bias against non-EU firms (Finley, 2017[40]; House of Lords, European Union Committee (testimony of Professor Annabelle Gawer), 2016[9]). However, what some perceive as European protectionism may actually be the result of transatlantic differences in the foundations of data protection and competition policies (Lancieri, 2018[41]).

Some of the questions posed above were addressed by expert panellists at a hearing held by the OECD's Competition Committee in June 2017. In several instances, panellists suggested that existing competition approaches would suffice in matters involving platforms, provided that certain adjustments were made to the techniques. For a summary of the panellists' views, see the synthesis (OECD, 2017[42]) prepared by the Secretariat. The question about how to distinguish legitimate regulatory interventions from the actions of a captured regulator was addressed by the Competition Committee in June 2015 (OECD, 2015[43]).

Concerns about particular types of conduct

- **Anti-competitive manipulation of search results**. The European Commission fined Google EUR 2.4 billion for this behaviour in 2017 (European Commission, 2017[44]). In particular, the Commission found that Google positioned and displayed its own comparison shopping service more favourably in its general search results than competing services. The Commission determined that this was an abuse of a dominant position under Article 102 TFEU. The decision is, at the time of publication, subject to appeal.
- **Anti-competitive bundling of apps**. In July 2018, the European Commission found that Google had abused a dominant position by 1) requiring manufacturers to pre-install its search and browser apps on Android devices if the manufacturers also wished to include the Google Play Store app; 2) paying manufacturers and mobile network operators to pre-install the Google search engine on their devices; and 3) obstructing the development of competing Android-based operating systems. The Commission found that, by taking these actions, "Google has used Android as a vehicle to cement the dominance of its search engine" (European Commission, 2018[45]). The Commission imposed a fine of EUR 4.34 billion and ordered Google to halt the practices in question. The Commission's decision is, at the time of publication, subject to appeal. In September, Turkey's competition authority imposed a fine of EUR 12.6 million on Google for essentially the same conduct in its jurisdiction (Richards, 2018[46]).

- **Pricing algorithms that facilitate or simulate cartels**. Online pricing algorithms range in sophistication from relatively simple tools that scrape price information from other sellers and report back with it to advanced tools that have the authority to make pricing decisions and are capable of learning from the resulting market reactions. Such algorithms can boost market efficiency and strengthen competition. However, the more sophisticated pricing algorithms, particularly when they are used by all of the leading competitors in a market, have the potential to achieve cartel-like outcomes, with equally harmful effects on consumer welfare, even without an express agreement to collude or indeed any operational intervention by humans at all. There are few known cases of this occurring, so the extent of the potential problem is not well understood. Algorithm-facilitated cartels raise new enforcement challenges, though, and their prosecution may depend on jurisdictions having an operational definition of "agreement between competitors" that is appropriately broad. A report (OECD, 2017[47]) by the OECD's Competition Division provides more detail. Furthermore, France's Autorité de la Concurrence and Germany's Bundeskartellamt have announced that they are jointly studying algorithms and their implications for competition (Bundeskartellamt, 2018[48]). Their work will result in a typology of algorithms, a study of their potential anti-competitive effects (including cartel simulation), and an assessment of how to detect and analyse algorithms for competition law enforcement purposes.
- **Possibly anti-competitive use of merchant data by marketplace platforms that are also downstream competitors**. The European Commission announced in September 2018 that it had opened a preliminary investigation to examine whether Amazon is violating EU competition law by using the data it collects on third-party sellers and the transactions they carry out on its marketplace platform in an anti-competitive manner (Schechner and Pop, 2018[49]). This investigation revolves around the fact that, in addition to operating a marketplace platform on which third-party merchants sell, Amazon is a seller on the same platform – often in competition with third parties. If it finds that Amazon uses competitively sensitive data (such as on the availability, prices, return rates and sales volumes of competing merchants) to benefit its own retail operations at the expense of third-party sellers, then the Commission may decide that the matter deserves more attention.

Defaulting to competition law versus using other legal and regulatory mechanisms

A related topic concerns the choice of which law or regulatory tool to apply when governments seek to modify or control the behaviour of online platforms. The topic is relevant because competition law has been used in several jurisdictions to address a variety of policy concerns regarding platforms. Not all of those concerns are within the traditional ambit of competition law, though. Some of them are more about the broader public interest than consumers' purely economic welfare, and that raises a number of questions.

Is it appropriate, for instance, to address concerns about privacy through competition law? Non-price considerations such as innovation and quality have long been considered relevant to competition law and policy, though more in principle than in practice (OECD, 2013[50]). Nevertheless, the idea of taking privacy concerns into account in competition law matters would not exactly be heretical from the competition community's perspective. Indeed, the OECD's Competition Committee has explored the idea (OECD, 2018[51]). However, an equally important question is whether such an approach could even be effective, given that competition law remedies are imposed on particular defendants, unlike broader regulatory solutions.

One could also question whether it is best to address concerns about fair taxation through competition laws, which operate ex post, rather than through ex ante legislative processes that cover the tax systems themselves. (The question of how to tax online platforms is being examined by the OECD's Centre for Tax Policy and Administration (CTP) under BEPS Action 1 (OECD, 2015[52]) and the Group of Twenty (G20) mandate to the OECD to deliver guidance. In particular, CTP is looking at ways to realign tax regimes with emerging business models.)

Overall, it makes more sense to address the concerns raised by considering and making appropriate use of the array of regulatory and legal mechanisms as well as the expertise that governments have at their disposal, rather than habitually defaulting to competition law enforcement. That array includes, for example, consumer protection, data protection, intellectual property, and tax laws and regulations (in addition to competition law) and the personnel responsible for enforcing them. Using these other resources appropriately could achieve better results on particular policy concerns while facilitating overall policy coherence (Daly, 2017[53]; see also Shapiro, 2018[35]; Bailey, 2018[54]).

For example, the European Commission has not relied on competition law alone to address the issue of unfair contractual clauses and trading practices in platform-to-business relationships. In its Digital Single Market Mid-Term Review, the Commission committed to prepare actions to address unfair contractual clauses and trading practices identified in platform-to-business relationships (European Commission, 2017[55]). It noted that the Commission had already conducted a fact-finding exercise (European Commission, 2016[56]) which indicated that some online platforms engage in trading practices that could harm professional users, such as the removal of products or services without due notice or without any effective possibility to contest the platform's decision. The Commission also mentioned widespread concern that some platforms may discriminate against other suppliers and sellers to the benefit of their own products or services (European Commission, 2017[55]). Following its survey, the Commission tabled legislation to address such platform-to-business disparities. The legislation is currently being negotiated with the other EU co-legislators and is scheduled for adoption in early 2019. The accompanying press release noted that the Commission had taken recent competition enforcement decisions in that regard (European Commission, 2017[57]). The actions taken to address these concerns go beyond competition law enforcement, though. The European Commission recently issued an impact assessment and a proposal for a potential new regulation "on promoting fairness and transparency for business users of online intermediation services" (European Commission, 2018[58]). The assessment states that the preferred approach would be co-regulation (see Subsection "Co-regulation and self-regulation" below), whereby a set of binding rules on all platforms would be complemented by more targeted voluntary action to address the complex of issues, enhancing business users' trust without harming innovation.

Co-regulation and self-regulation

Co-regulation (regulation derived from a collaborative effort between the public and private sectors) and self-regulation (regulation conceived and implemented by companies or trade associations) are not unique to online platforms. However, as entities that face all sides of their markets and typically require agreement to certain rules for transactions, online platforms can be particularly influential when promulgating and implementing co- and self-regulatory measures.

There is an underlying tension where such measures are concerned, particularly self-regulation. On the one hand, private companies may often be in the best position not only to identify problems that need regulatory attention, but to devise the most effective solutions. In addition, they may be able to perceive, understand and react to changes in their markets more quickly than government regulators can (OECD, 2015[59]). Thus, co- and self-regulation can lead to faster and possibly more effective regulatory responses than approaches that rely solely on public regulatory authorities, which is especially valuable in fast-moving digital markets. Examples of such efforts include the EU Code of Conduct on countering illegal hate speech online (European Commission, 2016[60]) and the Global Internet Forum to Counter Terrorism (GIFCT) (Twitter, 2017[61]). GIFCT was founded by Facebook, YouTube, Twitter and Microsoft. It also funds Tech Against Terrorism, an initiative mandated by the United Nations Security Council to help small companies and micro-platforms address terrorist exploitation of their services.

On the other hand, public sector regulators' objectives are not always the same as private companies' objectives, so relying only on co- and self-regulation may lead to outcomes that are not perfectly parallel to those of the regulators. (That concern is smaller for co-regulation than for self-regulation.) Furthermore, some regulatory authorities find that co- and self-regulatory processes also have limitations, notably as a result of limitations in the range of participants, the frequent lack of objective, measurable progress indicators, and the general lack of consequences when goals or targets are not met. Over the last few years, not all governments have considered the self-regulation efforts made by platform companies to be fully adequate. For example, regarding illegal content online, Germany adopted rules requiring platforms to take down or block manifestly illegal fake news, hate crime and certain other unlawful content within 24 hours of receiving a complaint, under the threat of possible sanctions. Meanwhile, evidence continues to emerge that some online platforms have not, on their own, adequately managed the problem that they are being misused to propagate misinformation and interfere with elections (DiResta, 2018[62]). Thus, it is sometimes considered necessary to implement traditional regulatory approaches, which may ultimately include penalties, to align platforms' legitimate interests with public goals. For instance, the European Commission has moved from a voluntary approach for addressing online terrorist content to proposing a specific regulation.

Protectionism

Like many other businesses, online platforms can be hurt by protectionism. In some cases, they have been among the highest profile targets of that treatment. It has taken several forms in China, including outright blocking. For example, access to Facebook, Google Search, YouTube, Instagram, Twitter, and Amazon's Twitch game streaming platform (BBC News, 2018[63]), is not permitted. Furthermore, foreign businesses that are permitted to operate in China are often required to partner with local Chinese firms even if they add no value – essentially a tax on foreign competition. Additionally, some non-Chinese companies are forced to share their technology with local partners who then reverse engineer the same products and compete against their "partners" (Holmes, McGrattan and Prescott, 2013[64]; Office of the United States Trade Representative, 2018[65]; Atkinson, 2018[66]). Moreover, some foreign companies are allowed to do business in China, like Amazon and Apple, but they are obliged to help enforce Chinese regulations that reduce Internet openness. Both companies, for example, have agreed to help China curb the use of virtual private networks (Rauhala, 2017[67]), and Amazon had to sell its own cloud infrastructure and start using only Chinese infrastructure instead (Russell, 2017[68]). Not having to compete at all, or at least not on an equal footing, with established foreign platforms has likely been an important factor in the rise of several Chinese platforms.

Online platforms also face protectionism in India, where foreign-owned or controlled e-commerce companies such as Amazon and Flipkart (which is 77% owned by US firm Walmart) were prohibited from selling their own products on their online marketplaces as of 1 February 2019 (Ministry of Commerce and Industry (India), 2019[69]). Instead, foreign platforms must serve only third-party sellers, but that restriction does not apply to Indian-owned platforms. Moreover, third-party sellers are no longer permitted to sell on foreign-owned or controlled online retail platforms if more than 25% of the seller's sales are carried out on that platform. In addition, sellers are prohibited from selling through an online platform if the platform, its parent or its subsidiaries have any ownership stake in the seller's business.

It is a challenge for OECD countries to address the imbalance created by protectionism without abandoning open market principles. Presently, Chinese platforms like Alibaba, Baidu, TikTok and WeChat, for example, are all permitted to operate and expand in OECD countries.

Impacts on labour, employment and associated policies

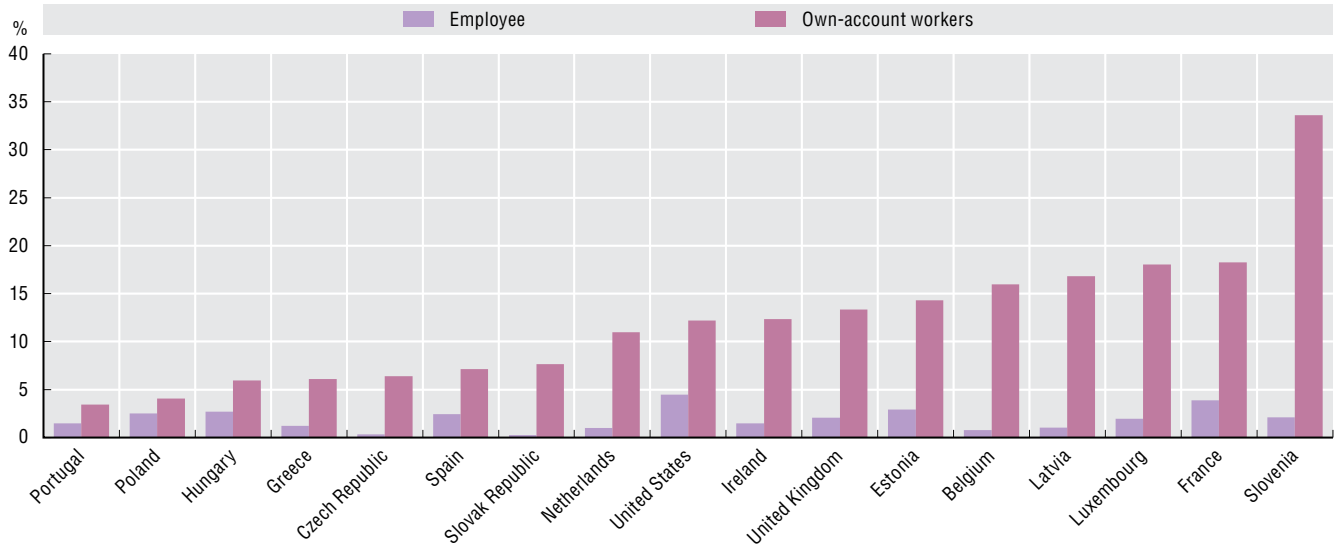
Online platforms that match workers and employers, whether for permanent positions (e.g. CareerBuilder.com, Monster.com,), outsourcing arrangements (e.g. Freelancer, Mechanical Turk, and Upwork,), or so-called "peer platform" opportunities (e.g. BlaBlaCar), have been transforming how, where, and when work is found and performed for a relatively small but growing number of people and businesses. Some of this work is delivered physically and often locally, such as accommodation, transportation and handyman services, while other types are delivered digitally and mostly over the Internet, such as data entry, graphic design, software coding and even legal consultations (OECD, 2016[70]).

For employers, these platforms can provide wider and more flexible access to talented workers, including those with specialised skills, as well as a faster hiring process, lower costs and potentially round-the-clock productivity. The platforms can also help employers to enhance performance, co-ordination, quality control, delivery, and to move payment of wages online.

For workers, job-matching platforms can make it easier for them to find openings that suit their interests, abilities and schedules. The platforms can also provide new opportunities to earn income, including in foreign job markets, in some cases regardless of where workers reside, provided they have an Internet connection. Opportunities facilitated by outsourcing and "peer" platforms afford greater flexibility for workers in terms of who can work on which types of jobs, in what locations and at which times (US Department of Commerce, Economics & Statistics Administration, 2016[71]). All of these factors, in turn, have the potential to move labour market supply and demand closer to equilibrium and thereby to ease unemployment and underemployment (European Commission, 2017[72]: 9) – including in disadvantaged areas.

On the other hand, along with these opportunities come certain risks for online workers, who may face greater career uncertainty and benefit from fewer protections (or lower awareness of them) than workers in traditional employment arrangements (European Commission, 2017[72]: 9). Online outsourcing and "gig" work does not always clearly fall under the purview of traditional employment laws, many of which are still premised on the model of a full-time, open-ended contract with a single employer. Therefore, in many countries outsourcing and gig workers (often called "own-account workers") cannot unionise, engage in collective bargaining or benefit from minimum wage regulations. That could explain why own-account workers are significantly more likely than traditional employees to earn less than the minimum wage (Figure 3.1).

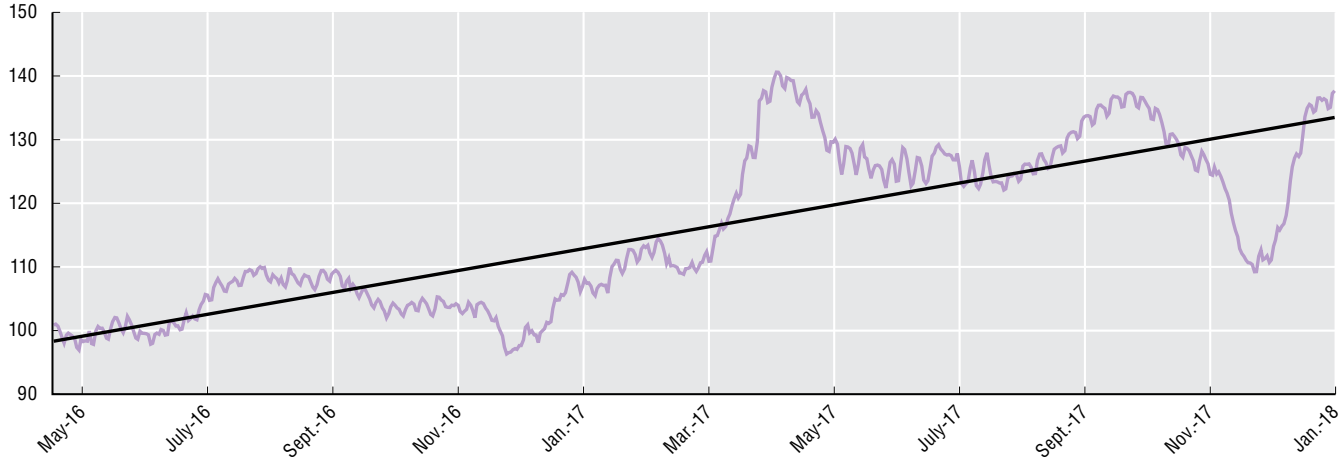
3.1. Proportion of workers earning below 75% of the minimum wage



Source: OECD estimates based on EU-SILC for EU countries and United States Census Bureau (2018[138]), *Current Population Survey: 2018 Annual Social and Economic (ASEC) Supplement*, *https://www2.census.gov/programs-surveys/cps/techdocs/cpsmar18.pdf* for the United States.

3.2. New vacancies listed on the top five English-language outsourcing platforms

28-day moving average, May 2016 = 100



Note: This figure was generated with data from the Online Labour Index (OLI), which crawls the largest English-language online labour platforms daily: Freelancer, Guru, Mechanical Turk, PeoplePerHour, and Upwork. Uber and Airbnb are excluded because the OLI requires not only that the worker and employer be matched digitally and the payment be conducted digitally via the platform, but that the work itself be delivered digitally.

Sources: OECD; Oxford Internet Institute (2019[139]), *Online Labour Index*, *http://ilabour.oii.ox.ac.uk/online-labour-index/*.

Nevertheless, more and more work is being digitally transacted through these platforms. A 2015 World Bank study projected that gross service revenue within the online outsourcing industry would grow from USD 4.8 billion in 2016 to between USD 15 billion and USD 25 billion by 2020 (World Bank, 2015[73]: 3) (see Figure 3.2, which depicts part of this trend). Because the figure is indexed, it may be helpful to have an indication of what some of the underlying data is. For example, by the end of 2016, Freelancer alone had registered a total of 10.2 million jobs posted with a value of USD 3 billion, since its inception in 2000 (Freelancer, 2017[74]).

Furthermore, a development in Denmark shows that there is at least some momentum for a new arrangement between platforms and gig workers that provides for the same kind of benefits as traditional work arrangements. Hilfr.dk, a platform that facilitates housekeeping work in private homes, has signed a collective agreement with 3F, a Danish trade union. The agreement will enter into force on 1 August 2018 and will guarantee people who work through the platform sick pay, annual leave, and a contribution to their pension (Hilfr, 2018[75]). For much more information on new forms of work emerging through online platforms, see the *OECD Digital Economy Outlook 2017* (OECD, 2017[76]: 228-231), as well as OECD (forthcoming[77]) which reviews the results of many initiatives undertaken since 2016 for estimating the number of platform-mediated workers and suggests future approaches.

The changing ways in which work is organised and firms are classified

Some online platforms are changing work arrangements, causing governments to review their labour and employment policies. They are confronting questions such as whether people who earn income from outsourcing and peer platforms should have the status of employees or self-employed entrepreneurs, or whether a new status should be created for online workers. Employment status matters because it affects the legal protections that workers are given with regard to health insurance, employment insurance, wage stability, paid annual leave, worker safety regulations, international labour rights and standards, and the rights to unionise and bargain, among other things. On the other hand, another consideration is what training, certifications and licenses the law should require of these workers.

Furthermore, how should so-called gig economy workers be taxed? Is income tax revenue currently less likely to be collected from work performed by people through online platforms than from offline work arrangements such as driving a traditional taxi, earning tips as a restaurant server, or from informal economic activities like babysitting? Or, on the contrary, is income tax on work via online platforms *more* likely to be paid (or at least potentially more likely to be paid), thanks to the digital trail left behind and the willingness of platforms to report transactions to tax authorities? Is the money received by individuals from their ride or home-sharing activities taxable, or is it – as some have argued – just the recovery of costs, which does not count as taxable income?

Job gains and losses

The profiles show that even among our limited sample, online platforms have created hundreds of thousands of jobs even when counting only the people who work directly for them. The platforms have far-reaching effects on employment across the entire value chain, in both online firms and traditional businesses. For example, one recent study found that in the United States alone, app economy employment totalled 1.729 million as of December 2016 (Mandel, 2017[78]). That is nearly quadruple the number of app economy jobs that existed in the United States five years earlier. Other OECD countries experience job gains from the app economy, as well, though not always to such a large extent. For instance, according to Orange Group (House of Lords, European Union Committee, 2015[79]), approximately 10 000 jobs were created in France between 2005 and 2010 because of the development of mobile apps sold on online platforms.

However, online platforms also cause job losses. They are transforming some major industries (transportation, publishing, advertising and hotels, to name a handful) and like all disruptive innovators, they are displacing some workers. Governments face the challenge of retraining newly unemployed workers while fostering conditions that generate new jobs for them. The OECD's Future of Work initiative is studying how digitalisation, among other factors, is affecting job quantity and quality, as well as labour market inclusiveness, and what the implications are for labour market, skills and social policies (OECD, 2018[80]).

Social impacts

Staying in touch

Some online platforms bring families and friends closer together, despite geographic separation, with features such as social media posting, instant messaging and video chat, and new options periodically emerging at no cost to users. Friends and families who use these platforms are therefore better able to stay in touch, and to do so less expensively, than they otherwise could.

However, such services are not costless to develop and maintain. To keep them running, and to profit from them, providers may use the personal information that users put onto the platforms to profile them. That can help the platforms to offer more effective advertising services, for example. They might also cross-subsidise free services with revenues from other services.

Furthermore, in some parts of the world, populations have become heavily reliant on certain free platform communications services. While this reliance is indicative of the benefit these services bring, the consequences of that reliance deserve continued study.

Moreover, just as platform communication services can be used for good causes, they can also be used for harmful ones. Terrorists and hate groups, for instance, can use these services as easily and inexpensively as families can.

Human health, including child health and safety

Certain online platforms can play a role in improving health outcomes. For example, data culled from Internet searches have been used to track the spread of diseases such as the flu, the Zika virus and Ebola. Dengue fever is a quickly spreading and potentially fatal disease that infects about 390 million people every year. A team of researchers looking for a better way to track the disease theorised that Google searches within an area would correlate positively with the number of people there who were affected by dengue. Using government-provided clinical data, in four out of five tests the team's Google search-based method turned out to be more accurate than all five of the other tracking methods they studied (Howden, 2017[81]). Another example is Facebook's work with UNICEF, in which the platform provided information about trends in the public's conversations about the Zika virus in Brazil. This helped UNICEF to develop an outreach strategy.

Furthermore, communications carried out through messaging and social media platforms are not only valuable tools for daily life, but also in emergency situations such as natural disasters, where they can be used to co-ordinate relief efforts and provide updates to citizens. For instance, data from social media posts can be used in combination with artificial intelligence (AI) to help humanitarian organisations map populations in need and determine what resources to send during natural disasters. That information can be difficult and sometimes impossible to obtain in a timely manner with conventional data collection methods. However, as the number of people using platforms has grown, it has become possible to use their data to provide near real-time information that enables disaster relief organisations to be more effective. Facebook provides this type of service with Facebook Disaster Maps (Facebook, 2017[82]). It has also implemented a Safety Check service that allows users affected by a disaster or dangerous event to use the Facebook platform's global reach to update their friends and family about their safety.

Nevertheless, commentators have also raised concerns about the direct impact that online platform usage has on human health, particularly that of children who spend a lot of time on social media. Addiction, sleep loss, online bullying, promotion of self-harm and insecurities about body image have all been identified as risks (Frith, 2017[83]: 6). Surveys have shown that some social media platforms do seem to have a steady pull for many users. For example, about 75% of Facebook users in the United States visit the site (or app) at least once per day (Pew Research Center, 2018[84]).

There is a tension between the fact that attracting users' attention is central to many platforms' business models in the so-called attention economy and that some of the concerns about undesirable health and social impacts are related to an increase in the amount of time people spend online. Some platforms have

addressed those concerns by taking specific actions. For example, Facebook has begun to take steps to address addiction. For example, in 2018 it started to roll out new tools designed to help people better manage their time on Facebook and Instagram. There is an activity dashboard that shows users how much time per day and week they spend on the platforms, as well as a way to set a daily reminder not to exceed a certain amount of time. The positive health impacts, especially for children, will need to be assessed over time.

Another societal concern that certain platforms have heightened is human trafficking and child prostitution. Tragically, such problems are not new. They are also not unique to online platforms. Some platforms are, however, capable of exacerbating these problems due to the same features (mainly network effects and lower transaction costs) that help to make online platforms instruments for positive purposes. In other words, online classified ad platforms can be as efficient for marketing trafficked human beings, including children, as they can for marketing books or music – if applicable laws and platform operators allow such uses.

For example, the classified ads platform Backpage.com reportedly earned USD 135 million in 2014 and was worth an estimated USD 600 million as of early 2015 (Ruelas and Cassidy, 2018[85]). But Backpage attracted the suspicion of both law enforcement and the US Congress. The Senate issued a report (United States Senate Permanent Subcommittee on Investigations, 2017[86]) stating that Backpage had altered ads on its site to eliminate evidence of human trafficking. Meanwhile, the National Center for Missing and Exploited Children found that almost 75% of the public reports it received on child trafficking implicated Backpage (Dias, 2018[87]). Furthermore, federal prosecutors have stated that the site earned more than USD 500 million in prostitution-related revenue since 2004 (United States of America, 2018[88]).

A variety of plaintiffs, including alleged victims, filed lawsuits against Backpage in the United States, contending that children were being advertised for prostitution on Backpage.com. The company won every case because the Communications and Decency Act (CDA) (United States, 1996[89]) shielded online intermediaries from liability for content posted on them by third parties. However, on the day that a US Senate subcommittee held a hearing about Backpage's possibly active involvement in the use of its platform to advertise children for prostitution, Backpage shut down its adult ads section and its executives refused to answer any questions (Ruelas and Cassidy, 2018[85]). Subsequently, the United States enacted the Stop Enabling Sex Traffickers Act (SESTA) and the Allow States and Victims to Fight Online Sex Trafficking Act (FOSTA). Those laws give prosecutors stronger tools to bring charges against sex trafficking sites and suspend the CDA's liability protections for them. SESTA and FOSTA have caused some controversy, though. Groups such as the Electronic Frontier Foundation contend that the laws will do nothing to stop sex traffickers, but will force online platforms to restrict user content more forcefully, which will silence legitimate voices (Heater, 2018[90]). That leads to issues about content filtering (discussed further below).

The European Commission has been equally concerned about the proliferation of illegal content online and in particular about the ease with which terrorist organisations can exploit platform services to promote messages inciting terrorist acts. The Commission has issued a policy Communication as well as a legal Recommendation to platforms and EU member states covering, among other things, Notice-and-Action procedures and transparency provisions to help fight illegal content without modifying the platforms' liability exemptions (European Commission, 2017[91]; European Commission, 2018[92]). More recently, the Commission also issued a proposal for a *Regulation on the Removal of Terrorist Content Online* (European Commission, 2018[93]) to ensure the effective and speedy removal of terrorist material from platforms. That proposal has raised concerns, however, among some human rights experts who find that its definition of terrorist content is overly broad and could encompass legitimate forms of expression (United Nations Office of the High Commissioner on Human Rights, 2018[94]; Joint Letter from Civil Society Representatives to Members of the European Parliament, 2019[95]).

Knowledge, social polarisation and democracy

Information and misinformation

Online platforms bring a world of information to individual users, allowing them to access more knowledge and literature than a physical library could possibly hold, and to do so instantaneously, with the ability to search comprehensively for precisely what one wants without even having to leave one's desk. They also make it easy to share that information with others, discuss it, and engage in debates about it.

Beyond helping people find and access information, online platforms also help to educate people. Whether through actual education services like Khan Academy and established universities, which reach millions of students through YouTube, how-to videos, or live online seminars, people are learning because of online platforms. In some cases, particularly in the developing world, online platforms may present the best educational opportunities available. Improving education and knowledge diffusion is not only good for individuals; it is good for societies.

On the other hand, misinformation has proliferated on some kinds of online platforms (mainly social media and search advertising platforms). Private individuals and groups as well as governments have used, and continue to use, online platforms to propagate falsehoods and propaganda for diverse aims, including dividing societies, influencing elections, securing economic gains and recruiting intelligence sources (Tatlow, 2018[96]; Martin, 2018[97]; Shear and Wines, 2018[98]). That has raised concerns about harmful effects on knowledge, reason and democracy, and has consequently attracted policy makers' attention. The European Commission, for example, recently released a survey (2018[99]) and an expert report (2018[100]) about fake news and disinformation online. Executives from some companies that operate online platforms have appeared before legislators to testify about misinformation and what the platforms are doing to combat it (Shaban, Timberg and Dwoskin, 2017[101]).

Misinformation appears to have negatively affected trust in the veracity of content found on some types of online platforms. The European Commission survey (2018[99]), for example, finds that only 26% of users trust social networks and messaging apps, whereas a much higher percentage trust traditional media (radio: 70%, television: 66%, newspapers: 63%).

Falsehoods are clearly not new. What is new, however, is the ability to misuse certain kinds of online platforms, with their scale and speed, along with the growing capabilities of AI and big data analytics, to propagate, tailor and aim misinformation so that it influences opinions and outcomes faster and more effectively. A threshold challenge is how to study that misuse rigorously.

More specific research questions include: How prevalent is misinformation online? How much of a difference has it made to various kinds of outcomes (economic, social, etc.)? Can misinformation be deterred or neutralised without trampling on the freedom of expression, and if so, how? Furthermore, who should be responsible for combating misinformation: governments, platforms, individual citizens, or everyone? When it is discovered, who should be accountable: the parties who post it, the platforms themselves, or both? Finally, with so many different legal regimes being potentially relevant (e.g. media law, competition law, consumer protection law, privacy law, electoral law, freedom of expression), how can governments be sure to assign responsibility in a coherent fashion in every case?

Answers to these questions require a better understanding of online disinformation. As online disinformation is a cross-border issue, the European Commission is trying to meet this challenge by facilitating the co-operation of different stakeholders who are already trying to tackle it. The Commission believes that one way forward could be to create an international multidisciplinary community, including fact-checking organisations and academic researchers equipped with the necessary tools and access to online platforms data, and capable of detecting and analysing disinformation campaigns.

For their part, the large social media and Internet search advertising platform companies are aware of the need to address misinformation online and have begun to act by improving trust and verification. On the search advertising side, see, for instance, Google's News Lab and CrossCheck projects (Google, n.d.[140]; 2019[141]).

As a result of the work of a multi-stakeholder forum on disinformation composed of industrial and civil society stakeholders and facilitated by the European Commission, some online platform companies (Facebook, Google, Twitter) have signed the Code of Practice on Disinformation. In doing so, they have committed to a wide range of actions, from transparency in political advertising to the closure of fake accounts and demonetisation of purveyors of disinformation.

Among social media platforms, Facebook has taken a number of other actions, as well, such as removing 30 000 fake profiles in France that were being used to spread misinformation during the 2017 presidential campaign. In August 2018, Facebook identified and suspended 652 fraudulent accounts, Pages and groups, while Twitter suspended 284 accounts, that originated in or had ties to Iran and Russia. The accounts, Pages and groups were spreading misinformation in the United States, the United Kingdom,

Latin America and the Middle East in a co-ordinated fashion (Frankel and Fandos, 2018[102]). One of the fake Facebook Pages had attracted nearly 140 000 followers who thought they were working together to fight racism. Facebook is also attacking the economic incentives for misinformation by taking down content that is posted only for the purpose of driving traffic to an external site that makes money from clicks but does not contain truthful information ("clickbait" sites). Moreover, it is trying to remedy misinformation with more information, such as with its Related Articles feature, which appears every time a user sees a hotly debated story in his or her news feed. It places a series of headlines from other sources on the same subject just below such stories.

It remains to be seen, however, whether such efforts can put a stop to, or even put a significant dent in, misinformation campaigns. Suspended accounts can pop up again under new names. Users will not necessarily choose to read multiple articles about the same subject. Worse still, seeing that an article is considered sufficiently contentious to warrant the Related Articles feature might make users more likely to read the misinforming article.

Confirmation bias, content bubbles and societal polarisation

When confirmation bias (the human tendency to look for information that is consistent with one's existing beliefs and/or to interpret it in a manner that is consistent with those beliefs) combines with the algorithmic curating and customising that some platforms use to serve content and ads to users, one result can be that users begin to live in "content bubbles". Seeing only content that comports with their prior tastes and viewpoints can eventually cause users' opinions to harden, especially if their main sources of information are algorithmically tailored. Such sources may not be providing them with the full spectrum of even mainstream news and opinion. This can affect perceptions of truthfulness in the media, make people less knowledgeable even as they consider themselves to be more so, entrench their biases, and make them more intolerant towards others who do not occupy the same bubble. In brief, it is possible that confirmation bias along with the customisation and curation of information by some online platforms narrows views of the world and reduces the flux of diverse information and opinion on which healthy democracies rely. That is to say, polarisation could be transforming the Internet from an open marketplace of ideas into a collection of sealed echo chambers.

How, exactly, could this happen? At the outset, it must be emphasised that there need not be any political bias on the part of platforms for users to experience an echo chamber effect that decreases the diversity of information and viewpoints that they see. Instead, that effect can be a by-product of the platforms' profit incentive and the "clicks are cash" business model. In other words, social media platforms have an incentive to maximise their profit by maximising the amount of time people spend using their service and, in particular, maximising the number of users' clicks. Due to confirmation bias, users are more likely to click on links that lead to content expressing views with which they agree. The algorithms therefore can show users more of the content that aligns with their existing views and less of the content that does not. As a result, users could experience less diversity of news content, which could increase the spread of fake news and erode trust in mainstream media. It could also contribute to the divergence of society towards opposing viewpoints, favour biased media while weakening more objective media, and ultimately could undermine democracy – all as a consequence of business models and human nature rather than any deliberate plan to bring about certain political outcomes (Choi, 2017[103]). In short, path-dependent algorithms could lead to path-dependent citizens and split societies into biased groups rather than giving them neutral access to information and an open marketplace of ideas.

Furthermore, algorithms may prioritise posts and stories that have provoked strong reactions (either negative or positive) because people are more likely to click on them (Berners-Lee, 2017[104]), while deemphasising more staid and objective mainstream media. This, too, may contribute to polarisation and the spread of misinformation, with attendant effects on sensationalist versus objective media. Once again, it is unnecessary for the platform to have a political bias for this to happen. It is due to the business model.

Moreover, it is the case that social media feeds have become an important source of information for many people. In 2016, the Reuters Institute for the Study of Journalism and the University of Oxford conducted a survey of roughly 50 000 people across 26 countries and found that social media had overtaken television among 18-24 year-olds as their main source of news (Newman et al., 2016[105]).

Overall, the report found that more than half of people with Internet access use social media as a source of news. Also in 2016, a study by the Pew Research Center found that 62% of US adults get their news from social media (Gottfried, 2016[106]). To be sure, not every OECD country's population shares all of these habits. For example, approximately 50% of Germans get some of their news from Facebook, but only 6% say it is their main source of news (Isaac, 2017[107]). Nevertheless, it matters that some kinds of online platforms have their own reasons for wanting people to see certain types of content more than others, and that platforms have the means to put their preferences into action by tailoring content feeds at the level of individual users.

An exacerbating factor is that some groups, including governments, have begun to exploit the polarisation effect by intentionally deepening it with misinformation. For example, after the 2016 US presidential election, Facebook disclosed that foreign entities had used the platform to disseminate and amplify divisive content to voters concerning contentious topics such as race, gun control and the environment (Frankel and Fandos, 2018[102]).

A subtler problem comes into view when one takes into account the ongoing digital transformation of the journalism industry along with the size of the audience that gets its news from social media platforms: journalism has become increasingly dependent on the platforms. To generate income, they need web traffic, and to get that traffic, the news media must become adept at the new media through which so many more readers are now accessing their content. Consequently, the approach and values of biased and sensationalist sources could spread to traditional media.

It must be stressed that the algorithms are not solely responsible for such results, though. User behaviours and interests inform the algorithms. Thus, individuals can help to address the spread of false information, too.

Democracy

Certain kinds of platforms, particularly social media, have made headlines because of their high profile impact on democracy. The benefits include potentially more transparent governments whose citizens are better informed and more actively engaged in the policy-making process. Platforms can also help civically minded citizens to organise themselves, keep each other informed, and to co-ordinate public demonstrations to advance their causes. In addition, it is now commonplace for politicians and government agencies to maintain profiles on social media platforms as a means of reaching out to and interacting with constituents. These effects should strengthen democracies.

Furthermore, specialised platforms exist in several countries for the purpose of strengthening civic engagement. In France, the Parlement & Citoyens platform (Parlement & Citoyens, 2018[108]), which is operated by a non-partisan association, gives the public opportunities to contribute to the policy-making process. Representatives post a policy problem and then citizens contribute information about the causes and propose solutions. The citizens' input is assembled, discussed and incorporated into draft legislation. In Brazil, there is Promise Tracker (Promise Tracker, 2018[109]), a citizen-monitoring platform created by civil society organisations in partnership with the Massachusetts Institute of Technology Media Lab. It enables communities to track policy outcomes by using smartphone cameras and reporting data back through the platform. These and other platforms are making it possible for governing to become more of a collaborative process with citizens, rather than something that is done to them. As a result, policy making can capitalise on citizens' diverse knowledge and experience so that laws are based on a deeper and more empirical understanding of real-world conditions.

Returning to general social media platforms, they can also provide a more vibrant and interactive market for ideas and opinions than was possible in previous ages, when information overwhelmingly flowed in only one direction, e.g. from the mass media to individuals. Indeed, one of the central benefits of certain kinds of online platforms is that they have essentially created new public spaces where anyone with an Internet connection can participate. Online platforms therefore are giving a voice to those who previously had none (House of Lords, European Union Committee, 2015[110]). These spaces, incidentally, have not only enabled new opportunities to speak one's mind, but also to do many other speech-related things like campaign for public office.

Consequently, just as certain types of platforms open up opportunities for SMEs to participate in markets they never could have reached in earlier times, certain types of online platforms can give citizens more and better opportunities to participate in civic life. The platforms may not only facilitate access to information and increase the transparency of governments and politicians, but some also offer the potential for many individuals to express their views to a much wider audience than was previously possible. That may be particularly true with respect to young people and those who seek information from across borders (European Commission, 2016[56]).

On the other hand, although the Internet could be a mostly democratising force as new forms of civic engagement blossom (e.g. crowdfunded electoral campaigns [Nichols, 2015[111]], social media communities dedicated to advancing specific causes), it has not always turned out that way. Algorithms that inadvertently polarise societies, combined with deliberate misinformation campaigns carried out online by bad actors (Grillo, 2018[112]; Shane, 2017[113]), can divide citizens (Fandos and Shane, 2017[114]) and undermine their trust in the media, society's governing institutions, and electoral processes (Edelman, 2018[115]). That weakens democracies.

Another consideration is the use – and not necessarily with the knowledge and permission of users – of personal data obtained by social media platforms, in combination with big data analytics and artificial intelligence, to devise tailored advertisements that may influence their votes. This topic gained prominence in March and April 2018 when it was revealed that the analytics firm Cambridge Analytica had harvested the private profile data of up to 87 million Facebook users and used it to develop techniques for influencing the outcomes of the 2016 presidential election in the United States and the Brexit referendum in the United Kingdom. Although the degree to which those techniques actually affected electoral results is not known, the revelations prompted lawmakers in the United States, the United Kingdom and the European Union to call for investigations (Dwoskin and Romm, 2018[116]; Volz and Vengattil, 2018[117]; Kang and Frankel, 2018[118]). The lawmakers have concerns that go beyond protecting the integrity of elections, such as protecting privacy while ensuring that freedom of expression is not chilled.

Big data analytics is not the only technology that can be deployed to undermine democracy through online platforms. A recent report from the French government explains that techniques for altering photographs, audio and video are becoming so sophisticated that they will soon be nearly undetectable. That will facilitate misinformation campaigns that lead to chaos and could weaken or destabilise democratic debate (CAPS and IRSEM, 2018[119]). The report acknowledges that "[t]he manipulation of information is as old as the world", but emphasises that "what is changing is the advent of new technologies, which gives it a new magnitude".

Another concern is that the new public spaces created by social media platforms are different from the traditional town square in that they are privately owned, and the private rules in effect in these environments may differ from the national laws that apply to public physical spaces. That may lead governments to pressure the platforms not only to conform their terms of service to the national laws, but to undertake to interpret and enforce those laws (see Subsection "Filtering to comply with legal requirements") in these online spaces. That can create headaches for large and small platforms alike. The large ones may be expected to monitor what hundreds of millions or even billions of their users around the world are expressing and to make decisions about whether their speech violates a law. They are also expected to sort out which law to apply when the laws differ from jurisdiction to jurisdiction and it is not clear which one governs a particular situation (OECD, 2016[120]: 70-71). The smaller ones, typically with proportionally smaller resources, may nevertheless be expected to come up with an equally fast and effective system for detecting and removing illegal speech, and they face the jurisdictional challenge, too.

Responsibility issues

Platforms' responsibility for user behaviour in general

An overarching challenge is how to define the contours of online platforms' responsibility for their users' behaviour. In the era of the E-Commerce Directive (European Commission, 2000[22]), the Communications Decency Act (United States, 1996[89]), and *Reno v. ACLU* (United States Supreme Court, 1997[121]), which

struck down the Act's anti-indecency provisions, many countries adopted an approach that seems relatively lenient in today's context. Internet intermediaries were sheltered from liability for the content their users posted. In the European Union, though, this shelter has always been conditional upon the platforms taking action once they obtain knowledge of any illegal activity on their service.

The Communiqué attached to the OECD's 2011 *Recommendation of the Council on Principles for Internet Policy Making* (OECD[122]) took a pragmatic approach by noting that appropriate limitations of liability for Internet intermediaries play a fundamental role in promoting innovation and creativity, the free flow of information, incentives for co-operation among stakeholders and economic growth. It also stated that Internet intermediaries, like other stakeholders, play an important role in addressing and deterring illegal activity, fraud, and misleading and unfair practices conducted via their networks and services; and that proportionality and compliance with the protection of all relevant fundamental rights are important in this regard.

Recent developments suggest that more responsibility will be placed on online platforms in some jurisdictions. For example, the United Kingdom's prime minister has urged social media platforms to take extremist material down within two hours of its posting. Furthermore, the European Commission has proposed in its *Communication on Online Platforms* (European Commission, 2016[56]) an approach that reflects a move to complement the horizontal and less procedurally prescriptive regulatory framework of the E-Commerce Directive with a more problem-driven approach (e.g. specific responsibilities in particular subject areas like intellectual property, combating terrorism, etc.) (European Commission, 2018[123]). In the United States, some prominent social media companies have complied with Congressional requests for testimony and information on issues including how third parties have been able to obtain users' private information without their knowledge or permission and how foreign governments may have used online platforms to influence elections, as well as on what the platform operators are doing about it.

It cannot be denied that today's digital environment has important differences compared with 15 to 20 years ago. For instance, platforms are now more integrated in peoples' lives. Users are spending more time on them and, for many people, platforms have not only become the first place they look when shopping (Soper, 2016[124]), but as mentioned earlier, their primary source of news (Gottfried, 2016[106]; Newman et al., 2016[105]). Furthermore, exempting online platforms from liability based on what users do was rational when the commercial Internet first started to grow and when lawsuits could have destroyed fledgling digital enterprises. Today, though, it is an understatement to say that the leading platforms are more resilient than the Internet start-ups of the 1990s. On the other hand, imposing stricter liability rules on all online platforms could have a disproportionate effect on new ones, including potential competitors of the market leaders.

In any event, much has changed for online platforms in the past two decades. That places some old policy challenges in a new light while bringing new ones to the fore.

Filtering to comply with legal requirements

To what extent should online platforms be obligated to monitor and, where necessary, remove or block user content that does not conform to legal requirements? Although general obligations for platforms to monitor themselves for illegal content are prohibited in many jurisdictions, this question has grown beyond the familiar issues of combating hate speech, child pornography, terrorism, intellectual property infringement and the sale of dangerous products. It now encompasses challenges such as misinformation, fake profiles and social bots (tools that can be used on social media to promote certain points of view).

As the scope of the challenge grows, underlying questions about the prudent extent of platform's decision-making responsibility for filtering grow in importance, too. In particular, is it a good idea for governments to outsource control over such decisions? If so, how much control should the platforms have? Do those private commercial entities have enough guidance from governments to enable compliance with filtering requirements without pre-empting legitimate freedom of expression?

Germany, for example, recently passed the Network Enforcement Act, which introduces various compliance obligations for social networks with regard to unlawful content. Among other things, the law requires social networks to take down or block manifestly illegal fake news, hate crime and certain other unlawful content within 24 hours of receiving a complaint. Systemic and culpable failures in dealing with complaints can result in fines of up to EUR 50 million. But the law has already engendered controversy amid claims that it is stifling free speech (Kaye, 2017[125]).

The European Council has gone farther than Germany, though, stating that it "expects industry to develop new technology and tools to improve the *automatic detection and removal* of content that incites to terrorist acts. This should be complemented by the relevant legislative measures at EU level" (European Council, 2017[126]) (emphasis added). Recent statements issued by the Group of Seven (G7) and Group of Twenty (G20) leadership agree in this respect with that of the European Council (G7, 2017[127]) (G20, 2017[128]). Is there any practical alternative to relying on the platforms to perform these functions and decide which content is permitted and which is not?

One path forward is to ensure that the platforms responsible for carrying out filtering responsibilities have as much clarity as possible about what governments expect of them. At the EU level, for example, the European Commission introduced guidance in 2017 on measures for preventing, detecting and removing illegal content that incites hatred, violence and terrorism online (European Commission, 2017[129]).

A way to begin to approach questions about the contours of responsibility for filtering user content is to decide whether we are talking about private control of public space or public control of private space. Are forums like Baijiahao, Haokan Videos, Twitter and YouTube still truly private spaces? Or have they become so large and vital that they are the modern day town square? (See the US Supreme Court [2017[130]] decision *Packingham v. North Carolina*, stating that social media platforms such as Facebook, LinkedIn and Twitter were "integral to the fabric of our modern society and culture" and were "the most important" modern forum for exchanging views.)

Filtering to comply with private standards

Some online platforms also filter content in accordance with their own standards. Facebook, for example, has rules about what can and cannot be posted (Facebook, 2017[131]). Some of the rules simply internalise legal requirements, though.

Other rules reflect that these businesses have an incentive to create communities to which users want to return, which means they want ground rules that help to ensure a positive user experience. This raises the question of whose values should be followed on social media platforms. Is it right for people to have to adhere to a private company's standards of free expression to be heard? Companies are not expected to be democracies. Yet they have appreciable control over forums that have become increasingly important for freedom of expression to exist and flourish. This raises important questions about the legitimate division of responsibilities between states and private platforms, as well as questions of transparency and accountability of the filtering arrangements and effective rights to contest erroneous decisions or filtering strategies.

Responsibility for third-party apps

Some app stores provide a benefit to users by checking the apps to make sure they meet certain standards, such as that they are not malware and are compatible with the applicable operating system. But should app stores be legally required to guarantee that the apps they distribute adhere to certain standards for compatibility, digital security and privacy?

For example, a study (Reyes et al., 2018[132]) of nearly 6 000 of the most popular free Android apps targeted at kids and families found that thousands of them may be in violation of the United States' Children's Online Privacy Protection Act. But who should be responsible if there are, in fact, violations? Google, the app developers, or both? Where an app violates the European Union's GDPR, the GDPR holds the app developer responsible, but it will also hold the app store responsible if it has knowledge that the app violates the GDPR (European Commission, 2016[24]).

Incidentally, the OECD has a 2012 Recommendation on the Protection of Children Online (OECD[133]), but the Working Party on Security and Privacy in the Digital Economy has concluded that the risk typology changed significantly since 2012. It therefore held an expert workshop in October 2018 to review developments and explore the need to update the Recommendation.

Artificial intelligence and transparency

Online platforms use AI to analyse data for many purposes, including curating content feeds, ranking search results, matching advertisements to users, and setting prices of various products and services. Correspondingly, there are diverse policy concerns related to the transparency of these AI systems. Among those concerns are the possibility of unfair or unlawful discrimination in access to credit, employment and insurance, anti-competitive manipulation of search results, automated price collusion, the propagation of misinformation, increasing societal polarisation, restrictions on freedom of expression, declining media diversity, and damage to democracy. In light of those concerns, there are calls to increase the transparency and accountability of AI systems.

This is one subject of ongoing work undertaken by CDEP (see OECD, forthcoming[134]). The essential idea of AI transparency is that AI outcomes should be explainable to people. However, tracing and understanding the decision-making mechanisms of AI algorithms that use advanced machine-learning techniques becomes increasingly difficult as their complexity grows, even to those who design and train them, and may come at a cost to performance or efficiency. AI transparency usually focuses on processes that allow people to understand how an AI system was developed, trained and deployed. It may also include insight into the factors that affect a specific AI prediction. The goal is to increase understanding of what factors contribute to AI decision-making. Transparency, however, should not usually include sharing specific code or data because in many cases the systems are too complex for such data to provide meaningful transparency. Such sharing also risks revealing trade secrets or disclosing sensitive user data.

In a future project, it might be worthwhile to consider policy ideas for addressing the societal challenges that news and social media algorithms present. One would have to consider that algorithmic transparency is a sensitive subject in light of the intellectual property rights (IPRs) that are vital to platform companies' livelihoods. Those IPRs are carefully balanced against societal needs and benefits so as to preserve incentives to invest in developing and improving the platforms.

But among the topics that could be discussed are the merits of "hard" versus "soft" policy responses. A hard approach might require news, search and social media feeds to be strictly neutral, which is to say there would be no curation tailored to individual users' views or online habits, and no bias towards sensationalism. For example, social media feeds might have to be strictly chronological. A soft approach might simply require platforms to offer users the choice of a curated feed versus a chronological feed (as Facebook already does, for instance, though the default is set to a curated feed).

Notes

1. See, for example, the Google Account dashboard (Google, n.d.[142]) and the information the company provides to users on how their data is used (Google, n.d.[143]); Facebook's Ad Principles (Facebook, 2017[144]) provide some information on the company's policies on advertising and user data.
2. Note that the SSNIP test framework has been used to consider price increases on multiple sides, though. An early example is (Emch and Thompson, 2006[135]).
3. The Commission also committed to explore other avenues, including dispute resolution, fair practices criteria and transparency.
4. The proposed regulation introduces internal mechanisms for resolving conflicts between platforms and business users and enables entities (entitled for this purpose in member states) to bring collective actions against platforms in case of non-compliance with the regulation's provisions. The proposed regulation also obligates member states to include enforcement measures in their national legislation, including proportionate penalties. The proposed regulation identifies a number of practices and dysfunctions that do not seem to have been solved via self-regulation or the spread of good practices.
5. Some commentators favour the word "disinformation" over "misinformation". The difference between the two words is small. According to Oxford Dictionaries (n.d.[136]), "misinformation" means "*false or inaccurate information, especially that which is deliberately intended to deceive*" while "disinformation" means "*false information which is intended to mislead, especially propaganda issued by a government organization to a rival power or the media*". As "disinformation" focuses on false information spread by governments, though, we have opted for the broader term "misinformation".

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Chapter 4

ONLINE PLATFORM TYPOLOGIES

Summary

The company profiles in Annex A facilitated the development of a number of typologies for online platforms. These typologies could eventually be used to match the impacts in Chapter 3 with the categories of platforms to which they are relevant, which would facilitate more focused discussions and policy making concerning online platforms. Many different typologies of online platform are possible, and several are presented here. Although they were developed primarily on the basis of the 12 company profiles, they can be used to categorise all online platforms.

There is no ideal, one-size-fits-all approach because different typologies are suitable for different purposes. The most intuitive approach is a functional one that does the sorting based on what platforms do or how they do it. This group can be further divided into broad and narrow functional typologies. Then there are typologies based on the users that platforms have, the kinds of data they collect, what they do with the data once they have it, and what the source of the revenue is. It can be useful in some situations to apply several typologies at once, so as to arrive at a finer compartmentalisation.

Choosing a suitable typology

The discussion in this chapter's subsequent sections will show that there simply is not one superior, one-size-fits-all way to categorise online platforms. It is necessary to use the variety of configurations at our disposal, as well as policy expertise and some creativity, to make a selection, fine-tune it, or develop new typologies in any given situation because different policy contexts call for different sorting methodologies.

The most sensible first step is to start with the policy issue that is of interest and let it guide the selection, adaptation, or creation of the typology that is most helpful for sorting out the kinds of platforms that are relevant to that issue. For example, suppose our policy concern is what online platforms are doing to stop the spread of terrorist propaganda. Do we want to focus on home-sharing platforms? Transportation platforms? Outsourcing platforms? Probably not. So we could start by using a somewhat broad functional typology to narrow down the possibilities. Platforms that could be used to disseminate terrorist content include, for example, social media, search advertising, consumer-to-consumer (C2C) and messaging.

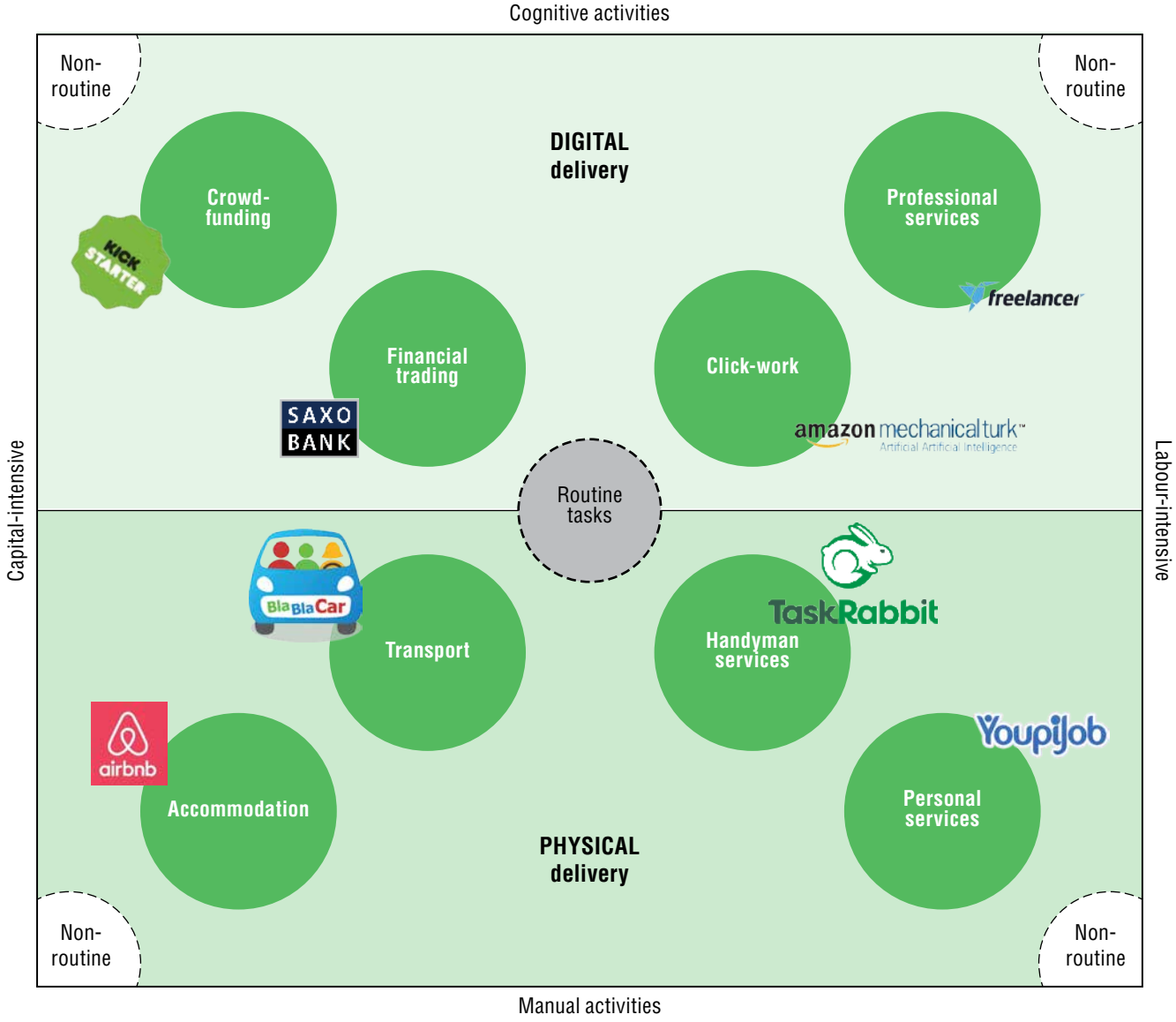
Then, a narrower functional typology could be used to eliminate certain sub-categories of platforms within those broader groups. For instance, price comparison sites and specialty search engines that cater to physicians would seem unlikely to point users towards terrorist content, so platforms falling into those categories could be eliminated, and so on.

A more complex example is the approach used in the OECD report "New forms of work in the digital economy" (2016[1]) to sort out online platforms from the perspective of policy making in the employment and labour area (Figure 4.1).

That approach simultaneously uses six criteria to categorise platforms: functionality (the descriptors in the blue circles), the medium of work delivery (physical versus digital), whether the work is routine or not, whether the work is manual or cognitive, and whether the work is labour or capital intensive. The sixth criterion is more subtle because it is not overtly identified. It is a broader version of functionality and was responsible for the limitation of the universe of online platforms to just the types that are represented by the blue circles: platforms that facilitate the delivery of a (usually paid) service.

The use of so many sorting mechanisms at the same time enables a tight compartmentalisation of online platforms, giving policy makers a more accurate and detailed view of the platforms' traits, similarities and differences. This demonstrates that even broad typological approaches, such as those set out in the first subsection of "Functional typologies", can be effective at classifying platforms when they are used in conjunction with other approaches.

4.1. A hybrid typology suitable for policy makers interested in jobs



Note: The original figure has been modified by the addition of company logos, which indicate examples of platforms that would belong in each category.
Source: OECD (2016[1]), "New forms of work in the digital economy", *http://dx.doi.org/10.1787/5jlwnklt820x-en*.

Functional typologies

The most obvious way to construct a typology is on a functional basis. That is to say, the platforms can be sorted based on categories that describe what the platforms do or how they do it. This approach could involve either a small number of broad categories or a large number of narrow categories.

Broad functional typologies can be useful in conjunction with other approaches, though they are not very helpful on their own

An example of a broad approach would be to divide platforms into "capital platforms" (those such as Airbnb that rely on matching capital owners with buyers or renters) and "labour platforms" (those such as Freelancer and Mechanical Turk that match workers with hirers) (JP Morgan Chase, 2016[2]). BlaBlaCar would be a hybrid in such a typology because it matches drivers *and* cars with passengers.

In any case, that broad, simple dichotomy would leave huge gaps if it were used by itself, with no obvious place for platforms such as social media and messaging. However, it could be helpful if used together with other typologies.

Another broad approach divides platforms into these two categories:

- **Matchmaking platforms**, which serve as intermediaries between two groups that are looking for each other for commercial, romantic or other reasons, providing them with easy ways to search, communicate, reserve, buy or pay. Examples include marketplace sites such as Leboncoin and eBay, and platforms that match providers and seekers of temporary accommodations (e.g. Airbnb), employers and freelance workers (Freelancer), and people looking for romantic partners (Match.com, Jiayuan.com).
- **Advertising platforms**, which offer content (such as news, videos, music and user-generated content), Internet search advertising, or other services (e.g. reviews and recommendations) to consumers while providing advertising solutions to companies. Examples include Google Search, iQIYI, Spotify (free version), Yelp and YouTube.

However, not only is it possible for some platforms (e.g. Amazon Marketplace, MercadoLibre Marketplace) to straddle those categories, they are also so broad that they do not do much of the work of separating platforms into more distinct and manageable groups.

The same drawbacks hamper another broad approach, proposed by Gawer (2015[3]), which is to divide platforms into these two categories:

- **Transactional platforms**, which facilitate transactions between a large number (and sometimes different types) of individuals and organisations that otherwise would have more difficulty finding or transacting with each other and that capture and transmit data, including personal data, over the Internet (e.g. Tmall, Google Search, Amazon Marketplace, Alibaba, MercadoLibre).
- **Innovation platforms**, which serve as technological building blocks on top of which innovators can develop complementary products/services (iOS, Android, Linux).

Again, having just two categories is barely helpful for narrowing down the applicability of policy issues to particular types of online platforms, and the straddling problem persists (e.g. Facebook is both a transactional and an innovation platform).

One broad approach that is more structural than functional, but that does not suffer from the straddling problem, is to separate platforms according to their overall scope and structure into one of these three categories:

- "**Superplatforms**", or "platforms of platforms", which are walled gardens that users enter through a single portal (an app or a website) and that contain many individual platforms. Tencent's QQ and WeChat, for example, are superplatforms (see the Tencent profile in Annex A for information on the platform components of QQ and WeChat).
- **Platform constellations**, which are platforms owned by a single company and that may be seamlessly interoperable, share data or have synergies with one another, but can all be accessed separately without having to go through a single portal. Google's main platforms are an example of a constellation, as are Rakuten's.
- **Stand-alone platforms**, which are self-explanatory (e.g. BlaBlaCar).

In general, the broad functional typologies are not helpful for separating the platforms into small groups if they are used on their own. However, as we will see, they can be useful in conjunction with other typologies.

Narrow functional typologies are better, but not perfect

A narrower functional approach would use more – and more specific – categories. In principle, such an approach will be better at matching impacts more precisely with relevant platforms.

For example, the main platforms discussed in the profiles included in Annex A of this report fall into the following somewhat narrow functional categories:

- **ad-supported messaging platforms** (WeChat, Facebook Messenger)
- **app stores** (Amazon Appstore for Android, Apple App Store, Google Play)
- **C2Cs** (MercadoLibre Marketplace, Taobao)
- **labour freelancing/crowdsourcing** (Freelancer, Mechanical Turk)
- **long-distance carpooling** (BlaBlaCar)
- **mobile payments** (WeChat Pay, Alipay)
- **search advertising** (Baidu, Google)
- **short-term accommodation** (Airbnb)
- **social media** (e.g. Facebook, WeChat, YouTube)
- **superplatforms** (WeChat, QQ)
- **third-party businesses-to-businesses (B2Bs)** (e.g. Alibaba, Amazon Business)
- **third-party businesses-to-consumers (B2Cs)** (Amazon Marketplace, MercadoLibre Classifieds, Rakuten, Tmall).

However, even if within the group of those 12 profiled companies, there is more variety than the basic list above suggests. For example, the video-sharing platforms Youku and YouTube are not mentioned. Furthermore, branching out beyond those companies and accounting for other platforms would clearly require adding more, and more specific, categories. Thus a more comprehensive list of categories could look like this, for example:

- **ad-supported content**
  - blogs
  - broadcast media streamed online
  - music streaming (Deezer, Spotify)
  - news aggregators (Yahoo! News)
  - print media (Chosun Ilbo, Corriere della Sera, National Geographic, Paris Match)
  - video streaming (Qzone, Youku, YouTube)
  - and many more types of content
- **app stores** (Apple App Store, Baidu Mobile Assistant, Google Play)
- **ad-supported messaging** (WeChat, Facebook Messenger)
- **C2C**
  - with payment feature (eBay, MercadoLibre Marketplace, Taobao)
  - no payment feature (Craigslist, Leboncoin)
- **crowdsourcing**
  - competitive (Topcoder)
  - non-competitive (Waze)
- **dating** (Meetic, Tinder)
- **fintech**
  - currency exchange (CurrencyFair)
  - crowdfunding (Indiegogo, Kickstarter)
  - mobile payments (Alipay, PayPal, WeChat Pay)
  - online brokers (Fidelity, Saxo Bank, Strateo)
- **food delivery** (Deliveroo, UberEats)
- **gaming** (Amazon Twitch, Huya)
- **jobs platforms**
  - full-time, traditional jobs (Careerbuilder, LinkedIn, Monster)
  - freelancing/crowdsourcing (Freelancer, Mechanical Turk, TaskRabbit)
- **maps** (Baidu Maps, Bing Maps, Google Maps)
- **online literature** (Amazon Self-Publishing, Qidian)
- **repositories for scholarly research** (SSRN)

- **search advertising**
  - general, or "horizontal", search (Baidu, Google, Yahoo)
  - price comparison sites (PriceGrabber, PriceMinister, ShopZilla)
  - other specialised, or "vertical", search (Amazon (for products), LexisNexis (for lawyers), PogoFrog [for physicians])
- **short-term accommodation** (Airbnb, HomeAway)
- **social media**
  - general social media (e.g. Baidu Post Bar, Facebook, WeChat)
  - microblogging (Sina Weibo, Twitter)
  - professional networking (LinkedIn)
  - photo sharing (Flickr, Instagram)
  - video-sharing sites (iQIYI, TikTok, Youku, YouTube)
  - and many others grouped around special interests (such as Ping for music, Kidzworld for children and Ravelry for knitting)
- **superplatforms** (WeChat, QQ)
- **third-party B2Bs** (Alibaba, Amazon Business)
- **third-party B2Cs**
  - tangible goods (Amazon Marketplace, eBay, Tmall)
  - services (Jianke [a Chinese healthcare services platform])
- **transportation**
  - long-distance carpooling (BlaBlaCar)
  - on-demand ride service (Lyft, Uber)
- **travel booking**
  - cruises (Vacationstogo.com)
  - rental cars, flights and hotels (Booking.com, Ctrip, Expedia, Opodo)
  - short-term home rentals (Airbnb, Atraveo, Homeaway).

Many more functional categories could be added, depending on how narrow and comprehensive one wishes to be. For example, there is no category in the list above into which Thuisafgehaald, a platform that facilitates sharing meals with neighbours, would fit. (That platform is further described in Annex A.) But a suitable one could easily be added. Or, given that Thuisafgehaald is an extremely small platform that serves a specific purpose and is not a for-profit undertaking, one might decide that no additional category is needed.

As an aside, it is evident even from the list above that online platforms are active in many economic sectors. In fact, the list could actually be much longer.

To head in an extremely narrow direction, one could draw inspiration from the International Standard Industrial Classification (ISIC) codes (United Nations, 2008[6]) for ideas about more categories that might be added to a functional typology. The farther out towards four-digit codes one goes, the narrower the typology would become. That exercise would be imperfect in the sense that not all online platforms fit neatly into existing ISIC categories. Moreover, the ISIC approach is built around classifying firms according to their main activities. What would one do with a highly diversified company that had several roughly equal lines of business, then? In any case, as a source of possibilities for categories in a very narrow typology, the ISIC codes would be a fruitful place to start.

In addition to making the categories narrower (or broader), one might wish to reorganise or regroup them. For instance, a "peer platform" category (or any term like it) is absent from the list. But one could be added and sub-categories such as "on-demand ride service", "short-term home rentals" and "C2C" could be moved into it. Or there could be a new category called "on-demand service platforms", which might at least partially cover platforms like Freelancer and Mechanical Turk, but not eBay.

Narrow functional typologies are thus elastic concepts and *there is no single, universally correct way to design them*. What turns out to be the best approach in a given situation depends on the nature of the inquiry that calls for a typology in the first place. In other words, they can and should be designed to suit the context in which they are being used. Elasticity is also a characteristic of several of the other kinds of typologies that can be used to classify online platforms.

In any event, all functional approaches, whether they are broad or narrow, have at least two disadvantages. First, given the existence of multifunctional platforms (e.g. Facebook, which is not only a general social media platform, but a C2C platform, a gaming platform, and more) and "platforms of platforms" (e.g. QQ and WeChat), even relatively narrow functional typologies will see some platforms showing up in multiple categories. Second, functional typologies are doomed to become obsolete as platforms evolve, necessitating periodic adjustments. A functional typology of online platforms that was created in 2000 would be useless for classifying several of the platforms that are listed above, such as app stores and on-demand ride services.

Typology based on users

Focusing on other features of platforms might lead to more enduring ways to categorise them. For example, one possibility would be to divide them according to the types of users they serve. This method could turn out to be useful in contexts such as labour and employment policy making, where it is important to identify platforms through which workers find, deliver, and/or receive compensation for work.

Each of the online platforms profiled in this report serves one or more of the following, rather broad, user groups:

- **advertisers**
- **buyers**
- **sellers**
- **content consumers**
- **content producers**
- **app developers**
- **app users**
- **employers**
- **workers**
- **drivers**
- **riders**
- **hosts**
- **guests**
- **payers**
- **payees**.

Like the functional approach, the user-based approach is elastic, so it could feature categories that are either broader or narrower than the ones above. For example, one could collapse the categories into just five groups: advertisers, buyers, sellers, content consumers and content producers, with most of the other categories merging into the "buyer" or "seller" group.

Alternatively, one could break some of the categories down into narrower groups. For example, content producers could be disaggregated into user-generated content producers, professional content producers, journalistic content producers, video content producers, print media content producers, audio content producers, etc. In addition, the fact that the list of users above is based only on the platforms profiled in this report means that more categories of users would need to be added when more platforms were brought into consideration.

Typologies based on the kinds of data platforms collect

Given that all online platforms collect and use data, one characteristic that could be used as a basis for arranging them is the kind(s) of data they collect. There are so many ways that data can be categorised, though, that this could be the subject of a whole other report. A starting point, in any case, is the OECD report *Data-Driven Innovation: Big Data for Growth and Well-Being* (2015[7]: 451). It distinguishes three types of data:

- **Data volunteered by users**. This data is actively and intentionally shared by a data subject, such as when a social media user creates a profile, a buyer enters credit card information for an online purchase, or a customer shares an online review.
- **Data observed from user behaviour**. This data is captured by recording users' online activities. Here, the data subject's role is more of a passive one, in which they might agree to the collection of such data, but the data is nevertheless neither actively nor intentionally shared. An example of observed data is the recording of how much time a user spends on a particular website.
- **Data inferred as the result of data analytics**, such as the calculation of credit scores based on an individual's history of paying for online purchases.

There is also a fundamental distinction between **personal data** and **non-personal data**, which is important in the context of privacy policies, for example. The OECD *Guidelines Governing the Protection of Privacy and Transborder Flows of Personal Data* (OECD, 2013[8]) define personal data as "any information relating to an identified or identifiable individual (data subject)". Any data that are not related to an identified or identifiable individual are therefore "non-personal" data. Every one of the platforms profiled in this report collects personal data, though.

In fact, every one of them collects data that is willingly submitted by users, as well as data that is observed from their behaviour. Furthermore, most if not all of the platforms generate inferred data from analytics, as well. That suggests that these broad categories by themselves will not be very helpful as sorting mechanisms.

Another option is to ask what the data that a platform collects are *about*. Each of the online platforms profiled in this report collects several of the following kinds of data:

- **personal identification data** (e.g. name, address, date of birth, gender, government-issued identification number, telephone number, marital status)
- **payment data** (credit card numbers or other payment service data)
- **product transaction data** (items bought, description of items, photos of items, when they are bought, prices paid, other items viewed prior to and after purchases)
- **service transaction data** (services bought, description of services, when they are bought, prices paid, other services viewed prior to and after purchases)
- **content consumption data** (content read, viewed or heard)
- **personal expression data** (social media posts, comments, reactions, photos, videos, ratings and reviews)
- **search queries**
- **browsing data** (advertisements clicked on, links clicked on, time spent on each web page visited)
- **friends and groups followed** (on social media)
- **phone contacts**
- **device/connection data** (brand/model of device used to connect to platform, Internet Protocol address)
- **location data** (users' whereabouts).

The list of categories that could be explored under this approach, particularly when considering the types of data collected by companies beyond the 12 that are profiled in Annex A, is very long. Furthermore, the more precise one wishes to be, the longer the list becomes. That should prove to be useful for sorting out the platforms into fairly specific groups. However, one of the drawbacks of this method, especially if very specific categories are used, is that online platforms exhibit varying degrees of transparency about the exact types of data they collect. From a practical standpoint, absent the power to legally require platforms to reveal such information, it may be difficult to categorise them in this manner. Another drawback is the fact that many of the platforms collect multiple kinds of data, so they would not fall into just one category.

Typology based on what the platforms do with the data they collect

Another data-related possibility is to sort online platforms according to the purpose(s) for which they use the data they collect. Like the previous approach, this one is hampered by varying degrees of transparency. That is, online platforms are not all equally forthcoming about the exact purposes for which they use the data they collect. However, we know from the profiles that some purposes for which platforms use collected data are:

- **optimising the platform website**
- **providing a better user experience**
- **advertising**
- **other business purposes**
- **operating, maintaining and providing the features and functionality of the platforms' products and services**
- **communicating with their users**
- **measuring traffic and usage trends**
- **understanding more about the demographics of their users**
- **providing personalised content and information, including targeted content and advertising**
- **diagnosing or fixing technology problems**
- **suggesting local events to attend**
- **serving location-based ads**
- **conducting audits**
- **safety and security**
- **attracting users and increasing their use of the platform**
- **developing new services**.

Terms such as "optimising websites", "other business purposes", "improving ad targeting" and "providing a better user experience" are opaque, though. Policy makers may have more specific categories of purposes in mind, such as:

- **making inferences about individual users' personal details**, such as whether they are married or have children, what their race is, how wealthy they are or whether they are pregnant
- **making inferences about a user's creditworthiness**
- **making inferences about the maximum amount that a user would be willing to pay for a product or service**
- **identifying or categorising a user's personality, political views or religion**
- **identifying unsafe or illegal products for sale**
- **identifying unlawful content** (e.g. terrorism promotion and recruitment, slurs against protected groups, child pornography)
- **improving human health**
- **enhancing users' trust in the platform**
- **making inferences about where assistance is needed most in a natural disaster**.

As usual, the questions and categories could go on and on, depending on the interests of the party studying the platforms. See OECD (forthcoming[9]: 18-19), for example, which examines data types and uses of particular interest to privacy officials.

Typology based on revenue sources

Another business model characteristic that could be used to sort platforms is the source(s) of their revenue. Although at first glance this method might seem no different from sorting them according to their users, it is indeed different because so many online platforms provide services free of charge to one or more of their sides. Consequently, they have some users who do not directly contribute to revenues.

Each of the online platforms profiled in this report earns money from one or more of the following sources:

- **advertisers**
- **sellers** who pay *transaction fees* (commissions charged when a transaction is completed on the platform, e.g. transaction fees paid by Rakuten sellers, commissions paid by developers who sell apps on Apple's App Store, and transaction fees paid by sellers or service providers who accept WeChat and Alipay payments), *subscription fees* (Alibaba and Amazon charge some of their third-party sellers a monthly or annual membership fee), *listing fees*, and/or *additional service fees* for services that are connected to the platform in some manner and complement what the platform provides (Alibaba's customs clearance and value-added tax refund services for sellers, MercadoLibre's interest-bearing loans to small and medium-sized enterprises that have a solid track record of sales on MercadoLibre Marketplace, and fulfilment services offered by Amazon to third-party businesses)
- **buyers** who pay *transaction fees* (e.g. Airbnb guests) and/or *additional service fees* for services that are connected to the platform in some manner and complement what the platform provides to them (MercadoLibre's interest-bearing loans to individuals who have a solid track record of paying for goods on MercadoLibre Marketplace)
- **consumer subscribers** (e.g. QQ's VIP levels, dating platforms; although streaming media services like iQIYI, Netflix and Spotify may come to mind, neither iQIYI premium, Netflix nor Spotify Premium meet the definition of online platforms because they are one-sided businesses (no ads); the free versions of iQIYI and Spotify do count as online platforms, though, because they display ads and thus serve two separate sets of users)
- **employers** who pay *transaction fees* (e.g. on Freelancer.com and Mechanical Turk) and *additional service fees* (e.g. for Freelancer's Non-Disclosure Agreement template, or for better visibility of listings)
- **workers** who pay *transaction fees* and *subscription fees* (e.g. on Freelancer.com).

One problem with this "follow the money" approach might be that it results in overly broad categories. "Advertisers", for example, encompasses business models that are differentiated even though they are all ad-based. It is true that Baidu's ways of presenting and targeting ads to users differ substantially from Facebook's and Alibaba's methods, for instance. But that may not always matter, as it may not be necessary to disaggregate ad-based models for every policy issue that a typology can be used to inform.

It is easy to see how such distinctions could matter in, say, a competition law case, where an often crucial step is to define a relevant market. Part of that exercise involves identifying who the customers are and what they consider to be substitute products or services. But it is harder to see how the differences could matter in a discussion about how much guidance or oversight online platforms should have when they filter content to comply with laws against pro-terrorist messages. In fact, for issues such as that one, the approach of looking at revenue sources may not be helpful in the first place.

On the other hand, for policy issues where it would be useful to disaggregate the "ad-based" category, one solution could be to add a functionality layer that splits the "advertisers" category into sub-categories, such as general search engine advertisers, product search engine advertisers, and social media advertisers (there could be many more sub-categories).

A different but familiar problem with the source-of-revenue approach is that several online platforms' business models have multiple kinds of revenue sources. For example, some – like MercadoLibre and Amazon – derive revenue from both sellers' transaction fees and advertisements. Consequently, this method cannot always produce neat dividing lines that place each platform into a single category.

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Chapter 5

INSIGHTS FROM THE PROFILES

Summary

This chapter presents a variety of insights drawn from the company profiles in Annex A. These insights range from basic points about how different the platforms are from each other in ways including functionality, size, profitability and labour intensity, to observations about the factors that drove their success, to perspectives on the scale, scope and future of the big Chinese platforms.

Online platforms are not all the same and they are active throughout the economy

An opening observation is that even the relatively small set of profiles in this report shows that online platforms are not all the same – far from it. They differ in functionality, encompassing for example a carpooling service, an app store, and a superplatform in which a user can accomplish most or even all of what he or she might want to do with a smartphone without ever leaving the app. They differ in how they generate income, with some drawing revenue from advertisers, others from transaction fees, still others from subscriptions, and some from a combination of those. As discussed below, they also differ dramatically in size and profitability. Although online platforms have some commonalities, as well, such as indirect network effects, to say that all of them belong in the same sector would be like saying that bicycles and jet airplanes belong in the same sector just because they are both forms of transportation. Online platforms serve different needs of different customers looking for different things.

Indeed, it is striking how many different economic activities online platforms encompass. As the Subsection "Typologies" shows, platforms are not just for activities like business-to-consumer (B2C) and consumer-to-consumer commerce, search and social media. They are engaged in facilitating short-term accommodation, transportation, freelancing work, the app economy, ad-supported content delivery, personal and small business lending, and much more. Online platforms have emerged as new forms of business that feature substantial reductions in one-to-one transaction costs.

Online platform companies vary greatly in size

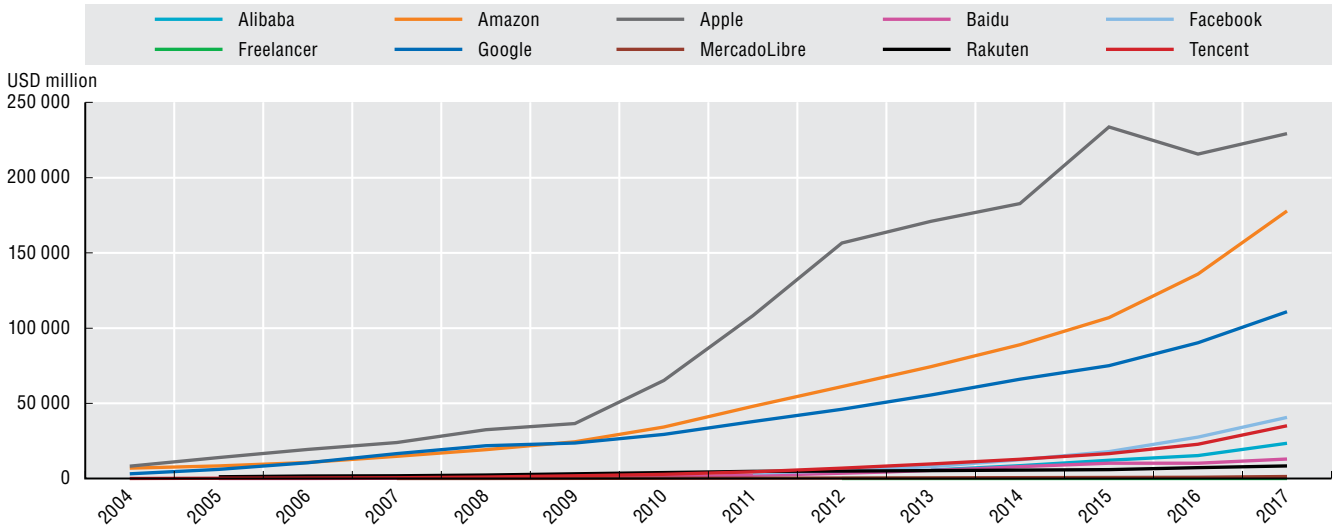
Whether measured by revenue, profit, user base or market capitalisation, the platform companies profiled in this report cover a broad range of sizes and the biggest among them are immense. Figure 5.1, for instance, shows how the revenues of ten companies profiled in Annex A have grown since 2004. Many remain clustered near the bottom of the chart until 2016, when several began to break away from the pack and tick upward. But the three revenue leaders – Apple, Amazon and Google – all began to break away about ten years earlier and now are far beyond the rest, having taken in more than USD 100 billion each in 2017 and in the case of Apple and Amazon, far more than that. There is much more to Apple and Amazon than their platform businesses, though. Nevertheless, the point remains that these companies generate a great deal of revenue. Apple, Amazon and Google (Alphabet) ranked number 4, 8, and 22, respectively, on the 2018 list of Fortune 500 firms (Fortune, 2018[1]).

The net income chart (Figure 5.2) presents a more skewed, though still informative, picture. Once again there is wide variation among the companies, but as of 2017, at nearly USD 50 billion in net income, Apple stood far ahead of all nine other companies. Apple derives most of its revenue and profit from hardware sales, though, and this is not meant to be a comparison of similar firms, but rather an illustration of how different the companies profiled in this report are. Three platform companies (Facebook, Google [Alphabet] and Tencent) are above the USD 10 billion mark and the first two rank number 12 and 14, respectively, on the current list of Fortune 500 firms in terms of profits (Fortune, 2018[1]) (Apple is number 1). Notably, Amazon – which was second to Apple in revenue in 2017 in the chart above – is nowhere near the top of the net income chart. That is consistent with Amazon's history of focusing on growth, whereas profit is a longer-term consideration.

Turning to another size metric, market capitalisation, both Apple and Amazon crossed the USD 1 trillion mark in 2018. They were the first companies ever to do so. Meanwhile, some of the other profiled companies are far smaller. MercadoLibre, for example, has yet to surpass USD 25 billion in valuation.

The profiles yielded spottier data on user bases, but what is available suggests the same widely varying pattern. BlaBlaCar, for instance, currently has about 65 million users. Tencent's WeChat, in contrast, had nearly 1 billion users in 2017 and Facebook now has well over 2 billion.

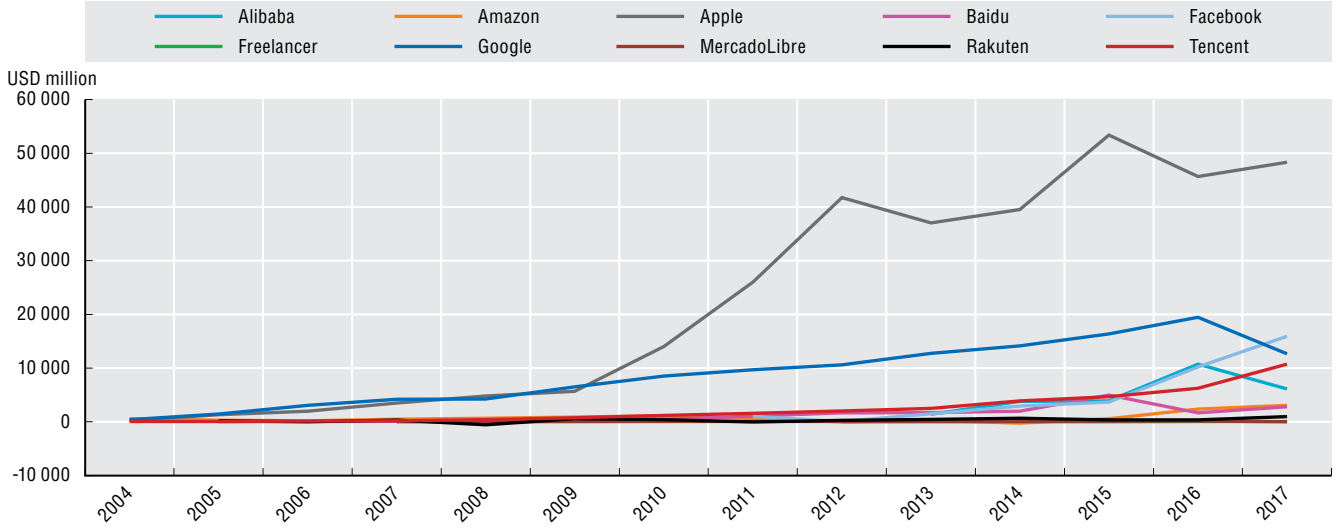
5.1. Annual revenue of ten publicly held companies profiled in Annex A



Note: Revenues are company-wide, except for Google, which is only the Google segment of parent company Alphabet's revenue. The revenues of Alibaba (RMB), Rakuten (JPY) and Tencent (RMB) have been converted to USD based on the yearly exchange rates from the OECD Annual National Accounts, Table 4, *https://stats.oecd.org/* (accessed on 10 October 2018). Revenue data was unavailable for the privately held companies Airbnb and BlaBlaCar.

Source: The company profiles in Annex A.

5.2. Annual net income of ten publicly held companies profiled in Annex A



Note: Net incomes are company-wide, except for Google, which is only the Google segment of parent company Alphabet's net income. The net incomes of Alibaba (RMB), Rakuten (JPY) and Tencent (RMB) have been converted to USD based on the yearly exchange rates from the OECD's *Annual National Accounts*, Table 4, *https://stats.oecd.org/* (accessed on 10 October 2018). Net income data was unavailable for the privately held companies Airbnb and BlaBlaCar.

Source: The company profiles in Annex A.

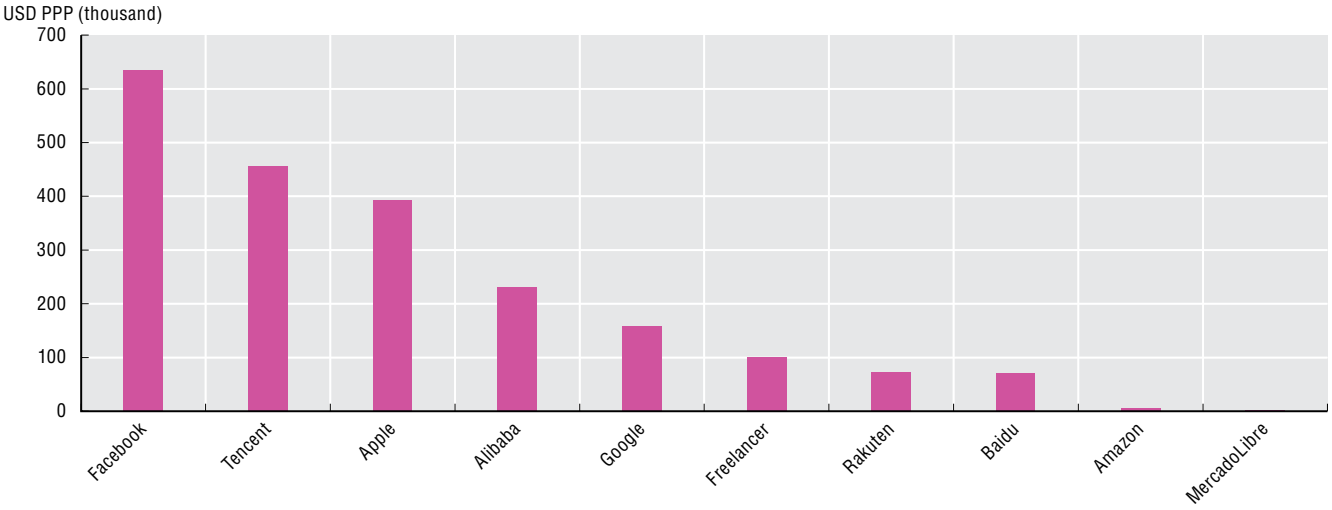
The profiled companies also vary greatly in net income per employee

Data from Annex A makes it possible to compare the net incomes per employee for ten of the profiled companies. The resulting bar chart, using 2017 data, is presented in Figure 5.3.

The figure demonstrates another way in which online platforms are not all the same, as there is wide variation in their profitability per employee. Facebook, with its comparatively small work force of about 25 000 employees, looks extremely profitable on a per employee basis in comparison to the other companies. The fact that Apple ranks third on this chart despite the fact that it employed about five times

as many people as Facebook is an indication of how substantial Apple's net income is. Meanwhile, Amazon barely registers a blip on the chart, which is consistent with its habit of keeping total profit low as well as the fact that it employs more than half a million people (on at least a part-time basis).

5.3. Net income per employee



Note: Net incomes are company-wide, except for Google, for which only the Google segment of parent company Alphabet's net income per employee is shown. The net incomes of Alibaba (Yuan renminbi), Rakuten (Japanese yen) and Tencent (Yuan renminbi) have been converted to US dollars based on OECD purchasing power parity statistics (*https://data.oecd.org/conversion/purchasing-power-parities-ppp.htm*). Net income data was unavailable for the privately held companies Airbnb and BlaBlaCar.

Source: The company profiles in Annex A.

Online platforms succeed for a wide variety of reasons

The profiles are also useful for identifying some of the key reasons that successful online platforms thrive. There are quite a few such reasons:

- **Business acumen**. All of the profiled platform companies have this trait to some degree. Whether it shows up as the ability to anticipate market trends (e.g. Alibaba, Amazon) or drive them in the first place (Apple, Tencent); a knack for continually raising efficiency and customer loyalty (Amazon), hiring talented personnel (Facebook, Google), building trust (Airbnb, Alibaba, BlaBlaCar, MercadoLibre) or making smart acquisitions (Facebook, Rakuten); or increasing convenience for their users (Baidu, Google, Rakuten, Tencent) – successful platforms are well managed.
- **Foregoing profit for many years in favour of building customer loyalty, scale and funding innovation** (Amazon, BlaBlaCar).
- **High-quality design and photography as a competitive advantage** (Airbnb).
- **Intense focus on customer service** (Amazon).
- **Low-overhead business model, or "scale without mass"** (Airbnb, Alibaba, Apple App Store, Baidu, BlaBlaCar, Facebook, Freelancer, Rakuten).
- **Piggybacking on a larger, established platform to build scale** (Airbnb [on Craigslist], Facebook Messenger [on Facebook], Freelancer [on getafreelancer.com], MercadoPago [on other platforms owned by MercadoLibre], WeChat [on QQ] and more).
- **Leveraging assets from one platform market to succeed in others**. Some online platform companies have built new businesses by taking the assets (not only physical infrastructure, but users, data, software, know-how) they have developed in one market where they are operating at scale and using them in new ways to enter another market, transforming competition there from product-driven to network-driven (e.g. Alibaba and MercadoLibre using their customer relationships and data from their e-commerce platforms to enter financial services markets).

- **Protectionism.** Some Chinese platforms (particularly Baidu and Tencent) were able to scale up to hundreds of millions of domestic users without having to face serious competition from large foreign platforms because the key players were blocked in the People's Republic of China (hereafter "China").

The piggybacking factor is especially interesting. Some of the profiled platforms not only obtained an early advantage from riding on top of a larger, more established platform, but they then wound up drawing away most of the larger platform's customers. Airbnb did that to Craigslist (with respect to users looking for short-term accommodation). Freelancer did it, too, relying on getafreelancer.com to achieve some scale and then buying it outright.

In several cases, companies have developed a platform that piggybacked on another one of their own platforms. For example, when MercadoPago came into being, it had the advantage of a ready-made user base from day one, thanks to MercadoLibre's other platform businesses. Google services like Maps and Gmail enjoyed name recognition and other synergies thanks to the success of Google Search. In a case of corporate cannibalism, Tencent's WeChat not only benefited from early integration with Tencent's QQ platform, but WeChat is now in the process of siphoning away the QQ user base. Yet the initial boost provided by QQ – which had over 750 million monthly active users (MAUs) when WeChat launched – was a major advantage for WeChat. WeChat users could import their entire map of social connections from QQ over to WeChat just by logging in with their QQ IDs. Thus, WeChat had the luxury of being born with instant scale.

The major Chinese platforms are innovative, consolidated, large, scalable – and expanding

The profiles of Baidu, Alibaba and Tencent (BAT) show that although some of them started out as mimics of Western platforms, they shed that image years ago and are now ahead of their foreign peers in a number of respects.

Innovation and consolidation

Two areas in which BAT excel are innovation and consolidation. Alibaba, Baidu and Tencent have integrated a wide variety of innovative online platform services under their brands and in some cases into single superplatforms.

It has been years since Baidu, for example, was mainly a Chinese version of Google's search engine. Baidu has continued to upgrade its search capabilities (with voice-driven search and image search, for example), but it has also added a raft of other services. Those include a social media platform, a short-video aggregation platform, a knowledge-sharing platform, an entertainment/video streaming/content distribution platform, and much more. One of Baidu's platforms, Baijiahao, seems to have no equivalent outside of China. It is a content platform where individuals, entities and content providers can publish and build a fan base. What is especially innovative about Baijiahao is that it supports many formats, including articles, books, albums, video, live broadcast, augmented reality and virtual reality. All of these services are accessible through the Baidu app and Baidu.com.

Alibaba, likewise, stopped being "just" a business-to-business platform long ago and today operates multiple domestic and cross-border B2C platforms, an advertising platform, a logistics service, a number of specialty consumer services platforms (e.g. for travel or food), a video-sharing and entertainment platform, a navigation service, and – through its partial ownership of Ant Financial – a variety of financial services including Alipay, a popular mobile payment platform.

Tencent, through its superplatforms QQ and WeChat, offers so many integrated platform services that it is a challenge to describe them all succinctly yet adequately. Perhaps it is a sufficient indication of WeChat's scope to point out that there is such a thing as a "WeChat lifestyle", and it is extremely popular in China. The term is a reference to the fact that one can easily go through an entire day, doing everything one wishes to do on a mobile device, without ever leaving the WeChat app. Imagine a company with nearly a billion MAUs that has the combined data of the Apple App Store, Facebook, Google Maps, PayPal, Spotify, Visa, WhatsApp, Yahoo! Mail, YouTube and Zynga, and you will begin to understand Tencent.

Size and scalability

As the previous paragraph suggests, these are not small companies. They have already scaled up to take their places among the world's largest platform companies, yet they still derive the vast majority of their users and income from within China, for now. Consider Alibaba. Figure 5.4 puts the company's scale into sharp focus by comparing it with data from outside of China. "Singles Day" is a one-day e-commerce sales event in China that Alibaba's Tmall platform pioneered. It has become a major success that dwarfs comparable events even in the United States. The USD 17.8 billion in sales transacted on Alibaba's marketplaces on Singles Day in 2016 easily overshadowed the USD 6.75 billion that all US online retailers grossed on 2016's Black Friday and Cyber Monday combined (Baird, 2017[2]) (Desjardins, 2017[3]). As a further illustration of Alibaba's scale, consider that USD 17.8 billion is also the total volume of e-commerce sales in Spain for the entire year 2016 (Desjardins, 2017[3]).

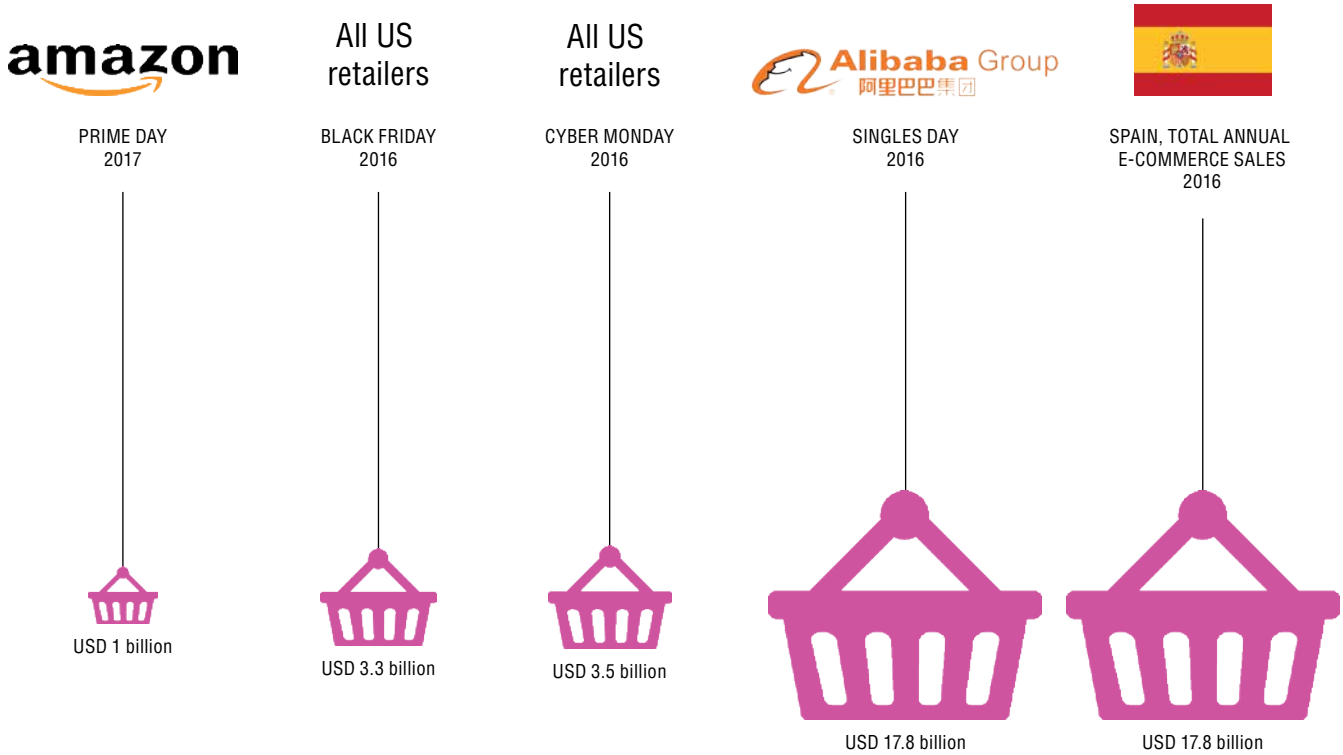
Moreover, USD 1 billion of that USD 17.8 billion amount was transacted on Alibaba within the first five minutes of Singles Day in 2016. That is equivalent to Amazon's take from the entirety of its Prime Day sales event in 2017 (Meixler, 2017[4]; Soper, 2017[5]). This is not to say that Amazon and Alibaba's revenues have the same meaning – they do not, because Amazon is a direct retailer in addition to being a platform on which third parties sell. However, this comparison is a way to put the scale and volume of Alibaba's capabilities into better perspective.

As explained in the Alibaba profile, the company's Singles Day transactions volume is not only already very large, it is growing quickly. Alipay settled USD 25.9 billion in sales transacted on Alibaba's marketplaces on Singles Day 2017. That was 39% more than in 2016 (that is, when measured in Yuan renminbi; the growth in US dollars would be even higher due to appreciation of the Yuan renminbi versus the US dollar).

Moreover, Alibaba's Singles Day volume illustrates the resilience and scalability of its infrastructure. In 2017, Alibaba processed a peak load of 325 000 purchase orders per second on the Alibaba Cloud computing stack, nearly double the 2016 peak of 175 000. Meanwhile, Alipay processed 1.5 billion payment transactions during the 2017 event, an increase of 41% versus Singles Day 2016.

5.4. Alibaba alone eclipses e-commerce in other countries

Comparison of sales volumes transacted

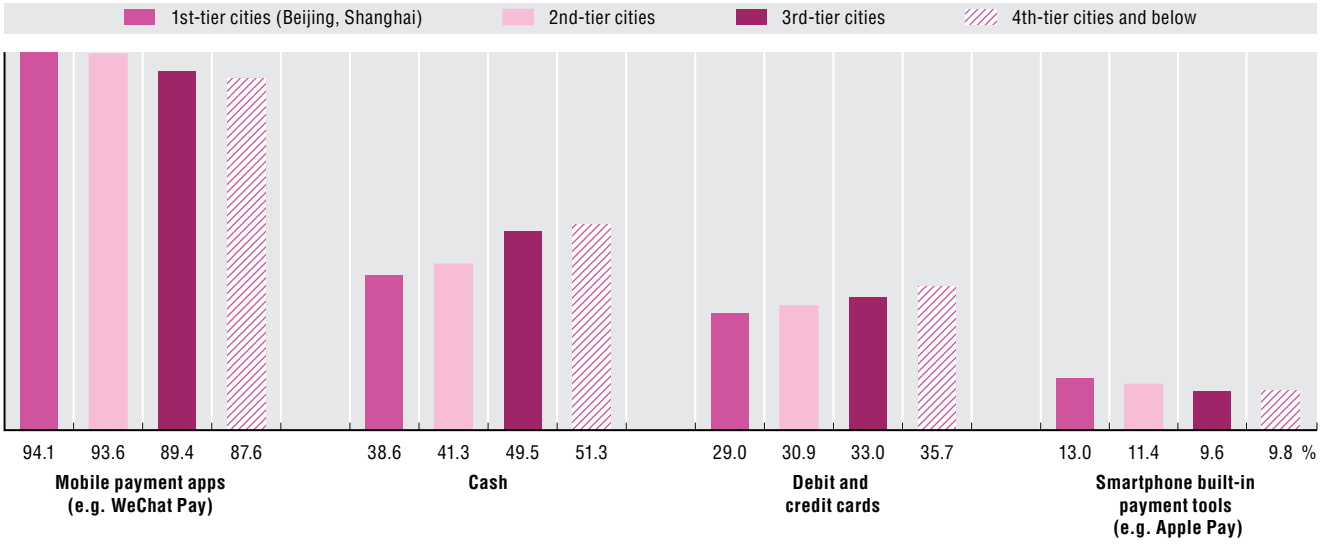


Source: Adapted from Desjardins (2017[3]), *Amazon's Prime Day was huge, but it pales in comparison to Alibaba's signature annual event*, *www.businessinsider.com/amazon-prime-day-vs-alibaba-singles-day-2017-7?IR=T*.

Alibaba's scale can also be seen in the sheer number of products for sale on its sites. For example, as of March 2017, the company's retail marketplaces in China had more than 1.5 billion listings. That is about three times the number of products sold on Amazon in the United States.

Another way to illustrate the size and scalability of the big Chinese platforms is by looking at their success in mobile payments. Figure 5.5 below, from the Tencent profile, shows that China is moving towards becoming a cashless society. That is largely due to the popularity of the mobile payment platforms Alipay and WeChat Pay. Alipay has about 520 million users (Alipay, 2018[6]), while WeChat Pay has more than 800 million (see Tencent profile in Annex A).

5.5. The transition to a cashless economy: WeChat users' primary payment methods for offline purchases in China



Sources: Brennan (2017[21]), *2017 WeChat User Report is Out*, *https://chinachannel.co/1017-wechat-report-users/*; Tencent Penguin Intelligence Survey Platform (2017[22]), *WeChat User Behavior Report*.

In about the same time (roughly three years) that it took Apple's mobile payment service, Apple Pay, to amass 12 million users, Alipay gathered 450 million (Knight, 2017[7]). In its totality, China's online mobile payments market, with a volume of USD 8.8 trillion in payments in 2016, is 50 times larger than the United States'. The Chinese market also grew fivefold compared to 2015 (Wildau, 2017[8]; Lucas, 2017[9]). Incidentally, the example of mobile payments illustrates that starting and scaling up an online platform in China now has the potential to provide a global advantage – something that was previously enjoyed almost exclusively by companies that achieved scale in the United States.

Ready to grow: AliExpress and WeChat Pay

The major Chinese platforms are indeed looking to expand beyond Chinese borders and have already made certain moves to establish an international presence. For example, Alibaba operates several platforms that cater to cross-border commerce, but as pointed out in the Alibaba profile, for now most of its revenue comes from commerce within China (in fiscal year 2018, Alibaba generated only 8% of its revenue from its international e-commerce businesses). Nevertheless, Alibaba has started to lay a foundation for a wider international presence. AliExpress, Alibaba's global retail marketplace, had approximately 60 million annual active buyers from around the world in the 12 months ended on 31 March 2017. AliExpress has begun to show up as a marketplace choice on North American and European price comparison sites. Furthermore, Alibaba's Lazada operates e-commerce platforms in Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. In addition, buyers on Alibaba.com were located in more than 190 countries and regions (data as of March 2018).

For its part, Tencent has a plan to penetrate Western markets by leading with WeChat Pay. In fact, that platform is already available in 25 countries outside China, but that is just a preparatory action. The real momentum will come from China's outbound tourists, who are already the largest group of

travellers by far from any country in the world whether measured in terms of the number of people or how much they collectively spend abroad. That is an especially important fact when one also considers that only 7% of Chinese citizens currently possess a passport (Smith, 2018[10]).

Tencent understands that foreign merchants are eager to tap into that growing stream of commerce. It also knows how popular WeChat Pay is among Chinese consumers. It is therefore leveraging the financial strength of Chinese tourists to persuade foreign merchants to accept WeChat payments. This has already started to happen, as Tencent began to establish partnerships with foreign merchants over the past year or so and is currently able to process transactions in 13 different currencies. As WeChat Pay expands, Chinese tourists will be able to pay in Yuan renminbi in more and more countries, while the overseas merchants from whom they buy receive payments in their local currencies.

That may be just the beginning, though, as merchants could also accept WeChat payments from non-Chinese customers should the service become popular with them, too. In fact, when non-Chinese merchants fully comprehend the possibilities for customer engagement that WeChat offers, they may actively encourage their customers to pay with WeChat Pay. Tencent believes that is exactly what will happen. The reason is that WeChat Pay, through the broader WeChat app, offers merchants a way to build a lasting social interaction channel with their customers, which facilitates ongoing promotions and communications. No Western platform is currently capable of offering a comparable service.

Note that even though WeChat Pay and Alipay are linked to users' commercial bank accounts, when transactions are carried out through those two services banks do not obtain information such as the merchant's name and location. Instead, the bank record will only show Alipay or WeChat as the recipient. Thus, valuable data is captured by Alipay and WeChat Pay, which can then use it for purposes like targeted advertising and credit scoring (Wildau, 2017[8]).

On the customer side, if merchants outside China widely adopt mobile payments, non-Chinese consumers may find that they enjoy the convenience of not having to carry cash or credit cards – a benefit that hundreds of millions of Chinese consumers already appreciate. Thus, if Tencent gains a foothold with merchants, then the door to propagating not only WeChat Pay, but WeChat itself, will swing open.

The expansion of Chinese platforms raises policy questions

As the Chinese platforms expand overseas, they may inject a considerable degree of competition into many markets. These entrants are not mere start-ups; they are experienced, well-funded and creative competitors that already have user bases numbering in the hundreds of millions. But they come from a country that has some very different attitudes about topics like privacy, state aid and democracy. An overarching question is whether, on the whole, such entry will be a positive development.

Policy makers' attention, understandably, has been largely focused on the big Western platform companies, especially Amazon, Apple, Facebook and Google (GAFA). Those platform companies have had much success as well as powerful influences. Because not all of those influences have been seen as entirely positive, these firms have faced inquiries or fines on issues ranging from competition law violations to illegal state aid to the spread of misinformation. There have been discussions about placing new regulations on them and even about breaking them up. None of that is being questioned or endorsed here. But it is reasonable to ask whether adequate attention is also being devoted to preparing for the expansion of the major Chinese platforms. Again, this is not an argument either for or against the position that GAFA have made some legal missteps and that the scrutiny they have received was warranted. It is a question about whether another policy challenge needs more attention than it has been receiving. Waiting for the Chinese platforms to arrive and grow in OECD countries before considering the policy implications of their practices would unnecessarily put policy makers behind in their efforts to keep up with the evolution of the platforms. It is better to start understanding these new competitors now and to develop policy strategies for them in advance.

A related topic that merits consideration is what the future relationship between GAFA and BAT will look like in comparison to what would be best for citizens. One possibility is global competition that largely pits the Chinese platform giants against those from the United States even as they continue to vie with their domestic rivals. In this scenario, users in all countries could benefit greatly from the additional competition, at least until the victors (or possibly a victor) emerged.

However, what we may see instead is worldwide competition of a very different nature – one that features Chinese-American alliances, each one composed of one or more Chinese giants and one or more American ones. In other words, the future may not be, say, Baidu simply battling Google in search advertising, Tencent vying with Facebook for social media and messaging supremacy, and Alibaba battling Amazon in e-commerce. What may happen is that Tencent and Google could become partners, as could, say, Facebook and Alibaba, or Amazon and Baidu. Under that scenario, it would not be a purely Chinese wave arriving overseas in one product/service market at a time, where it would be met mainly by GAFA. Instead, there may be a series of trans-Pacific handshakes resulting in a three- or four-way war whose objective would not be merely to win particular product/service markets, or even particular geographic markets, but to become the biggest digital ecosystem on the planet.

Segments of BAT and GAFA have already begun to form partnerships. Google and Tencent, in particular, have been inching closer together. They signed a patent cross-licensing agreement in January 2018, then they both invested in Chinese biotech firm XtalPi (Sun, 2018[11]). In June, Google invested USD 550 million in Tencent's e-commerce partner JD.com – a business in which US retailer Walmart has invested, as well (Duberstein, 2018[12]). In addition, Google has launched its first Mini-Program on WeChat (a game called "Guess My Sketch") (Sun, 2018[11]). In late 2015, Baidu announced that it had formed an alliance with Amazon under which Baidu would be the default search engine in Amazon's Kindle and Fire tablets in China (Team, 2015[13]). Meanwhile, although Alibaba has not teamed up with a GAFA firm yet, it has strongly signalled its willingness to partner with foreign firms. It has agreements with many well-known Western firms including coffee company Starbucks, grocery chain Kroger, and spirits company Moët Hennessy (Gurdus, 2018[14]; Baertlein and Bose, 2018[15]; Pan, 2018[16]), just to name a few.

Another possibility is that other competitors will evolve and scale up to the size of GAFA and BAT. They may also come from jurisdictions outside China and the United States, which could alter the global status quo in interesting and positive ways, such as injecting more competition and innovation into markets served by online platforms.

In contrast, Chinese platforms appear to be far behind in the app economy

It is difficult to obtain thorough information about some platform markets in China, and lacking the co-operation of Baidu and Tencent in this report made matters more difficult. However, what we were able to discover suggests that the overall app economy outside of China may be very large compared to what it is within China. For example, the Tencent profile mentions that since opening the superplatform QQ to third-party app developers in 2011, Tencent registered more than 6 million developers and paid out about USD 240 million in revenue to them as of September 2016. QQ is a very popular platform in China, with hundreds of millions of users. However, USD 240 million over five years is next to nothing compared to the app economy outside of China.

Consider these statistics on iOS developers and the Apple App Store (mostly taken from the Apple profile):

- iOS app developers earned USD 26.5 billion through the App Store in 2017 alone. As an indication of how much business that amount represents, it is more revenue than McDonald's Corporation earned in 2017 (United States Securities and Exchange Commission, 2017[17]). Since the App Store's launch in 2008, iOS developers have earned a cumulative total of over USD 86 billion.
- When the 30% commission Apple receives on app sales and most in-app purchases is also taken into account, one can calculate that, on average, iOS device users spent about USD 100 million *per day* on App Store apps in 2017.
- Even if the App Store – which has experienced annual growth of 30% to 40% in recent years – has a comparatively slow year and grows by 20% in 2018, its total billings (including Apple's commission) could surpass global box-office revenues (Statista, 2018[18]).

Of course, sales on the App Store are just a part of the app economy. There is also the revenue Apple derives from advertising in the App Store through Search Ads, for example. Then there is all of the app revenue from the Android operating system and its offshoots. Furthermore, even App Store and Google Play revenue combined is a fraction of the overall app economy because apps that end users pay for are just a subset of all apps and the economic activity they generate. Many apps are free to download but lead to purchases that are not made through an app store platform. Netflix, eBay, Spotify, Twitter, Tencent, Uber, and thousands of other enterprises all have "free" apps that lead to transactions

worth substantial amounts, but not all of it is reflected in app store revenue data. Companies have been experimenting with way to avoid the fees charged by the app store platforms (Stutz, 2018[19]; Lanier, 2018[20]).

On the other hand, much of the apparently vast difference in the sizes of the app economies inside and outside of China may be due to the Chinese penchant for superplatforms. Whereas in the West specialised apps that are good at one specific thing are the norm, in China the large platforms tend to integrate numerous functions behind one app portal. Such functionalities are either developed in-house or in-sourced and then developed in-house. The revenue they generate therefore would probably not appear as third-party developer revenue.

Overall, the profiles depict a diverse and continuously evolving group of online platforms. They vary in size, business model, profitability, labour intensity and in their formulas for success. Moreover, they are but a small subset of the much larger set of online platforms that are currently operating. If there is one certainty about the future that can be drawn from the profiles, it is that online platforms will not only continue to change, but will continue to change the world. The major Chinese platforms will have an important hand in that change. It is therefore important for policy makers to keep an eye on BAT as well as on Western platforms.

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Annex A

PLATFORM COMPANY PROFILES

Please note that the profiles consist mostly of information that came from the profiled companies (e.g. their regulatory financial filings, their questionnaire responses, and their feedback). The profiles therefore do not represent the consensus view of OECD countries. Nor do the profiles necessarily match the companies' views perfectly. They are simply a collection of publicly available information.

Summary

The report's premise is that to grasp the economic and social impacts of online platforms, it is important to understand the platforms themselves. Therefore, this Annex contains a set of profiles of 12 of the world's major online platform companies: Airbnb, Alibaba, Amazon, Apple, Baidu, BlaBlaCar, Facebook, Freelancer, Google, MercadoLibre, Rakuten, and Tencent. The profiles are presented here rather than in the main body of the report due to their length, but that should not be interpreted as a signal that they are less important. Much of the content in the rest of the report was derived from these profiles. The profiled companies were selected with four criteria in mind: 1) usage, based on average daily visitors and page views (Alexa, 2018[1]); 2) market capitalisation; 3) the diversity of the business models of the profiled companies; and 4) their geographic diversity.

The following profiles include information such as how quickly the leading platforms have grown, how they generate income, how profitable they are, what they do with the data they collect, the main benefits they confer on economies and societies, and the main platform-specific regulatory issues they have encountered.

The profiles are, for the most part, snapshots in time. Although they contain some information about the history and evolution of the companies and the markets in which they operate, aspects such as the descriptions of the business models are susceptible to obsolescence as these dynamic businesses continue to develop. The profiles nevertheless provide a sense of how important online platforms have become and how some of the leading business models currently work. They show that while all online platforms have certain traits in common, they are also quite different from one another – so different that it would be a fundamental error to conclude there is such a thing as an online platform "market", "industry" or "sector".

In fact, there are numerous online platforms besides those profiled here and they are a much more diverse group than this selection can represent. Platforms vary widely in the purposes they serve. They range from the broad to the specific, and from the very small to the extremely large. Users distribute the time they spend online among multiple platforms (and non-platforms), and how they do so depends on factors such as their age, location, language, culture and interests.

A few examples provide a small indication of the variety of platforms not profiled in this report:

- **CurrencyFair**. CurrencyFair is a small peer-to-peer currency exchange platform that enables individuals to safely move money between bank accounts denominated in different currencies and located in different countries. By matching users who want to sell a particular currency with users who want to buy it, the platform is able to charge less than commercial banks typically charge. CurrencyFair is headquartered in Ireland.
- **Etsy**. Etsy is a global e-commerce platform that specialises in connecting buyers and sellers who are interested in handmade and vintage items. It was founded in New York in 2005 and recently reported USD 1 billion in quarterly gross merchandise sales (Etsy, 2018[2]).
- **Idealist**. Idealist is a non-profit job-matching platform that helps public-interest job seekers and public-interest employers to find each other. Its Spanish and English-language sites have a combined 1.4 million monthly visitors and feature public-service opportunities around the world (Action Without Borders, 2018[3]).
- **Thuisafgehaald**. Thuisafgehaald is a relatively tiny platform in the Netherlands that enables people to share meals with their neighbours. This is not a mercantile platform so much as a community service and social (though not social *media*) platform. The idea is that meals are offered to others in the same area for approximately the purchase price of the ingredients, though Thuisafgehaald adds a small amount to each transaction for itself. Roughly 10 000 home cooks participate.

- **TikTok**. Likely the biggest online platform most adults have never heard of, TikTok (known as Douyin in the People's Republic of China [hereafter "China"]) is a video-sharing platform used by lip syncers and others who enjoy expressing themselves through singing, dancing and comedy. TikTok was founded in China in 2016 and has more than 500 million monthly active users (MAUs) – well beyond Twitter's 335 million (Statista, 2018[4]), for instance – and 40% of TikTok users live outside China (Pham, 2018[5]). In the first quarter of 2018, the TikTok app was the most downloaded iOS app in the world (Lee, 2018[6]).

As this brief list makes clear, this report does not presume to circumscribe the entire range of online platforms. Instead, it examines key parts of that range.

The OECD sent a brief questionnaire (see Annex B) to each of the profiled companies, requesting basic information for the profiles. Most of them graciously complied (the profiles indicate where this is the case) and the profiles have benefited from their responses. The profiles were then sent to the companies that responded to the questionnaire so they could make comments or corrections.

When the "competitive environment" in which a profiled company operates is described, the term "competitor" is used informally rather than in the strict manner of competition law analysis. The idea is to give readers a general sense of what other companies are in a similar business or are vying for some of the same users, not to undertake the lengthier and more precise analysis required for defining relevant markets in a competition law assessment. Most of the companies mentioned as competitors were identified as such by the profiled companies themselves in their financial filings or their questionnaire responses.

Airbnb

Corporate history/evolution

We are "offering more than just a place to sleep" was the marketing slogan used by two young men, Brian Chesky and Joe Gebbia, who were trying to help cover the cost of their loft apartment in San Francisco in 2007 by taking in guests who paid to sleep on air mattresses. The slogan would become one of Airbnb's main differentiators for attracting guests to its service. It juxtaposed the comforts and delights of being "at home" with a suggestion of impersonality, formality and broad homogeneity in the world of hotels. This remains a core component of Airbnb's brand identity.

Academics and business strategists were captivated by the possibilities for disintermediation brought about by new information and communication technologies (ICTs). Small players gained the ability to access global markets directly through new platforms while aggregation, the model of traditional travel agents, lost some of its competitive advantage. Everyone could enjoy bespoke travel and holiday arrangements. Dynamic pricing models and innovative payment systems matched supply and demand in real time and provided reliable, secure ways to make and receive payments and guarantees that were historically available only if both the consumer and the supply side used an aggregator (a travel agent).

But Chesky and Gebbia took another route. As Gebbia noted at the time, "We didn't want to post on Craigslist because we felt it was too impersonal. Our entrepreneur instinct said 'build your own site' [initially called Airbed & Breakfast]. So we did." (GrowthHackers, n.d.[7]).

Developing the platform

In 2008, Chesky and Gebbia enlisted former roommate and engineer Nathan Blecharczyk to help get Airbed & Breakfast off the ground. The plan was to launch ahead of a major design conference to capitalise on the anticipated shortage of hotel rooms.

From 2008 to 2010, the company's performance was relatively lacklustre. It was unable to capitalise on the positive externalities that could bring more renters and hosts onto the platform. The founders knew Craigslist was the leading platform in the geographic markets where Airbnb originally focused. Craigslist had a reputation as the source of alternative accommodation outside the traditional hotel market. It also had a degree of transactional efficiency compared to other methods, such as searching for rooms available on individual websites.

Airbnb's response was to become innovative by integrating processes into its platform that soon distinguished it from its competitors. These processes included secure online payments, a peer-to-peer review system and host protection. It also focused on the importance of design. Thus, although there were other platforms in the same approximate business, Airbnb was offering a broader set of services.

Still, to gain scale and transactional efficiency, Airbnb needed to increase the number of users on both sides of its platform (those looking for rooms and those looking for people to stay in their rooms). So it adopted another strategy: directly persuade those using Craigslist to switch to Airbnb.

What is colloquially called the "Craigslist Hack" appears to have started in early 2010. The idea was simple: make Airbnb a quasi-portal through which those listing on Airbnb would automatically be registered on Craigslist. This dual registration process was technically possible, though difficult, but it was not sanctioned by Craigslist.

The benefits of the Airbnb/Craigslist integration for Airbnb were numerous. Airbnb was able to access the large volume of potential users on Craigslist, and as Airbnb's listings were far superior – more personal, with better descriptions and nicer photos – they were more appealing to Craigslist users looking for vacation properties. Thus, if Craigslist users tried Airbnb once, they may have been more likely to ignore Craigslist in the future and use Airbnb. On the supply side, Airbnb told its hosts that re-posting their listings on Craigslist would drive up bookings and increase their monthly earnings by USD 500 on average (Chen, n.d.[8]; GMA, 2010[9]).

Other platforms have grown and achieved scale in this same manner, i.e. as start-ups riding on a much larger platform. These relationships can be opportunistic, synergistic, or parasitic, and possibly all three. Other examples include Zynga Games (e.g. Farmville) on Facebook and PayPal on eBay.

There is some evidence (Gooden, 2011[10]) that Airbnb actively set about "poaching" clients from Craigslist by exploiting a feature within Craigslist that allowed Airbnb to harvest the e-mail addresses of owners. Airbnb then sent them individual invitations to join Airbnb. These two strategies appear to have helped Airbnb achieve a critical mass of owners and renters quickly and at relatively low cost.

Still, the influence of Chesky's and Gebbia's art and design backgrounds should not be underestimated. Their initial site focused on the intrinsic quality of their loft apartment and the provision of "more than a place to sleep". The two founders demanded that the listings displayed by hosts should be of high quality. Another formative influence was Airbnb's initial failure to gain significant traction in New York in 2009. Chesky and Gebbia believed the photographs posted by hosts were of poor quality (both technically and in terms of composition). The remedy was initially to take new photographs themselves, but this soon evolved into deploying freelance photographers hosts could use.

Airbnb believed the better-quality photographs were helping it to break into the market. Reportedly, at the end of the first month when freelance photographers were available, bookings in New York had doubled (Crook, 2015[11]; GrowthHackers, n.d.[7]). The professional photography option then rolled out across all major cities, with Airbnb claiming "enhanced" listings were 2.5 times more likely to be booked and, as a result, hosts would earn an average of USD 1 025 more per month (Carr, 2012[12]). By 2012, Airbnb had over 2 000 freelance photographers, and owners had used their services for more than 13 000 listings.

Airbnb launched a new service called Experiences in 2017. Experiences are activities, rather than homes. Anyone with knowledge or a certain skill to share can be an Experiences "host". For example, the activity may be a tour, a class, or a concert. The activities are grouped by geographical destination and Airbnb expects to increase the number of Experiences destinations from 60 to 1 000 in 2018.

As of March 2019, Airbnb has ballooned to more than 6 million total listings in 191 countries. That figure is larger than the total number of rooms available in the world's top six hotel groups combined (Airbnb, 2019[13]). More than 300 million short-term stays have been transacted on the platform since the company's founding. They have taken place in homes, apartments, castles, yurts, boats, recreational vehicles – even treehouses (more than 130 000 stays were in treehouses). At present, on an average night, 2 million people around the world stay in homes they rented through Airbnb (Airbnb, 2019[14]).

Trust and safety

As a facilitator not only of financial transactions between strangers, but transactions that involve staying in a stranger's home and allowing strangers to stay in one's home, trust and safety are critical issues for Airbnb. Like many online platforms, they have addressed these issues, in part, with an online review system. After each stay is completed, the guest can write a review about the host and the property, and the host can write a review of the guest. As they gather more evaluations, each guest and host builds a reputation that helps other users to decide whether to carry out a transaction with them. Airbnb has also implemented other tools and strategies to promote trust and safety (Airbnb, 2019[14]), including:

- **Risk scoring**. Risk scoring is a particularly innovative approach that has helped to distinguish Airbnb from competitors like Craigslist. Every Airbnb reservation request is assigned a risk score before it is confirmed. The score is based on predictive analytics and machine learning. Airbnb claims it can instantly evaluate hundreds of signals that help it to identify and investigate suspicious activity *before* it occurs, which keeps users safer and gives them greater peace of mind. It therefore increases confidence in the service and leads to a higher volume of transactions.
- **Watchlist and background checks**. Airbnb checks both hosts and guests against regulatory, terrorist, and sanctions watchlists. In the United States, they also conduct background checks.
- **Preparedness**. Airbnb holds safety workshops for hosts with local experts. They will also provide a smoke and carbon monoxide detector free of charge upon request.
- **Secure payments**. Payments are made through the secure platform so all parties can be sure that funds go exactly where they are supposed to go and Airbnb is aware of the payment.
- **Refunds, guarantees and insurance**. Airbnb will also provide refunds or reimbursements under certain circumstances and offers insurance for both renters and hosts, including a USD 1 million guarantee against property damage with every booking.

Another aspect of trust concerns what Airbnb does with user data. Like most platform companies, Airbnb states that it uses customer data to optimise its website and provide a better user experience. In addition, under the terms outlined in its privacy policy (Airbnb, 2018[15]), Airbnb reserves the right to securely transmit certain basic demographic information and anonymised, aggregated data to third parties for marketing, advertising and "other business purposes".

The financial model and results

Airbnb's financial model is straightforward. Both hosts and guests pay a commission that in total amounts to 8-18% of the transaction price. Hosts generally pay only 3%, so most of Airbnb's revenues derive from guest fees. The exact percentage they pay varies: the larger the transaction price, the lower the fee percentage (Agriya, 2017[16]).

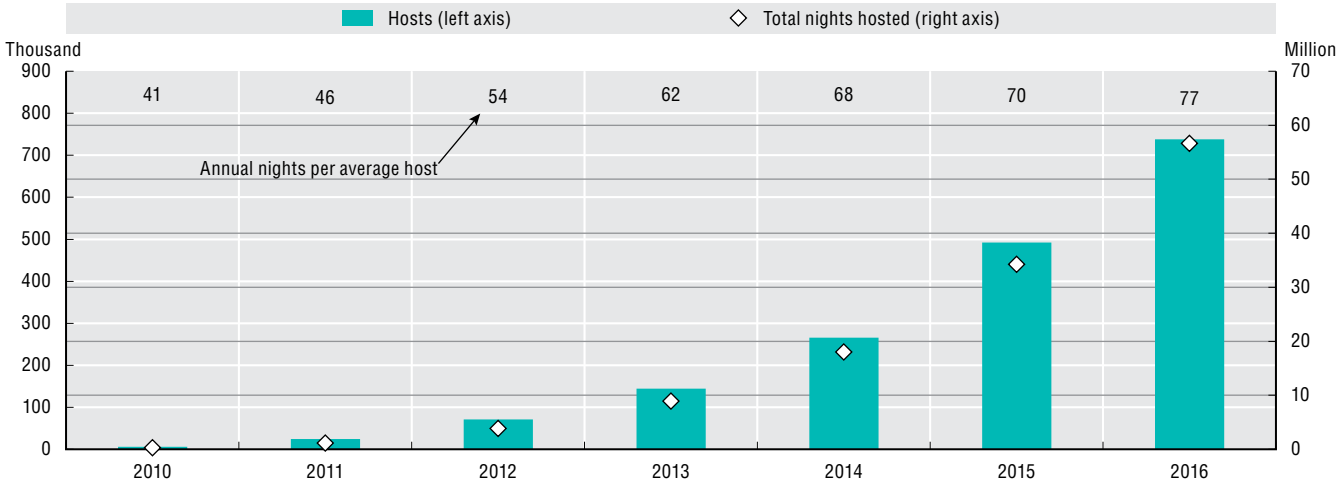
Airbnb is a privately held company, so it is not obligated to disclose its financial data. However, Airbnb reportedly earned USD 93 million in net income in 2017 (Bort, 2018[17]) and has raised USD 4.4 billion in venture funding (Crunchbase, 2018[18]), of which USD 1 billion was raised in 2017 (Reuters, 2017[19]). That last tranche of financing valued the company at USD 31 billion (Reuters, 2017[19]). Annual revenues have been reported in the press as reflected in Table A A.1, but the numbers should be considered indicative only, as Airbnb has not confirmed them (Quora, 2016[20]; Bort, 2018[17]).

Figure A A.1 below provides another perspective on Airbnb's growth, focusing on usage. Not only did the total number of hosts grow rapidly, but so did the total number of nights hosted, *and* the average nights hosted per host. That means more and more hosts were each doing more and more business on average, which suggests that the user base was growing quickly, too. However, for a variety of reasons, including a desire to balance tourism interests with longer-term housing needs, some local and national governments (e.g. Amsterdam, Berlin, Japan, Paris or Santa Monica) have been placing controls on the total number of nights per year a host can rent out a home on a short-term basis (see e.g. Fujita, 2018[21]; Le Figaro Immobilier, 2017[22]; OECD, 2016[23]: 106-109). Consequently, growth in the average number of nights hosted per host, as well as in the total number of nights hosted, may begin to slow down in some jurisdictions.

A A.1. Airbnb annual revenues reported by the press for selected years

Year	Revenues (USD million)
2009	< 1
2010	6.8
2011	25
2012	100
2014	500
2015	900
2017	2 600

A A.1. Airbnb hosts and nights hosted in the United States and major European markets



Note: European markets include: Germany, Italy, Spain and the United Kingdom. The number of hosts shown in this figure represents only active hosts, or "hosts who hosted", rather than all registered hosts.

Source: OECD (2017[354]), *OECD Digital Economy Outlook 2017*, *https://doi.org/10.1787/9789264276284-en*.

As with other successful "peer" or "sharing economy" platforms, much of Airbnb's growth can be attributed to the fact that it is a pure platform with little overhead. It does not have to absorb the expense of owning and maintaining the properties that are booked on its site; the owners do that. Nor does it have to enter into employer-employee relationships with the owners. They remain independent of the company and thus do not draw salaries or receive benefits like health insurance or retirement packages. Instead, Airbnb simply facilitates the transactions and collects a (typically) 3% transaction fee from the host. That puts it at a substantial advantage in comparison to more traditional models, such as hotels, which do need to buy and maintain properties and furnishings, and to hire employees who work in them.

Airbnb's main impacts

The company's impacts can be expressed in terms of externalities and transaction costs.

Externalities

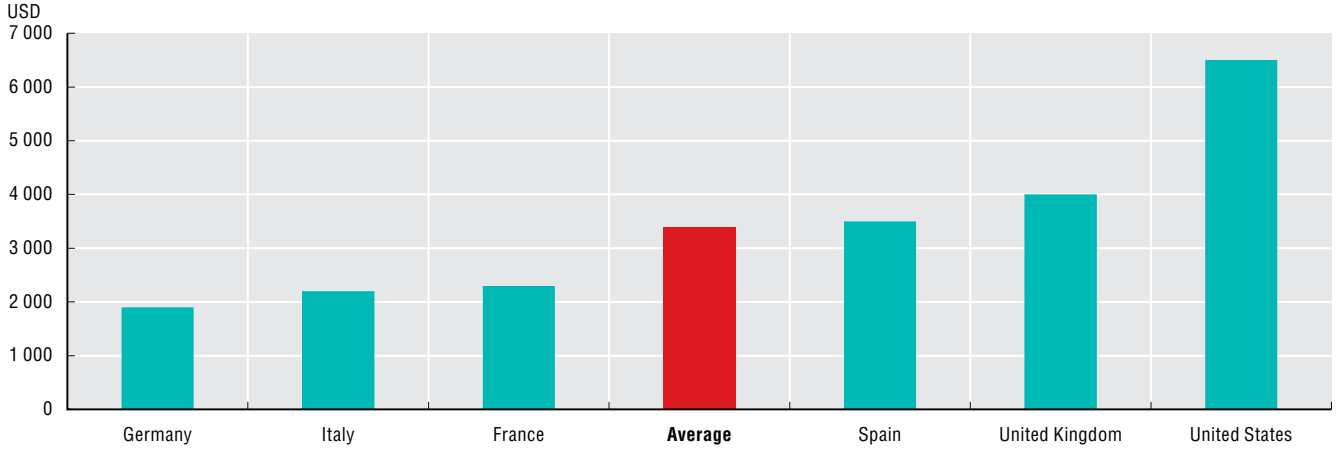
One of Airbnb's strengths is its ability to generate positive externalities and economic efficiencies that it shares with its community of hosts and guests, and with economies and societies generally (Edelman and Geradin, 2016[24]). For example, it has reduced the price of temporary accommodation in many cities (especially city centres [Quattrone, 2016[25]]) and thus provided an encouragement to travel. Additional tourists also feed directly into positive economic externalities for localities, some of which are not necessarily popular tourist areas, so the platform disperses the benefits (along with the costs) of tourism more widely. In fact, three-quarters of the properties listed on Airbnb are outside main hotel districts. Furthermore, Airbnb has led to new clusters of demand for services that support

Airbnb activities, such as cleaning, home repair and improvement services, as well as the freelance photography mentioned earlier. Businesses have been created to support Airbnb hosts, such as property management companies. Thus, Airbnb has contributed to job creation and higher employment.

There is some evidence that the innovation and expansion in tourism services introduced by online accommodation platforms such as Airbnb is causing net growth in the sector. In its *Tourism Trends and Policies* report (2016[23]), the OECD noted that in the United States, for instance, a 10% increase in Texas's Airbnb market was associated with just a 0.4% decline in hotel revenue. The report also took note of a number of Airbnb studies finding that Airbnb guests spend less per day than guests staying in traditional accommodations, but they also stay longer and may be a complement to, rather than a substitute for, existing capacity. These findings reinforce the point that services like Airbnb's may advance a country's economy while requiring little to no additional investment. In other words, there is a positive externality associated with underused private assets becoming more productive, which is a common characteristic of the so-called sharing or peer platform economy.

In addition, as a result of that same phenomenon of underused assets becoming more productive, homes rented via Airbnb may generate substantial supplemental income for hosts and start to have a higher economic value. Annual rental income earned through Airbnb by typical hosts in major Airbnb markets approximates an average monthly salary. Typical hosts in the major Airbnb markets earned USD 3 400 per year in 2016 (Figure A A.2). However, the amount varies significantly across countries, even among the major markets. For example, typical hosts in the United States earn more than three times as much as typical hosts in Germany. Nevertheless, the additional income can provide an important economic lift to hosts, especially those for whom the additional marginal income is significant, such as senior citizens living on otherwise fixed incomes.

A A.2. Average annual revenue from Airbnb per typical host (USD, 2016)



Note: A "typical host" is the median host among those who have at least a one-year history with Airbnb. Income values rounded to the nearest hundred.
Source: Airbnb.

In fact, the income from participating as a host on Airbnb has led to studies of whether Airbnb has caused home prices to rise higher than they otherwise would have in some areas (Ward, 2017[26]; Sheppard and Udell, 2016[27]). Of course, higher home prices are not universally considered to be a positive development, particularly if one is a buyer or renter rather than a seller. Thus, a complaint sometimes heard about Airbnb and similar services is that they have pushed residents out of their communities by causing rents to rise (Burgen, 2017[28]). Increases in tourism can lead to other negative externalities, too, such as more noise and traffic. Moreover, growth in the supply of short-term rental properties can change the nature of neighbourhoods and individual apartment buildings. The quality of life can be different when more people stay on a short-term basis relative to those who are permanent residents (Kuper, 2018[29]).

Communities and planning authorities are therefore paying more attention to the proportion of homes devoted exclusively or primarily to housing short-term guests. They are also questioning whether zoning and other laws actually permit individual hosts to rent their accommodations (The Straits Times, 2018[30]). But restricting short-term rentals has a cost, too, mainly in the form of lost income

for the would-be hosts. Consequently, policy makers must undertake a potentially complex balancing of economic and non-economic interests when imposing regulations in this type of market.

An additional consideration is that online platforms like Airbnb disrupt markets for short-term accommodation. This disruption has the virtue of motivating traditional players like hotels to innovate and provide new services, but it can also necessitate some adjustments as the platforms grow.

Transaction costs

For both guests and hosts, Airbnb radically reduces the transaction costs of short-term home rentals. This reduction helps to explain Airbnb's rapid success. Fradkin (MIT Sloan School of Management, 2017[31]) explores the impact of lower transaction costs on the Airbnb community:

> *In the context of Airbnb, the process of transacting is complicated by the presence of large and heterogeneous choice sets as well as uncertainty regarding the availability of an option. Airbnb's marketplace design, which tracks availability and offers precise filters, greatly reduces these costs. Without these features, searchers would need to expend much more effort to find suitable matches in this market. This reduction in transaction costs is especially important given the fact that searchers have the outside option of booking a hotel room while incurring much lower transaction costs.*

Incidentally, Airbnb hosts are not limited to individuals. Boutique hotels and bed-and-breakfast establishments also use the platform. Like individual hosts, these small and medium-sized enterprises (SMEs) benefit from using Airbnb because it makes it easier for them to connect with people looking for a place to stay.

Conclusion

Serendipity and good design launched Airbed & Breakfast; a combination of process innovation and free-riding on an established platform helped to give Airbnb critical mass, and from there its business model propelled it forward. Airbnb has demonstrated the latent economic potential of online platforms to put previously idle or underused assets to more productive uses. It has done that by bringing two sides of a market closer together, lowering users' transaction costs, bringing a supply of new accommodation at a wide range of prices to geographic markets around the world, and creating a framework that promotes trust and safety, which helps individuals who have never met to transact. In achieving those things, Airbnb became a disruptive force, helping homeowners to augment their incomes and bringing more choice and convenience (and in some cases lower prices) to travellers.

Nevertheless, Airbnb has attracted some controversy because it is one among many platform businesses that have changed people's livelihoods and lifestyles. Gains in welfare for some individuals, in other words, have arguably gone hand in hand with welfare losses for certain other individuals. Governments are now in the process of examining possible negative externalities and accounting for them when they are shown to exist.

Alibaba

Corporate history/evolution

A team of 18 people led by former English teacher Jack Ma (Ma Yun) founded Alibaba in 1999 in Hangzhou, China. Many people on the team had already worked together during the previous year in an information technology (IT) company established by the China International Electronic Commerce Centre (CIECC). At that time, the CIECC was a department within the Chinese Ministry of Foreign Trade and Economic Co-operation. At its inception, Alibaba's founders sought to build a company centred on a platform and certain related services that would help millions of small businesses to conduct business-to-business (B2B) transactions. Its self-declared mission was, and still is, to make it easy to do business anywhere. To accomplish that goal, Alibaba's vision for itself is nothing less than to build the future infrastructure of commerce.

Alibaba evolved over time into an ecosystem composed of a number of different platforms. It increasingly enters into joint ventures and takes equity stakes in distribution companies, such as Cainiao in China. Its core business remains a set of B2B, business-to-consumer (B2C) and consumer-to-consumer (C2C)

platforms, but Alibaba Group's scope now covers digital media and entertainment, cloud computing services, innovation initiatives and more. Alibaba's ecosystem connects consumers, merchants, brands, third-party service providers and strategic alliance partners, making it easier for participants to discover, engage and transact with each other and manage their businesses anytime and anywhere. Users meet, work and in a sense, live, within the Alibaba ecosystem.

To say Alibaba has been a success greatly understates the extent of its achievements. Today, 60% of all online retail sales in China flow through Alibaba (Magana, 2018[32]). More than 10 million merchants run their businesses on its online marketplaces in China alone, which connect them to more than half a billion annually active buyers. As of March 31, 2017, more than 100 000 brands were selling on Tmall, Alibaba's B2C platform, and more than half a billion people were mobile MAUs of Alibaba's digital media and entertainment businesses. During the 12-month period prior to that date, the mobile payments platforms at least partially owned by Alibaba served more than 630 million users globally. Alibaba's online retail marketplaces have 634 million active monthly mobile users and 552 annual active consumers (Alibaba Group, 2018[33]). As of March 2017, the company's retail marketplaces in China had over 1.5 billion listings. The great majority of Alibaba's revenue (more than 90%) still comes from its operations within China. That, however, is likely to change.

Alibaba has subsidiaries in the Cayman Islands, Hong Kong (China), Luxembourg, the British Virgin Islands and Singapore.

Business model

Alibaba's platforms and their users

Alibaba has developed an intricate ecosystem comprised of several platforms and services that fall within the following lines of business: 1) Core Commerce (Retail Commerce in China and Cross-border, Wholesale Commerce in China and Cross-border, Branding and Monetisation, Logistics Services and Consumer Services); 2) Cloud Computing; 3) Digital Media and Entertainment; and 4) Innovation Initiatives. The most important platforms and components of this ecosystem are:

Taobao Marketplace (Retail Commerce in China)

Taobao ("search for treasure" in Chinese) is a B2C social media hybrid platform that connects merchants and consumers. Big data analytics optimise and personalise the consumer shopping experience with features, such as real-time updates from merchants so consumers can learn about new products and trends. In addition, consumers can interact with each other and their favourite merchants and brands, as well as enjoy features, such as live broadcasts and short videos.

Taobao also acts as a top-level traffic funnel, directing users to the various marketplaces, channels and features within Alibaba's ecosystem. For example, a search result on Taobao displays listings not only from Taobao Marketplace merchants but also from Tmall merchants, thereby generating traffic for Tmall (see below). Taobao is also the entry point to platforms, such as used product auction sites and online travel booking platforms. Those platforms may also be accessed through their own independent mobile apps.

Merchants on Taobao are primarily individuals and small businesses. They can create storefronts and listings free of charge. In addition, Taobao merchants can purchase pay for performance (P4P) and display marketing services to direct traffic to their storefronts (whereupon they become advertisers served by Alimama; see below). Similarly, merchants can acquire additional traffic from third-party marketing affiliates and pay for advanced storefront software that helps to upgrade, decorate and manage their online storefronts.

Tmall (Retail Commerce in China)

Tmall is a B2C platform featuring branded products oriented towards China's growing middle class. Tmall focuses on larger sellers, including multinational brands, as well as products not available in traditional retail outlets.

Brands and retailers design and operate their own stores on the Tmall platform and have full control over their own branding and merchandising. As of March 2018, there were over 150 000 brands on Tmall, including 76% of the consumer brands ranked in the Forbes Top 100 World's Most Valuable Brands for 2018. Because of the presence of a large number of global brands and the stringent standards required for merchants to join and operate on Tmall, having a presence there has become a validation of quality – one that allows merchants to take advantage of Tmall's traffic to extend brand awareness and customer engagement.

In addition to gaining access to a platform that reaches hundreds of millions of potential buyers, Tmall sellers obtain analytic tools that display information, such as the number of visitors, page views and customer ratings, which help to guide their business decisions. Moreover, like Taobao merchants, Tmall merchants have access to P4P and display marketing services and storefront software, which they can use to fully customise their storefronts, right down to the software code.

Tmall Global (Retail Commerce – Cross-border)

Tmall Global, an extension of Tmall, was conceived to fulfil the increasing Chinese consumer demand for international products and brands. Tmall Global is a major B2C platform for overseas brands and retailers wishing to reach Chinese consumers, build brand awareness and gain consumer insights in forming an overall China strategy without the need for physical operations in China.

Alimama (Branding and Monetisation)

The Alimama platform matches the marketing demands of merchants and brands with the media resources available on Alibaba's own platforms and third-party properties, thus enabling the monetisation of Alibaba's Core Commerce and Digital Media and Entertainment businesses. Alimama supports P4P marketing services based on keyword search rankings or display marketing in fixed positions that are sold through auctions, as well as cost-per-thousand-impression (CPM)-based and time-based marketing formats, and individual marketing campaigns at fixed cost, through the display of photos, graphics and videos.

The ranking of P4P search results on Alibaba's Core Commerce platforms is based on proprietary algorithms that take into account the bid price of keywords, the popularity of an item or merchant, customer feedback ranking of merchants and the quality of product displays. For display marketing, Alimama serves marketing messages based on data derived from the Alibaba ecosystem. The relevance and comprehensiveness of data based on commercial activity and user activity in the Alibaba ecosystem help Alimama to serve the most relevant information to users.

Alimama also has an affiliate-marketing program that places marketing displays on third-party websites and apps, thereby enabling marketers, if they so choose, to extend their marketing and promotional reach to properties and users beyond Alibaba's own marketplaces.

Alimama operates the Taobao Ad Network and Exchange (TANX), one of the largest real-time online bidding marketing exchanges in China. TANX helps publishers to monetise their media inventories on web properties and mobile apps. TANX automates the buying and selling of billions of marketing impressions on a daily basis. Participants on TANX include publishers, marketers and demand-side platforms (DSPs) operated by agencies.

The ads purchased through Alimama are shown on Taobao, Tmall, Tmall Global, 1688.com, Alibaba.com, AliExpress, Youku and other properties.

Lazada (Retail Commerce – Cross-border)

Lazada is a leading B2C platform across Southeast Asia, with local language websites and mobile apps in Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. Lazada offers merchants and brands a one-stop marketplace solution to access consumers in these six countries. Lazada also sells products on its platform directly via its own retail operations. In addition, it has an extensive in-house logistics operation, which is supported by Alibaba's efficient warehouse management and order fulfilment system.

AliExpress (Retail Commerce – Cross-border)

AliExpress is a global marketplace that connects consumers from around the world with manufacturers and distributors based primarily in China. In addition to the global English-language site, AliExpress operates 16 local language sites, including sites in Russian, Portuguese, Spanish and French. Consumers can access the marketplace through its websites or the AliExpress app. AliExpress is available in several large countries, including Brazil, France, the Russian Federation, Spain and the United States.

1688.com (Wholesale Commerce in China)

The B2B platform 1688.com was China's largest integrated domestic wholesale marketplace in 2017 by revenue. It connects wholesale buyers and sellers who trade in apparel, general merchandise, home decoration and furnishing materials, electronics, shoes, packaging materials, and food and beverages, among other products. Listing items on 1688.com is free. Sellers may purchase a China TrustPass membership for an annual subscription fee to reach customers, provide quotations and transact on the marketplace. They may also pay for additional services, such as premium data analytics, upgraded storefront management tools, and advertising services.

Alibaba.com (Wholesale Commerce – Cross-border)

The B2B platform Alibaba.com was China's largest international online wholesale marketplace in 2017 by revenue. It connects wholesale buyers (typically trade agents, wholesalers, retailers, manufacturers and SMEs engaged in the import and export business) with wholesale sellers. Sellers on Alibaba.com may purchase an annual Gold Supplier membership to reach customers, provide quotations and transact on the marketplace. Sellers may also purchase an upgraded membership package to access value-added services (VASs), such as upgraded storefront management tools and P4P services. In addition, Alibaba.com offers its members and other SMEs import/export supply-chain services, including customs clearance, trade financing and logistics services.

Cainiao Network (Logistics Services)

Alibaba's logistics vision is to fulfil consumer orders within a day in China and within three days anywhere else in the world. To do that, Cainiao Network has adopted a platform approach, establishing a nationwide fulfilment network that relies on the capacities and capabilities of logistics partners to offer domestic and international one-stop-shop logistics services and supply-chain management solutions. Thus, Cainiao is a platform that connects merchants with providers of shipping and parcel delivery services.

Cainiao's nationwide fulfilment network consists of fulfilment hubs at key strategic locations, package sorting and distribution centres, and last mile stations, which are owned by, leased by or partnered with logistics data providers. The fulfilment network is connected by Cainiao's proprietary logistics data platform. This nationwide fulfilment network enables medium and large merchants to place inventory across multiple locations in advance based on sales forecasts, thereby optimising supply-chain efficiency and providing fast delivery to consumers.

Cainiao uses data insights and technology to improve efficiency across the logistics value chain. Using large-scale computing and machine learning, Cainiao's e-shipping label and VASs optimise delivery routes and improve efficiency for express delivery couriers, leading to quicker and more accurate deliveries to consumers.

Ele.me, Koubei and Fliggy (Consumer Services)

These platforms connect consumers with a broad array of food suppliers, restaurants, hotels, airlines and other travel-related service providers. Ele.me is a leading on-demand delivery and local services platform in China that enables consumers to order meals, snacks and beverages online. It fulfils food orders generated directly through the Ele.me app as well as through the Taobao and Alipay apps. Ele.me covered over 670 cities in China as of March 2018.

Koubei is one of the leading local services platforms in China. It generates traffic to restaurants and other local service providers.

Fliggy, a leading online travel platform in China, provides reservation services for airline tickets, accommodations, train tickets, car rentals, package tours and destination attractions. Fliggy's data technology also enables partnered hotels to identify travellers with good credit.

Youku (Digital Media and Entertainment)

Youku enables users to search, view and share video content quickly and easily across multiple devices. It is among the most recognised online video brands in China.

Insights derived from Alibaba's B2C businesses as well as its proprietary data technology enable Youku to deliver relevant digital media and entertainment content to its users. At the same time, Alibaba strengthens customer loyalty to its B2C businesses by providing users with complementary content offerings on Youku. For example, a loyalty program member of one of Alibaba's Core Commerce businesses can buy a Youku membership at a preferential rate or be rewarded a membership free of charge. Youku is also the exclusive online video platform for livestreaming major Alibaba e-commerce events, such as the Countdown Gala Celebration for the 11 November "Global Shopping Festival" (also known as "Singles Day"), which is supported by interactive features to drive consumer engagement.

The content offered on Youku and other Alibaba properties (such as UC Browser; see below) is produced in different ways. First, Alibaba can produce it directly. Second, studios and directors produce content for Youku – sometimes exclusively to that platform. Furthermore, Alibaba sometimes acquires rights to display content on its Digital Media and Entertainment platforms pursuant to licensing agreements with rights holders. Finally, Youku hosts user-generated content and other, professionally generated content that may be uploaded and streamed. Alibaba's Digital Media and Entertainment offerings include online videos, movies, news feeds, games, literature, music and sports.

Other important components of Alibaba Group's ecosystem

Alibaba Cloud (Cloud Computing)

Alibaba Cloud was China's largest provider of public cloud services by revenue in 2017, including Platform as a Service and Infrastructure as a Service (IaaS) services (IDS, 2017[347]), It was also the world's third-largest IaaS service provider by revenue in 2017 (Graham et al., 2017[34]). The technologies that power Alibaba Cloud grew out of Alibaba's need to operate at massive scale as well as the complexity of its commerce business, including payments and logistics elements. Alibaba Cloud was founded in 2009 to make these technologies available to third-party customers.

Alibaba Cloud offers a suite of cloud services to customers worldwide, including elastic computing, database, storage, network virtualisation services, large-scale computing, security, management and application services, big data analytics, a machine-learning platform, and Internet of Things (IoT) services. Alibaba Cloud is differentiated from its domestic peers based on its proprietary security and middleware products, large-scale computing services, and analytic capabilities supported by Alibaba's big data technology. Alibaba operates data centres in a number of countries including Australia, Germany, Japan, India, Indonesia, Malaysia, Singapore and the United States.

UC Browser (Digital Media and Entertainment)

UC Browser is one of the top three mobile browsers in the world and was the number two mobile browser in India and Indonesia by page-view market share as of March 2018 (Statcounter, 2019[35]). It is also of paramount significance for the distribution of digital content within the Alibaba ecosystem.

Amap (Innovation Initiatives)

Amap (formerly AutoNavi) provides mobile digital map, navigation and real-time traffic information to end users in China. In addition, Amap's big data-enabled digital mapping technology powers many major mobile apps in China, such as food delivery, ride service, taxi-hailing and social networking apps. Amap also serves major platforms and infrastructural service providers in the Alibaba ecosystem, including its China retail marketplaces, the Cainiao Network and Alipay.

Alipay (a subsidiary of Ant Financial)

Alibaba owns a 33% share of Ant Financial Services Group (Alibaba, 2018[36]), which provides financial services to consumers and SMEs in China and across the world, including payment, wealth management, lending, insurance and credit system services. It also provides other services to merchants and consumers in the Alibaba ecosystem, such as consumer loans and working capital loans to SMEs. Ant leverages its own and Alibaba's customer insights and technologies to help financial institutions and other customers on its platform and within the Alibaba ecosystem to enhance the user experience and improve their risk management capabilities. In particular, by leveraging big data from the Alibaba ecosystem, Ant is able to identify with precision the risk profiles of Alibaba's merchants and buyers, and to extend loans or make credit-related decisions accordingly (most likely better than a traditional retail bank could, as Alibaba has more and better data on its users). During the 12 months ended 31 March 2017, Ant, together with Paytm and Ascend Money, served over 630 million annual active users globally. Ant was valued at over USD 150 billion after its latest round of funding (Wu and Zhu, 2018[37]) in 2018.

Alipay, a wholly owned subsidiary of Ant, operates a mobile and online third-party payment platform. Alipay provides payments and escrow services for transactions on Alibaba's e-commerce platforms and has been referred to as "the glue that holds the Alibaba online shopping empire together" (Weinland and Fei Ju, 2018[38]). Koubei, Tmall, Tmall Supermarket and Taobao's food delivery service are also integrated with Alipay.

Created in 2004, Alipay started out as the payment department of Taobao Marketplace. Taobao was aiming to solve the biggest pain point in e-commerce in China at that time: lack of trust between sellers and buyers. Many negotiations between sellers and buyers on Taobao were failing to result in transactions, often because both sides suspected each other as fraudsters. So Taobao introduced Alipay as a third-party service that temporarily holds the money paid by the buyer, only releasing it to the seller upon confirmation by the buyer that the product was received in good condition. Having solved the trust issue, Alipay saw tremendous growth on Taobao, and Alibaba began to use it in other settings, as well (Liu, 2017[39]).

Today, Alipay provides payment services well beyond the Alibaba family of businesses. For example, almost all shopping malls in China accept Alipay, which can be used either by scanning a quick-response (QR) code at a point-of-sale device or at traditional checkout counters with an attendant. Alipay is also accepted in the majority of restaurants in China. After dinner, users can buy movie tickets with Alipay. It also has a direct connection with Airbnb and Uber (Liu, 2017[39]).

Alipay is connected to bank accounts. Thus it is not dramatically different from Western online payment methods such as PayPal. However, Alipay's (like Tencent's WeChat Pay's) user adoption rate is much higher, and China is quickly evolving into a cashless society. Together, WeChat Pay and Alipay reportedly have 90% of the Chinese online payment market. Alipay alone was used for over USD 8.7 trillion in transactions in 2017 (Weinland and Fei Ju, 2018[38]).

How the platforms make money

Sources of revenue

Alibaba derives the majority of its revenues from its Core Commerce segment, which accounted for 85% of its total revenue in fiscal year 2017, while Cloud Computing, Digital Media and Entertainment, and Innovation Initiatives and Others contributed 4%, 9% and 2%, respectively.

A substantial majority of Alibaba's Core Commerce revenue comes from online marketing services. In particular:

- **Taobao Marketplace** does not charge transaction fees and the site is free for merchants to join. However, merchants pay for P4P and display marketing services, third-party marketing affiliate services and storefront software.
- **Tmall** charges merchants commissions based on a percentage of each transaction value that varies by product category, typically from 0.4% to 5.0%. There is also an annual service fee, but that may be refunded up to 100% depending on the sales volume achieved by the merchant each year. Like Taobao merchants, Tmall merchants have access to P4P and display marketing services, third-party marketing affiliates, and storefront software.
- **Alibaba.com** derives its revenues mainly from membership fees, online advertising services (as in the case of Tmall and Taobao) and VASs such as customs clearance, value-added tax refunds and product showcases. Membership is free for buyers.

Alibaba offers different supplier "memberships". The entry-level membership allows sellers to list up to 50 items without having to pay a listing fee. In addition, apart from transactions paid with credit products such as credit cards – for which Alipay charges the seller a fee – neither Alibaba nor Alipay charge any payment fees to sellers. Instead, Alibaba pays Alipay's fee for the payment and escrow services that Alipay provides for transactions taking place on Alibaba's marketplaces. On the other hand, entry-level suppliers get a low ranking in the platform's search results, so their listings are unlikely to appear on the first few pages. They have few product display options and no ability to communicate with customers via the site during the ordering process. Furthermore, Alibaba does not verify these suppliers, so "caveat emptor" applies.

Gold membership requires an annual fee, which is currently RMB 29 800 (about USD 4 300) for suppliers in mainland China. Gold membership is mandatory for domestic Chinese businesses, but is available to overseas suppliers, too. Gold membership includes a process to verify the supplier's identity as well as a credit rating. Gold members can post an unlimited number of products and are entitled to have a number of "product showcases" that show products more frequently to buyers. Their listings also have a higher priority ranking in search results than entry-level members. However, Gold members pay a sales commission to Alibaba.com, the amount of which depends on each seller's performance.

The Premium Gold Supplier Membership also allows for unlimited product listings but comes with even higher priority in search results, better product display options, and enhanced services for communicating with customers during the ordering process.

- **AliExpress** makes money by charging sales commissions of 5% to 8% of each transaction's value. AliExpress also charges approximately USD 1 500 to start or change a store on the platform. That fee is reportedly designed to discourage dishonest sellers from registering quick sales for a short time and then starting up a completely new store when the poor ratings and reviews start to appear (Pahwa, 2017[40]).
- **Youku** derives its revenues primarily from brand advertising, including in-video, display, sponsorship and other forms of advertisements. In-video advertisements appear at certain times during the playback of a video. Display advertisements can be delivered alongside a video and may take the form of graphical banners or text hyperlinks. Other forms of advertising include product placements in web video series produced in-house, sponsored live events and viral videos produced in-house.
- **Cainiao Network** charges merchants and third-party logistics service providers certain fees based upon the number of contracted orders completed and the other VASs provided, such as customs clearance.

Reason for success

Several interlinked factors have helped Alibaba to be successful, including improvements in Chinese infrastructure and technology, macroeconomic trends, business acumen, network effects and government protectionism. Although Alibaba emerged just as the dotcom bubble was bursting in the West, it was a time when broadband access and mobile Internet services were beginning to expand in China. It was also a period when starting a business in China was becoming easier because the government was encouraging SMEs by doing things like making it easier to obtain operating licenses. That had a formidable effect on Alibaba because it magnified the number of Chinese SMEs that would start up and become users of its platforms.

Moreover, a number of macroeconomic factors, including the changing nature of the Chinese economy and a prolonged period of high gross domestic product (GDP) growth rates, played a role. In addition, a structural shift in consumption took place in the Chinese economy. Consumer expenditure was low and flat for several decades before 1989 and then began to grow substantially. That growth was occurring without a parallel buildout of effective retail infrastructure to support the major shift towards consumption, though. On the other hand, China's ICT infrastructure, including high-speed mobile Internet, was growing rapidly.

Jack Ma and his colleagues seem to have understood these broad trends well and early. They anticipated the value of the Internet as a series of business opportunities in China. Ma's original idea was to provide a B2B platform, largely but not exclusively for buyers around the world to connect with businesses in China. Alibaba built that platform and created mechanisms to establish trust between suppliers and business consumers. As Alibaba began to attract buyers and sellers, indirect network effects came into play. Accordingly, the platform's value increased for both types of users as more of them participated. Sellers valued a larger audience of buyers, and buyers valued a larger number of sellers who offered more products and more competition. Alibaba also focused on software development, ICT infrastructure investments and e-commerce support services rather than pushing directly into markets for products, order fulfilment and content. As one article in the financial press noted when explaining Alibaba's growth, "In short, software is easier to scale than warehouses" (Blystone, n.d.[41]).

Some commentators have argued that Alibaba's pricing approach, which gives non-Chinese sellers the option to list products on Alibaba.com without paying a listing fee, helped to develop reliance on and comfort with online sales in China and contributed to a large and loyal customer base (Pavie and Luo, 2016[42]). Furthermore, sellers do not have to pay Alipay's transaction fee if they opt to use Alipay for payment processing. Fully subsidising Alipay's fees helped Alibaba to seed its market by taking that burden off of sellers.

Additionally, consumer engagement tends to increase over time. The longer consumers have been with Alibaba, the larger the numbers of orders they tend to place across a more diverse range of product categories, and the more they tend to spend on Alibaba's China retail marketplaces. For example, in the 12 months ended 31 March 2018, consumers who had been with Alibaba for approximately five years placed an average of 132 orders in 23 product categories with average spending of approximately RMB 12 000 in terms of gross merchandise volume (GMV). In contrast, consumers who had been with Alibaba for only one year placed an average of 27 orders in 6 product categories with average spending of approximately RMB 3 000 in terms of GMV. In the 12 months ended 31 March 2018, the average annual active consumer on Alibaba's China retail marketplaces placed 90 orders in 16 product categories, with average spending of approximately RMB 9 000 in terms of GMV.

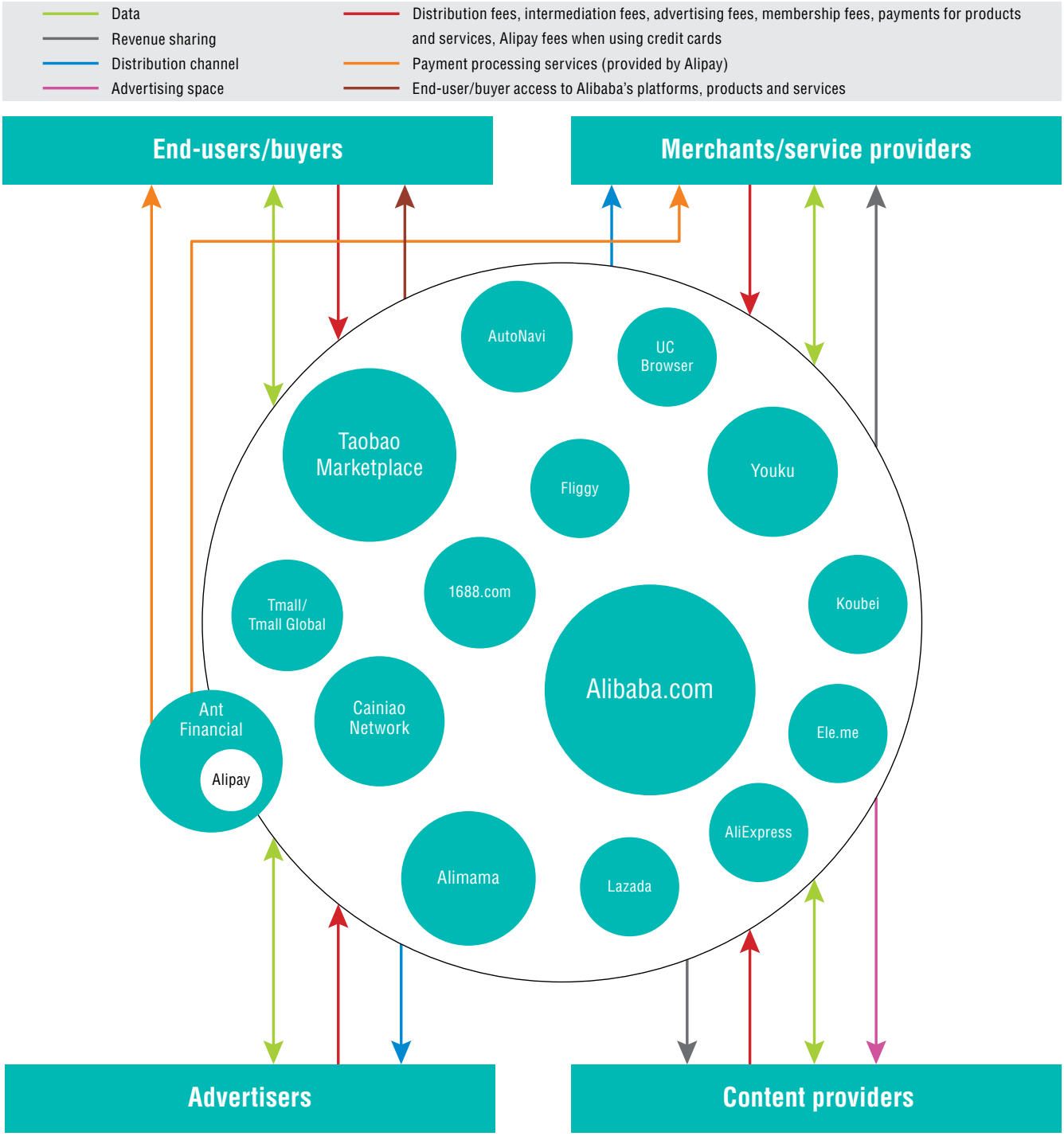
Another reason behind Alibaba's financial success may be that it prevents the "search spiders" of other companies' search engines, such as Baidu's, from indexing its sites. Consequently, the value to users of conducting searches on Alibaba's sites increases. That makes sellers more willing to pay for advertisements alongside Alibaba's search results (Blystone, n.d.[41]).

Furthermore, Alibaba developed a trusted credit-referencing model that reduced the risk for sellers and buyers of transactions not being completed. All sellers have to complete an online certification process to verify their identity. Furthermore, Alibaba makes it possible for all transactions between sellers and buyers to be recorded and uses a payment protection mechanism (now through Alipay). Alibaba also encourages feedback between sellers and buyers. In fact, Alibaba rewards buyers with discount coupons for future purchases when they leave feedback.

Lastly, protectionist policies enacted by China's government have likely contributed to Alibaba's success, though perhaps to a lesser extent than for the other Chinese platform giants, Baidu and Tencent. China's "Great Firewall" has kept Facebook, Google, Snapchat, Twitter, YouTube and several other Western tech companies out of Chinese markets (Banjo, 2018[43]). Amazon, a company that is more similar to Alibaba in some ways, has more freedom to operate in China, given that it is not blocked outright. Moreover, from 2004 to 2006, eBay (which also bears some similarities to Alibaba) was an active competitor in China. However, eBay pulled out of China and even Amazon faces certain disadvantages, such as the inability to offer its Prime Video service due to government censorship (Keyes, 2017[44]).

Flow chart

A A.3. The Alibaba ecosystem



Note: Alibaba's services also share data between them.

Use of data and information

In connection with the use of Aliexpress.com and Alibaba.com ("the Sites"), Alibaba collects basic information including user names, addresses, phone numbers and e-mail addresses (Alibaba, 2018[45]). It also collects tax registration numbers and information about merchants' business licenses. In addition, it collects social media account names, profile photos, posts or comments made by the Sites' members; bank account numbers, billing and delivery information, credit/debit card numbers, expiration dates and security code information; details of users' activities on the Sites; information relating to transactions (including, but not limited to, the types and specifications of goods, pricing and delivery information, and any information disclosed in any discussion forum) when conducted on or facilitated through the Sites; and users' buying and browsing activities on the Sites, including but not limited to Internet Protocol (IP) addresses, browsing patterns, buyer behavioural patterns, device information, browser software, operating system, software and hardware attributes, pages viewed, number of sessions and unique visitors.

Alibaba's privacy policy says the information listed above is collected to verify users' identities and their eligibility to register as a user of the Sites; to process registrations, provide log-in IDs for the Sites; to provide customer service; to facilitate communication between buyers and sellers on the Sites, process transactions and payments, assess advance withdrawal requests from sellers and provide delivery services; to assess the account security and transaction risks of members, detect and prevent fraud and other security incidents; to personalise Alibaba's communication with users based on their browsing records, equipment information and order history; to perform research or statistical analysis in order to improve the content and layout of the Sites; and to improve Alibaba's product offerings and services, including, for example, using anonymised data for machine-learning purposes.

Alibaba may also disclose and transfer (whether within or outside the jurisdiction of the Alibaba entity that is the data controller) users' personal data to its partners and service providers (for example, to enable them to provide users with discounts or offers); to marketing platforms and providers of analytics services relating to users' behaviour, in order to tailor the content users see when visiting the Sites; to payment service providers to assist with payment for transactions or provide withdrawing services for sellers; to credit risk assessment providers to enable them to conduct risk assessments on sellers to determine whether a seller can be permitted to make an advance withdrawal; to logistics partners; to custom agents for customs clearances purposes; to cloud computing service providers to provide cloud storage services; to customer service providers to provide after-sale services; and to risk control service providers to assess the security of members' accounts and transaction risks.

Alibaba has availed itself of the vast amounts of data generated within its ecosystem, identifying synergies arising from linking data and using it to improve the ecosystem's overall functioning. Examples include Alibaba's Uni Identity system and Uni Marketing approach (see below), the use of retail commerce data to deliver content recommendations on Youku, and the use of data to improve the Cainiao Network's efficiency.

The platforms' importance to users

How users on each of the platforms' sides benefit from using them

Core Commerce

End users (i.e. buyers) on the platforms comprising Alibaba's Core Commerce segment (Taobao, Tmall, Tmall Global, 1688.com, Alibaba.com and AliExpress) benefit from access to a large selection of products and services; enhanced convenience; an engaging and personalised "social commerce" experience in the Taobao and Tmall apps (based on relevant content, personalised shopping recommendations and opportunities for social engagement); greater value for money (as Alibaba's business model strives to ensure that merchants offer competitive prices); merchant quality (consumers can rate a merchant after completion of a transaction and that feedback is factored into the search algorithm that determines the merchant's ranking on the search results pages of Alibaba's China retail marketplaces); and buyer protection programs (such as a full refund if an item purchased on its China retail platforms turns out to be counterfeit).

Merchants benefit from a large base of consumers (in March 2018, the various mobile apps consumers use to access Alibaba's China retail marketplaces had 617 million MAUs; stronger brand identity (merchants use Tmall storefronts to distinguish their brands and build brand awareness, leveraging the multimedia capabilities of Alibaba's platforms, such as social media, videos and dynamic graphics); and innovative initiatives (for example, Alibaba offers mobile and enterprise technology to enable merchants to offer a seamless online and in-store shopping experience – these solutions integrate online and offline inventory, membership and services that enable merchants to fulfil online orders with store-based inventories, while allowing consumers to buy products that are unavailable in stores). In addition, Alibaba provides an online control panel that allows merchants to conduct core operations. The panel has business tools, such as an operation dashboard and direct messaging, and access to business software as well as a wide range of offline services, such as fashion modelling and photography. Merchants on Alibaba's China retail marketplaces use this control panel to conduct day-to-day operations, such as managing stores and product listings, fulfilling orders, managing inventory and transactions, conducting sales and marketing activities, servicing customers, managing procurement processes, interacting and collaborating with other businesses and seeking financing provided by Ant Financial.

Moreover, given the scale of Alibaba's operations, local post offices and private couriers offer the Cainiao Network low shipping rates and a reliable delivery service. These benefits are passed on to merchants, enabling them to offer trustworthy shipping services to their buyers at competitive prices. Buyers benefit from a reliable, affordable delivery service and merchants benefit from increased attractiveness of their offerings. Sellers also benefit from greater convenience because instead of having to arrange shipping themselves, this task is carried out by the Cainiao Network. Lastly, parcel delivery firms and post offices benefit from having a good customer that ensures a dependable, increasing volume of business.

Finally, retailers and merchants of all sizes that use Alimama's advertising solutions benefit from the possibility to advertise their products and services on popular websites visited by users who are there to make purchases. Also, because ads are targeted based on users' preferences and interests (determined by algorithms and data processing), their ads are more likely to be of interest for potential buyers. In particular, based on big data technology, Alibaba has developed a "Uni Marketing approach" that enables brands to build robust consumer relationships throughout their lifecycles in the Alibaba ecosystem. This approach is based on Alibaba's Uni Identity system, which makes it possible to track users across different properties and devices. For example, Alibaba is able to identify a user watching a Youku video on a PC as the same user who is shopping on the Taobao app. The Uni Identity system takes disparate data and attributes them to a single user, which enables Alibaba to provide marketers with valuable insights into user behaviour and preferences. Alibaba's Uni Marketing approach tracks brand-consumer relationships through each stage from awareness to interest to purchase to loyalty. Consumer data is generated, aggregated, analysed and fed back into brands' databases. This data guides brands and marketing agencies across each phase of the brand-consumer relationship, providing insights into strategy, communication planning and ad-serving.

Digital media and entertainment

Youku's and UC Browser's users (i.e. **content viewers**) benefit from access to a wide selection of material. The recommendations and search results these platforms display are based on each consumers' revealed preferences and thus are likely to be more relevant to their interests. Users also benefit from the ability to post videos, as well as the possibility to develop a fan base and propagate their artistic creations. **Advertisers** have recourse to Alimama's advertising solutions, thereby gaining the ability to serve ads to promote their brands. Accordingly, they benefit from the possibility to target Youku's audience based on the videos and content viewers watch.

Special case: Alipay

Alipay, though only partially owned by Alibaba, is the principal means by which consumers pay for their purchases on Alibaba's China retail marketplaces. Except for transactions paid with credit products such as credit cards, where Alipay charges the merchant, neither Alibaba nor Alipay charge any payment fees to merchants transacting on Alibaba's platforms. Instead, Alibaba pays Alipay a fee for the payment and escrow services it provides on Alibaba's marketplaces pursuant to a commercial agreement with Ant Financial Services Group and Alipay.

Registered/active users, business transacted between the platforms' sides and number of listings

- As of March 2018, over 10 million merchants were running their businesses on Alibaba's China retail marketplaces.
- As of December 2014, there were 334 million annual active buyers on Alibaba's China retail marketplaces, 407 million as of December 2015, 443 million as of December 2016 and 515 million as of December 2017.
- Alibaba was the largest retail commerce company in the world in terms of GMV as of 31 March 2018. In particular, Taobao's GMV was RMB 1.6 trillion as of 31 March 2015, RMB 1.9 trillion as of 31 March 2016, RMB 2.2 trillion as of 31 March 2017 and RMB 2.7 trillion as of 31 March 2018. Tmall's GMV was RMB 0.8 trillion as of 31 March 2015, RMB 1.2 trillion as of 31 March 2016, RMB 1.6 trillion as of 31 March 2017 and RMB 2.1 trillion as of 31 March 2018.
- As of 31 March 2018, there were over 1.5 billion listings on Alibaba's China retail marketplaces.
- As of 31 March 2018, 1688.com had over 887 000 paying members (i.e. sellers that pay for memberships, advertising or additional services, such as upgraded storefront management tools or premium data analytics).
- As of 31 March 2018, Alibaba.com had over 164 000 paying member sellers.

Other informative statistics

- Today, 60% of all online retail sales in China flow through Alibaba (Magana, 2018[32]).
- As of 31 March 2017, more than 100 000 brands were selling on Tmall, and more than half a billion people were mobile MAUs of Alibaba's digital media and entertainment businesses.
- In 2009, Tmall pioneered what has become a massive one-day e-commerce sales event in China: "Singles Day" (also known as the 11/11 Global Shopping Festival). On Singles Day in 2016, sellers transacted USD 17.8 billion in sales through Alibaba alone (Baird, 2017[46]). To appreciate the size of that number, consider that in 2016, all US online retailers grossed a total of USD 6.75 billion on Black Friday and Cyber Monday (Desjardins, 2017[47]) combined. The first USD 1 billion of sales transacted through Alibaba on Singles Day in 2016 occurred within the first five minutes of the event (Meixler, 2017[48]). Relatedly, Alipay settled USD 25.9 billion in sales that were transacted on Alibaba's marketplaces on Singles Day 2017. That was 39% more than 2016's figure. The volumes transacted on Singles Day illustrate not only Alibaba's sheer commercial importance in China, but also the resilience and scalability of its marketplaces. During 2017's Singles Day, the company processed a peak load of 325 000 purchase orders per second on the Alibaba Cloud Computing stack, nearly double the 2016 festival's figure of 175 000. Meanwhile, Alipay processed 1.5 billion payment transactions during the 2017 event, an increase of 41% over 2016.
- As of 31 March 2018, Cainiao Network's 15 strategic express courier partners employed over 1.9 million delivery personnel in more than 700 cities and 31 provinces in China. Collectively they operated more than 200 000 hubs and sorting stations. During fiscal year 2018, Cainiao Network and its logistics partners enabled the delivery of 20.6 billion packages that originated from Alibaba's China retail marketplaces.
- In the 12 months ended on 31 March 2017, Lazada had approximately 23 million annual active buyers.

Social and economic benefits to countries

Alibaba has created a large and rapidly growing ecosystem where buyers and sellers from China and all over the world meet to fulfil their needs. Given the size and variety of products on Alibaba's marketplaces, more commerce is likely to be transacted than if each retailer could sell only in its own brick-and-mortar and/or online shop. The higher volume of transactions increases GDP, entrepreneurship and consumer welfare. Alibaba also facilitates sales through its targeted advertising services. Furthermore, its logistics and payment processing options offer cost-effective delivery and secure online payments solutions. These enhance the online shopping and selling experience on Alibaba's marketplaces, further encouraging sales growth. Moreover, Alipay enhances consumer convenience and further realises the potential of online commerce, as explained above.

As of 31 December 2016, 590 million people in China resided in rural areas, according to the National Bureau of Statistics of China. Consumption in rural areas is highly constrained by geographic and infrastructural limitations. Alibaba had established service centres in over 26 500 villages as of 31 March 2017, giving rural residents greater access to goods and services and the ability to sell what they make to city residents.

Furthermore, Alibaba has applied its technology to philanthropic initiatives. For example, it launched the Reunion platform, which connects Alibaba's mobile apps and those of its partners to help locate missing children across China. From Reunion's implementation in mid-2016 to the end of 2016, authorities successfully located 611 missing children based on 648 alerts broadcasted to the ecosystem of mobile users.

Last but not least, Alibaba has had a positive impact on job creation in China. According to AliResearch, Alibaba's research division, as of December 2016 Alibaba's China retail marketplaces had helped to create more than 33 million (direct and indirect) job opportunities in China, including people working directly for online storefronts, service providers employed by merchants and other businesses. Alibaba's platforms have also contributed to a more inclusive economy. In fiscal year 2017, approximately half of the annual active sellers on Alibaba's China retail marketplaces were female. Similarly, in calendar year 2016, Alibaba's China retail marketplaces supported the livelihoods of approximately 160 000 disabled sellers.

Basic financial information

Alibaba does not disaggregate its financial information on a platform-by-platform basis. The information presented below is therefore grouped by Alibaba's major business segments.

A A.2 Alibaba's annual revenues by major business segment

	Year ended 31 March							
	2015		2016		2017		2018	
	RMB (million)	% of total revenue	RMB (million)	% of total revenue	RMB (million)	% of total revenue	RMB (million)	% of total revenue
China commerce retail	59 732	78	80 033	79	114 109	72	176 559	71
China commerce wholesale	3 205	4	4 288	4	5 679	4	7 164	3
International commerce retail	1 768	3	2 204	2	7 336	5	14 216	6
International commerce wholesale	4 718	6	5 425	6	6 001	4	6 625	2
Cainiao logistics services	..	..	..	..	..	..	6 759	3
Others	113	0	385	0	755	0	2 697	1
Total core commerce	69 536	91	92 335	91	133 880	85	214 020	86
Cloud computing	1 271	2	3 019	3	6 663	4	13 390	5
Digital Media and Entertainment	2 191	3	3 972	4	14 733	9	19 564	8
Innovation Initiatives and others	3 206	4	1 817	2	2 997	2	3 292	1
TOTAL	76 204	100	101 143	100	158 273	100	250 266	100

Note: .. = not available.

A A.3. Alibaba's annual company-wide revenue, net income and employees

Year ended 31 March	Revenue (RMB million)	Net income (RMB million)	Net profit margin (RMB million)	Employees
2013	34 517	8 649	25	20 674
2014	52 504	23 403	44.6	22 072
2015	76 204	24 149	31.6	34 985
2016	101 143	71 289	70.4	36 446
2017	158 273	41 226	26	50 097
2018	250 266	61 412	24.5	66 421

Competitive environment

Geographic reach

Alibaba's platforms and services still operate predominantly in China. Indeed, in fiscal year 2018, Alibaba generated only 8% of its revenue from its international e-commerce businesses.

However, Alibaba has started to lay a foundation for a wider international presence. AliExpress, Alibaba's global retail marketplace, had approximately 60 million annual active buyers from around the world in the 12 months ended on 31 March 2017. Tmall Global enables overseas brands and retailers to reach Chinese consumers without the need for physical operations in China. Furthermore, Alibaba's Lazada operates e-commerce platforms in Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. In addition, as of March 2018, buyers on Alibaba.com were located in more than 190 countries and regions.

Main competitors

According to Alibaba, its ecosystem faces competition from established Chinese Internet companies, such as Tencent, Baidu and their respective affiliates, as well as from certain offline retailers and e-commerce players, including those that specialise in a limited number of product categories, such as fast-moving consumer goods, global or regional cloud computing service providers, and digital media and entertainment providers.

Alipay faces strong competition from Tencent's WeChat Pay. WeChat Pay, which is several years behind Alipay in terms of market entry, has been steadily chipping away at Alipay's lead. While Alipay still has more users than WeChat Pay, the former may have more potential to capture China's rapid e-payment growth. This is because electronic wallets are overtaking bankcards as the favourite payment method for smartphone users in China (Wang, 2018[49]) and WeChat gives its users few reasons to leave its "superplatform" environment.

Alibaba also knows it faces competition from major global Internet companies, such as Amazon and eBay (not in China, but in cross-border and global commerce).

Publicly announced geographic and product/service expansion plans

Alibaba is introducing New Retail initiatives to transform the retail landscape and re-engineer the fundamental aspects of retail operations in China. New Retail represents the convergence of online and offline retail by leveraging digitised operating systems, in-store technology, supply-chain systems, consumer insights and Alibaba's mobile ecosystem to provide a seamless experience for consumers. Alibaba seeks to empower retailers with its technology to significantly improve operating efficiency and allow them to respond to consumer demands on a real-time basis.

One of these New Retail initiatives is Hema, a premium fresh food store chain that uses its physical retail spaces to function as both storefronts and warehouses for online orders. Its proprietary fulfilment system enables 30-minute delivery to customers living within a three-kilometre (km) radius of a Hema store. Hema offers a mobile app that allows consumers to search for products and place orders while browsing the store. To improve consumer experience, transaction data is used to personalise recommendations, while geographic data helps to plan the most efficient delivery routes.

Alibaba has also announced its intent to invest USD 15.2 billion over the next five years to strengthen its global logistics network. Its goal is to fulfil orders in China within 24 hours and in other parts of the world within 72 hours (Najberg, 2017[50]).

Major mergers and acquisitions

- In 2014, Alibaba paid USD 1.09 billion for a 16.5% equity interest in Youku Tudou, a multi-screen entertainment and media company in China. Then, in 2016, Alibaba completed the privatisation of Youku Tudou for total cash consideration of USD 4.4 billion, making Youku Tudou a consolidated subsidiary of Alibaba Group.
- Alibaba took majority control of Singapore-based Lazada in April 2016 in a USD 1 billion deal (McClay, 2017[51]). Alibaba invested another USD 1 billion in June 2017, followed by USD 2 billion in March 2018.
- Alibaba announced in September 2017 that it was increasing its stake from 47% to 51% in Cainiao Smart Logistics Network Ltd., for USD 807 million as a step to implement its New Retail strategy.

Major litigation and regulatory matters

- ***Gary Buelow, et al. v. Alibaba Group Holding Limited, et al.***, No. CIV-535692. This class action, brought in California in October 2015 on behalf of a putative class of investors who purchased Alibaba American Depositary Shares pursuant or traceable to its initial public offering (IPO), alleged violations of Sections 11, 12(a)(2) and 15 of the United States Securities Act of 1933 (material misrepresentations in IPO materials). Alibaba agreed to settle the case without admitting any wrongdoing for USD 75 million in December 2018. The settlement agreement is subject to court approval (Tian, 2018[52]).
- **Pending US Securities and Exchange Commission (SEC) inquiry**. Alibaba's 2014 IPO raised USD 25 billion and, at that time, was the largest IPO ever issued in the United States. Technically, it was an issue of American Depositary Shares to an offshore structure, to which Alibaba committed to pay profits. However, the structure – which is known as a variable interest entity and is commonly used by Chinese corporations – leaves investors with little, if any, ownership or control of the company's assets. There has been some concern about the company's corporate governance and accounting practices (as reflected in the *Buelow v Alibaba* lawsuit). In early 2016, the SEC announced it had initiated an investigation into whether there have been any violations of the federal securities laws on the part of Alibaba. The SEC requested that Alibaba voluntarily provide it with documents and information relating to, among other things, its consolidation policies and practices, policies and practices applicable to related party transactions in general, and its reporting of operating data from Singles Day. Alibaba is reported to be co-operating with the SEC.

Alibaba's policy concerns

- **Regulatory uncertainty**. Alibaba and Ant Financial Services Group are subject to a variety of Chinese and foreign laws, rules, and regulations across a number of aspects of their businesses, including laws on data protection and privacy, consumer protection, content regulation, intellectual property, competition, cross-border trade, taxation, anti-money laundering and anti-corruption. Alibaba believes these numerous laws and regulations pose significant administrative burden and litigation risks that may negatively affect its financial performance.
- **Protectionism**. Alibaba also fears the prospect of facing protectionist policies and regulatory scrutiny on national security grounds in foreign countries in which they conduct business or investment activities.

Amazon

Corporate history/evolution

Founded in the United States, Amazon launched its services as an online seller of physical books in 1995. Since going public in 1997, Amazon has become a multinational e-commerce giant.

The company considers itself a retailer even though it has several lines of business other than classic retailing. However, the B2C e-commerce segment is vital for much of Amazon's overall business. Indeed, it is hard to understand the company, the ways it has been innovative and how it has delivered enviable levels of customer satisfaction without locating the B2C component at the core of Amazon's operations. In particular, the B2C component's dual function as Amazon's own retail operation and a platform for third-party sellers, the hardware developments it has supported, and the fact that it has spawned numerous product, process and organisational innovations, are all fundamental to understanding Amazon. Three other factors are essential, too: the quality control standards on which Amazon insists; its analysis of consumer data; and its consistent prioritisation of long-term growth, efficiency and customer service over nearer-term profit.

As it evolved, Amazon revealed and exploited weaknesses and market failures in the traditional bricks-and-mortar retail sector. For example, the company currently offers more than 480 million products across a range of price/quality points in the United States alone. Amazon has achieved things no bricks-and-mortar store ever could.

Throughout its history, Amazon has focused on reducing transaction costs and improving services. It has also preferred to keep its retail profit margins thin, in part by investing in research and development (R&D), product development and acquisition activity. That activity has concentrated on deepening and

extending the reach of its business models rather than on developing breakthrough technologies. Its prioritisation of expansion over profitability sets Amazon apart from the other platform businesses profiled in this report. Moreover, to understand Amazon solely as a platform company is to misunderstand its business models. Granted, platforms are an important component of its activities, but the underlying strategy is to develop a diversity of business models that all deliver lower transactions costs and higher quality than other solutions.

Amazon's platforms

Amazon Marketplace

In one way or another, all of Amazon's platforms bring sellers and buyers together, but there is not always a neat separation between Amazon's platform and non-platform businesses. For example, direct B2C operations are not platforms under the definition used in this report (because they are one-sided), but Amazon Marketplace, which is a platform because it connects third-party sellers with buyers, is seamlessly integrated with Amazon's direct B2C service on its retail websites, such as amazon.com, amazon.fr, amazon.de, etc. In fact, products sold by Marketplace vendors account for at least 50% of Amazon's worldwide volume and sales (Amazon, 2018[53]). Marketplace is not branded as such for consumers. They access, search and place orders via Amazon as usual and may not even notice that a particular item they buy is actually being sold by a third-party seller, especially if the order is handled through the fulfilment services Amazon offers to third-party sellers.

To participate in Amazon Marketplace, sellers must have either an individual account, which is for low-volume sellers, or a professional account for high-volume sellers. Both are available only by subscription, with very low or even zero monthly fees for the former but accompanied by individual item listing fees and category restrictions, and a monthly fee of about USD 40 for the latter, with no category restrictions. There is also a referral fee that ranges from 6% to 20% of the product's selling price, with a reported average of 15% (Fabregas, 2018[54]).

A A.1. What is the difference between an online retailer and an online platform?

The line between an online retailer and an online platform may seem hard to draw at times. That is particularly true with regard to Amazon. Is there really, after all, a meaningful difference between buying a product from a third-party seller on Marketplace (which is a platform) when that seller has hired Amazon to stock the product and fulfil the order, and buying a product directly from Amazon (not a platform in this instance, but a direct retailer), in which case Amazon is also doing the stocking and fulfilling?

There are some meaningful differences. As online platforms evolve, they do sometimes blur lines that used to be clearer. Amazon Marketplace is a good example. But even if Amazon is stocking a third-party seller's inventory and fulfilling orders for it, there is still an important dividing line between such sellers and wholesalers that simply supply their product to a retailer. Wholesalers sell directly to Amazon rather than to end consumers. In contrast, while it is true that some third-party retailers use Amazon Marketplace not only as an online storefront, but for warehousing, payment, and order fulfilment, they are nevertheless not wholesalers. These third-party sellers retain ownership of their products until an end consumer (not Amazon) buys them. These sellers (not Amazon) also set the price the end consumer will pay. They are, in other words, customers of Amazon's Marketplace platform. They are not suppliers to Amazon. If they had a wholesaler relationship with Amazon, Amazon would take ownership of the merchandise and set the retail price. Another way of looking at this is to observe that the third-party sellers are on one side of the two-sided Marketplace market. The end consumers are on the opposite side. Marketplace, the facilitating platform, sits in between and serves both of them.

Amazon offers other services to third-party sellers, most notably Fulfilment by Amazon (FBA). With FBA, the seller stores its products in Amazon's fulfilment centres where Amazon will retrieve, pack and ship those products whenever a customer orders them, regardless of whether the order is placed on

Amazon's site, the third-party seller's site, or some other e-commerce site. In addition to outsourcing warehousing, sellers can also save money by riding on Amazon's low negotiated rates with shippers. Depending on the size and weight of the product, shipping fees when selling via FBA will typically be smaller than what the seller would pay when arranging the shipping itself. As the largest online retailer in the world, Amazon has considerable negotiating leverage with shippers. If the seller opts not to use FBA, then the seller lists the product on Amazon's e-commerce site but handles storage and all aspects of order fulfilment itself.

Kindle

The Kindle line of business is also a blend of Amazon's direct B2C segment and an online platform. The first Kindle was introduced in late 2007 and was designed to mimic printed books while extending and improving reading by offering more functionality. The original idea was to create a product that would support e-books alone, but both the Kindle hardware and the content available for it rapidly advanced and diversified. The Kindle app store became a platform on which third-party app developers could participate, too.

At the first Kindle's launch, there were 90 000 book titles available to download. As of December 2017 there were nearly 6 million titles (Pierce, 2017[55]). Furthermore, the Kindle platform spawned a range of new formats and self-publishing ventures. Amazon has also supported interoperability for the Kindle, making the Kindle software accessible from a range of devices and operating systems rather than from Amazon hardware alone (Pierce, 2017[55]).

Mechanical Turk

Amazon launched Mechanical Turk in 2005 with the aim of facilitating the employment of people to undertake tasks that would be complex for machines but that humans can complete more easily and successfully, such as identifying the colour of a car in a photograph. Various types of work available are grouped under headings, such as "image and video processing", "data verification and clean up", "information gathering", or "data processing". Essentially, a "requester" lists a task comprising a "HIT" (human intelligence task) or multiple HITs and pays Amazon 20% of the fee paid to the worker. Where there are more than ten HITs, Amazon charges an additional 20%.

Upon satisfactory completion of a HIT, workers receive their compensation through Mechanical Turk in one of two formats: an Amazon gift certificate or a disbursement into a bank account (Boyd, 2018[56]). There has been much debate as to how much Mechanical Turk workers earn. Hara et al. (2018[57]) find that the median hourly wage was around USD 2.00 per hour and only 4% of workers earned more than USD 7.25 per hour. The authors note that their results are dependent on how unpaid work is accounted for, such as the time spent searching for a task, working on tasks for which their work is rejected, and working on tasks that are not submitted. Furthermore, the authors note that the average requester offers USD 11 per hour but at an assumed productivity rate that workers do not necessarily meet.

Workers' reasons for accepting work on Mechanical Turk vary, but reportedly at least 25% cited a lack of work in their locality, while over 50% say they "need to control their own schedule" (Suri and Mary, 2016[58]). For requesters, Mechanical Turk opens up a market for getting certain types of tasks done easily, quickly, accurately and flexibly (MTurk.com., n.d.[59]) – and perhaps more economically than would otherwise be possible.

Echo/Alexa

As noted by many commentators, voice recognition software has become sufficiently reliable for the technology to be used as an access technology to platforms. Amazon's voice recognition software is called Alexa, and its smart speaker that uses Alexa is called the Echo. As of the fourth quarter of 2017, the Echo's US installed base was more than 30 million users and was growing rapidly (Meeker, 2018[60]). Nevertheless, the market for smart speakers is relatively new. It is not yet clear whether these technologies will become platforms in their own right. What is clear is that Echo/Alexa (and competitive products) are enabling people to do things they have never done before. They are enabling people with disabilities, for example, to access information and services online in a new and easier way (Christopherson, 2016[61]).

Basic financial information

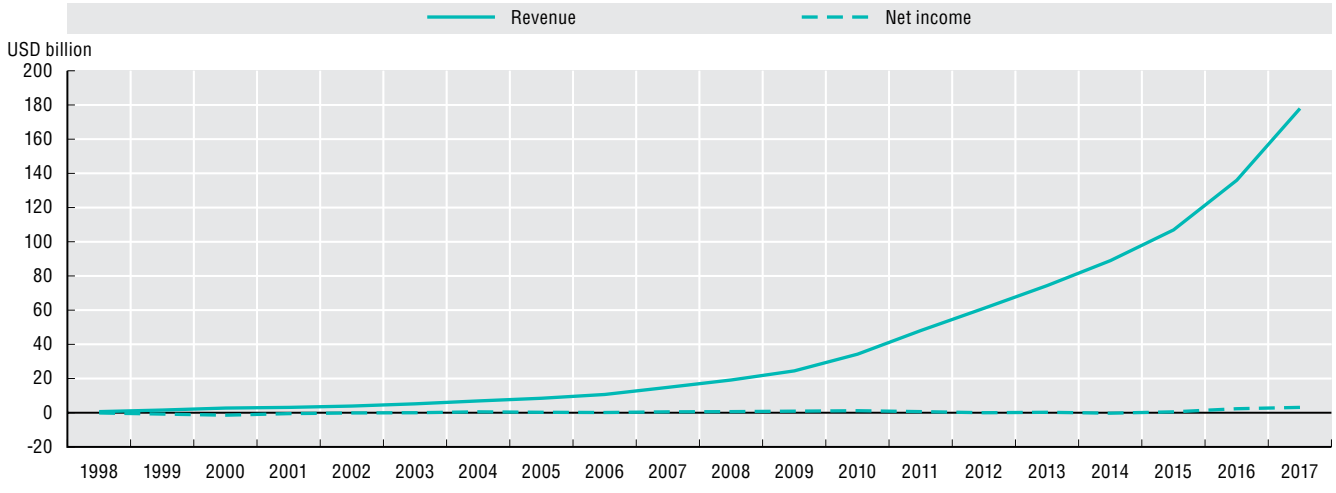
Amazon does not report financial information for particular components of its business other than its cloud services business, Amazon Web Services (AWS). It is therefore not possible to gauge the financial performance of its individual platforms. In 2017, global, company-wide revenue was approximately USD 178 billion and net income was USD 3 billion. The revenue figure capped a period of strong, sustained growth from 2011, when it was USD 48 billion (Table A A.4).

A A.4. Amazon's company-wide revenues and net income

Year	Total revenue (USD billion)	Net income (USD billion)	Net profit margin (%)
1998	0.61	-0.13	-21.31
1999	1.64	-0.72	-43.90
2000	2.76	-1.42	-51.45
2001	3.13	-0.55	-17.57
2002	3.94	-0.15	-3.81
2003	5.26	0.04	0.76
2004	6.92	0.59	8.53
2005	8.49	0.33	3.89
2006	10.72	0.19	1.77
2007	14.84	0.48	3.23
2008	19.16	0.65	3.39
2009	24.51	0.9	3.67
2010	34.21	1.16	3.39
2011	48.08	0.63	1.31
2012	61.1	-0.03	-0.05
2013	74.45	0.27	0.36
2014	88.99	-0.25	-0.28
2015	107.02	0.59	0.55
2016	135.98	2.37	1.74
2017	177.91	3.08	1.73

Sources: Amazon's 10-K filings and Amazon (2018[62]), *Amazon.com Announces Fourth Quarter Sales up 38% to $60.5 Billion*, *https://www.businesswire.com/news/home/20180201006454/en/Amazon.com-Announces-Fourth-Quarter-Sales-38-60.5*.

A A.4. Amazon generates huge global revenues but takes very low profits



Sources: Amazon's 10-K filings and Amazon (2018[62]), *Amazon.com Announces Fourth Quarter Sales up 38% to $60.5 Billion*, *https://www.businesswire.com/news/home/20180201006454/en/Amazon.com-Announces-Fourth-Quarter-Sales-38-60.5*.

The high volume of sales feeds into Amazon's financial success. Not only does the company have a "high velocity inventory" but they also obtain rapid payment recovery from consumers. As a result, according to press reports, Amazon generally collects payments from its consumers even before it pays its suppliers (PYMNTS, 2015[63];Fox, 2014[64]). That translates into relatively low trading demands on working capital.

Amazon's sales volumes are driven, in part, by the fact that for many years it has been not merely efficient, but seemingly averse to taking a profit (Figure A A.4).

Amazon's importance to economies and users

Although detailed, yearly and consistent data have proven difficult to obtain with respect to Amazon, the company does release some numbers that provide a partial glimpse of its effects on investment, employment and business users in certain countries. As some of these numbers appear in press releases and corporate presentations, they do not carry the same weight as audited financial reports. They are nonetheless indicative.

The total number of full- and part-time Amazon employees, reported as of 31 December 2017, was 566 000 (Amazon, 2018[53]). That is more than twice the figure of 230 800 reported two years earlier and more than 15 times the figure reported in 2010. However, a significant portion (roughly 90 000 employees) of the recent growth is due to Amazon's acquisition of the Whole Foods supermarket chain.

The company has invested heavily and often with cash. As it noted in a recent SEC filing,

> *Cash capital expenditures were USD 4.6 billion, USD 6.7 billion, and USD 10.1 billion in 2015, 2016, and 2017, which primarily reflect additional capacity to support our fulfilment operations and additional investments in support of continued business growth in technology infrastructure (the majority of which is to support AWS), during all three periods. Capital expenditures included USD 528 million, USD 417 million, and USD 311 million for internal-use software and website development in 2015, 2016, and 2017.* (EDGAR, 2018[65])

Amazon's operations in Europe have been accompanied by considerable investment and direct employment effects. There are also indirect benefits stemming from the use of Amazon by individuals and firms, though some of this data is not limited to the elements of Amazon's business that we have defined as online platforms.

A A.5. Amazon's investment, employment and usage impacts, European Union and selected European countries, as of 2016

Country/region	Cumulative investment, 2010-16 (million)	Direct employment (Amazon employees with permanent positions)	Companies and professionals using Amazon Marketplace, AWS and Kindle Direct Publishing	Jobs supported by third-party businesses selling on Amazon Marketplace
United Kingdom	GBP 9 300	25 000	373 000	74 000
Germany	EUR 8 000	16 000+	327 000	87 000
France	EUR 2 000	5 500	102 000	10 000
Spain	EUR 500	1 600	10 000	2 100
Italy	EUR 800	3 000	32 000	5 700
Czech Republic	EUR 100+	5 000+	3 200	..
Ireland	..	1 800	9 100	..
Poland	EUR 710	9 000+	7 200	..
Sweden	..	..	11 300	..
European Union	EUR 20 000	65 000	990 000	176 000

Note: .. = not available.

Source: Amazon (n.d.[66]), *Investing in Europe*, *https://www.aboutamazon.eu/map/investing-in-europe*.

Amazon's worldwide direct impact on employment is, of course, higher. In 2017 alone, Amazon hired nearly 130 000 employees globally, excluding acquisitions (Amazon, 2018[62]).

Moreover, some idea of Amazon's scale and impact on other businesses and consumers can be gleaned from numbers that occasionally appear in the press and unaudited Amazon reports (Stores, 2017[67]; DMR, 2018[68]; Amazon, 2018[69]; Amazon, 2018[53]; Marketplace Pulse, 2019[70]):

- 300 million accounts were stored on the amazon.com website as of February 2017.
- The Amazon mobile app had 30 million average monthly users as of July 2016.
- Over 300 000 SMEs based in the United States began to sell through Amazon Marketplace in 2017, joining a group that totals 1 million SMEs (in the United States alone).
- More than 20 000 SMEs worldwide had sales greater than USD 100 000 on Marketplace in 2017.
- More than 5 million third-party sellers worldwide list products for sale on Amazon Marketplace.
- During the 2017 end-of-year holiday season, more than 1 billion items were ordered from small businesses and entrepreneurs worldwide via Amazon, and nearly 140 million of those items were ordered during a five-day period (from 23 November through Cyber Monday).
- Globally, Amazon estimates SMEs selling on Marketplace have created more than 900 000 jobs.
- In 2016, 80% of Amazon US users purchased from Amazon at least once a month, and 20% purchased at least once a week.
- As noted earlier, net income in 2017 was USD 3 billion on sales of USD 178 billion, so the profit margin was low; that suggests a formidable contribution to consumer welfare.
- Amazon's 2017 share of retail e-commerce in the United States was 43.5%, but that represented less than 4% of all US retail sales; Amazon's 2016 US retail sales, for example, were about one-fifth of Wal-Mart's.
- 44% of online shoppers went directly to Amazon for product searches in 2015.

Another clue to Amazon's importance to users can be found in customer satisfaction indices, such as the American Customer Satisfaction Index (ACSI). The ACSI is based on a survey of more than 50 000 US consumers. In 2018, Amazon ranked first in the Internet Retail category of ACSI's Retail Report (ACSI, 2017[71]).

None of the information above shows the opposite side of the coin, though, such as job losses that are attributable to Amazon's disruption of other businesses. Not surprisingly, such data does not appear in Amazon's financial filings.

Business structure

Today, Amazon consists of numerous businesses that developed around its original business model of selling books. Amazon is a multi-product firm (Manez and Waterson, 2001[72]) with diverse investments in horizontal and vertical activities. Those activities feed into Amazon's success. At a more general level, multi-product firms are "systematically more productive, more capital intensive, more skill-intensive and pay higher wages than single-product firms" (Bernard, Redding and Schott, 2005[73]).

Horizontally, Amazon has used its e-commerce model to expand from selling books to selling music, films, baby-care products and numerous other products. Additionally, through Marketplace, Amazon has made it easy for third-party retailers/manufacturers to launch and develop their own e-commerce activities. According to the company, just over 50% of all activity on the Amazon website, both by value and volume, is attributable to third-party selling through Marketplace.

Vertically, Amazon has developed activities in two core areas. First, it has invested considerable resources in what it calls "fulfilment", a term that refers to all of the logistics that transform an order into a successful delivery. Second, the company has invested extensively in the back-office functions that allow Amazon and third-party organisations to process and secure payments, pay invoices, satisfy customs and tariff obligations, and perform all other related business administrative functions. The scale of Amazon's infrastructure and revenues suggest it has a vital position in the information economy, at least in the United States. It has been estimated that almost half of all e-commerce sales in the United States will be transacted via Amazon in 2018, though that would still amount to just 5% of all US retail sales (Lunden, 2018[74]).

What has made Amazon successful?

Such questions may sound simple but can be incredibly hard to answer accurately and comprehensively. It is clear that an overarching feature of Amazon since its inception has been that it provides excellent customer service at highly competitive prices. The company has demonstrated an unwavering focus on efficiency, keeping accounting profits to a minimum year after year and choosing instead to apply much of its financial resources to innovations, expanding its product and service offerings, and improving its infrastructure.

What may be less widely appreciated is that in its early days, Amazon also appears to have been a pioneer in understanding search engine technologies and, in particular, designing a search engine specifically for e-commerce as opposed to general Internet search functionality (AMZ Advisers, 2018[75]). Having its own customised search feature not only helped users to find more of what they were looking for faster, it allowed Amazon to achieve extensive insights into customers' shopping behaviours. That, in turn enabled Amazon to optimise its offers to consumers at an individual level. Consequently, through the search feature and the data it collects, Amazon was able to deliver both a better consumer experience and new opportunities for retailers (Snap, n.d.[76]; Linden, Smith and York, 2003[77]).

Today, having a built-in search engine is a commonplace feature of many Internet business websites, but Amazon was an early innovator. Furthermore, its search engine has become widely used according to some studies. For example, Google claimed in 2014 that its biggest competitor in the search space is Amazon, pointing to a study showing 44% of all US consumers search for products on Amazon before turning to any other source, whether Google or browsing in a mall (Vasagar and Barker, 2014[78]). By the third quarter of 2016, that figure had reportedly risen to 55% (AMZ Advisers, 2018[75]).

Furthermore, beyond searches, all of the general browsing and shopping on Amazon's websites also create vast amounts of valuable data. The products consumers look at, the ones they buy, when they buy them, and at what prices, all provide Amazon with opportunities to use big data analytics and learn more about consumer behaviour.

Amazon's retail data analysis and targeting capabilities have roots in traditional retail businesses, which may be able to gather data on individual consumer's purchase histories (e.g. through loyalty cards) and to generate recommendations based on past purchases. That is much more limited, though, than Amazon's ability to collect and analyse large amounts of data from online behaviour. By capturing clickstream data, in particular, Amazon knows not just every product a consumer buys, but every product he or she views – and in what order, when, from where, and from what device.

In addition, because it can identify items consumers look at repeatedly on Amazon Marketplace but do not purchase, Amazon can use that information to promote its own listing of the same items (if it carries the product). Alternatively, it can offer the items at lower prices when the consumer returns to the site, thereby using the Marketplace data to increase its own direct retail business. In fact, data analysis occurs in real time, so relevant purchase prompts may start to appear while a customer is browsing for something for the first time. (One should not assume this is a bad thing. It is a way to increase competition and boost consumer welfare, at least in the short run.) The main point here is that gathering data through fidelity cards is comparatively primitive and of more limited value.

Another important innovation that helped to spur Amazon's success is the broad and deep array of information offered about each product on its site. Having detailed product descriptions and specifications, their physical dimensions, photographs, customer reviews, etc. may have been instrumental in helping buyers habituated to offline shopping become more comfortable with and confident in online shopping.

Like all of the online platforms profiled in this report, Amazon Marketplace has also benefited from network effects. Positive indirect network effects attracted third-party sellers to one side of Marketplace because there was an already-well-developed customer base on the other side, thanks to Amazon's direct retail business. The addition of more sellers then served to attract even more customers, creating a positive feedback loop.

Moreover, Amazon has extraordinary economies of scope, as customers can find hundreds of millions of products on its websites in addition to a host of services, such as media streaming, software downloads, and a lot more. Those economies of scope are the reason Amazon, not any other search engine, is the

first place most US consumers go to look for products they want to buy. They know Amazon is likely to carry (or offer via a third-party seller) whatever they are seeking.

Regarding the consumer experience, Amazon has taken the consumer's processes of *discover, search, find and order* and mapped these into a series of sophisticated yet easy-to-use functions on its website (e.g. user-generated ratings and reviews, recommendations based on shopping and browsing patterns, 1-click purchasing, allowing customers to see the first several pages of books). Thanks to investments in logistics infrastructure and a network of fulfilment centres that put products ever closer to customers, the company has been able to ship products faster and faster over the years, often at no additional charge. The same customer-centric, innovative approach carries over to the subscriptions on offer (most notably Amazon Prime but also music and video/TV streaming). In addition, Amazon offers hardware devices, such as Alexa/Echo and Dash, whose functionality embeds these retail processes.

Another reason for Amazon's success is that it has systematically sought to reduce transaction costs for both consumers and third-party firms. By combining low transaction costs and low prices, Amazon attracted more customers and higher volumes of sales, which fed into economies of scale. That cycle has repeated numerous times.

Furthermore, economies of scale have also mapped onto economies of scope at Amazon: as the company grew and was being used by more customers looking to buy more things, it became economical to offer them more and more different kinds of products. That, in turn, attracted even more customers, who then attracted even more third-party sellers.

Additionally, and critically, investments in its e-commerce business, related hardware and logistics have allowed the company to build a low-cost and highly flexible operating structure where there has been little evidence of stranded assets and significant capital write-downs.

A key service provided by Amazon that links the consumer and logistics/delivery is Amazon Prime. This subscription-based model gives consumers free unlimited and fast delivery for a fixed annual cost. It is estimated that 63% of Amazon users in the United States have subscribed to Prime (which may account for 50% of US households) and over 60% of Prime users buy every time they log in into the Amazon website. The comparator for consumers who do not have Prime is 13% (Khan, 2017[79]). US Prime subscribers spend USD 1 300 per year on average, according to on one survey (Reisinger, 2017[80]).

Amazon, as noted above, has also invested heavily in its distribution centres and these are core to its physical fulfilment activities. They have also long been a key competitive advantage. As noted by Leslie Hook in the *Financial Times*, "they (the distribution centres) form a competitive moat that has for years helped keep would-be Amazon competitors, such as Walmart and Target, at bay" (Hook, 2015[81]). So Amazon has focused on discovery, search, find and order at the retail level, and on unloading, sorting, storage, transport and delivery in the fulfilment space. The company has exacting process control (and reputedly uses the Six Sigma methodology, which permits less than four errors per million) and advanced automation, most notably the use of robots in its warehouses. In 2012, Amazon bought Kiva Systems for USD 775 million and has over 100 000 Kiva robots deployed in its distribution centres.

The use of robots in the distribution centres drive costs down significantly and, as noted by Amazon's Director of Investor Relations at the time (Kim, 2015[82]), the acquisition of Kiva Systems was an investment that had implications for many elements across Amazon's entire cost structure. Robots deliver significant savings in space allocation, minimise "aisle time", and ensure high levels of density in each packet and pallet. An industry rule of thumb is transport costs can be reduced by 10% by increasing package and palate density (i.e. reducing the amount of air that is transported) (Welch et al., 2014[83]). When your transport costs have been estimated at USD 20.5 billion for 2017 (DMR, 2018[68]), 10% is worth saving.

Amazon has used numerous strategies to tackle "the last mile". The location of its warehouses and main distribution centres has been a key element. It is estimated that 44% of the US population live within 20 miles of one of these strategic locations (Levy, 2016[84]). Although the company has captured many headlines with its investment in drones for delivery and the revelation of its patents for airborne distribution centres (Kharpal, 2016[85]), Amazon still relies heavily on courier services, such as UPS and traditional postal services. Furthermore, those services are increasingly dependent on Amazon. Some estimates suggest Amazon is responsible for 4% of the volume of parcels handled by UPS (Hook, 2015[81]).

From digital to physical

Amazon, a company that was born digital, has recently been making moves into the world of bricks and mortar. Desiring to be an omni-channel retailer rather than a purely digital one, it has made strategic investments in traditional retail operations. In many cases, these investments and partnerships are centred on bringing Amazon's e-commerce expertise into the partnerships (such as the deal signed with Casino in France [Agnew, 2018[86]]), but they have also involved the acquisition of premises. The 2017 acquisition of grocery chain Wholefoods for USD 13.7 billion is the most notable example.

The acquisition of Wholefoods does two things. First, it gives Amazon key real estate in key geographical markets – real estate that is multifunctional and can be embedded in Amazon's logistical network. Second, it gives Amazon access to food retailing expertise, which supports its drive into that market segment (Thompson, 2017[87]). As noted by Dennis Berman, Financial Editor of *The Wall Street Journal*, "Amazon did not just buy Whole Foods grocery stores. It bought 431 upper-income, prime-location distribution nodes for everything it does" (@dkberman, 24 August 2017[88]).

In effect, Amazon has again made an investment that helps it to bring down transaction costs for consumers and to enhance its logistics. Investing in "brick and mortar" may well become more common among online marketplaces over the next few years, and not just for the purpose of owning them, but for improving them. After all, the emergence of steam ships spurred a period of radical innovation in sailing ships, too.

Future directions

The Amazon ecosystem is best understood as one that connects consumers and sellers who may or may not be Amazon itself. Its ecosystem is now familiar to consumers virtually throughout the OECD. However, one of the overarching drivers of strategy at Amazon is a relentless focus on customer value and a focus on both meeting and anticipating consumers' expectations. Jeff Bezos sums up this approach as behaving as though it is always "Day 1". He explains, "Day 2 is stasis. Followed by irrelevance. Followed by excruciating, painful decline. Followed by death. And that is why it is always Day 1" (Balakrishnan, 2017[89]). The implication is that Amazon will always inculcate a "start-up culture" and be wary of managing by proxies, which Bezos says is the Achilles heel of large organisations. Processes are designed to serve customers, but large organisations tend to end up focusing on the processes themselves, instead of customer satisfaction, as their key performance metric.

An obvious extension of the Amazon model, and one that links back to its beginnings as a bookseller, is the development of content and the ability to distribute it as quickly as possible. Consequently, Amazon extended the functionality of its website to include digital content distribution, invested in consumer-centric devices (such as Kindle, Fire, Echo), applications (for example, ensuring compatibility and functionality across iOS and Android) and innovative new platforms, such as Alexa. In this strategy Amazon appears to be supporting a range of technical standards, interoperability and multi-homing. For example, Alexa has built in a certain degree of integration with Microsoft's voice assistant, Cortana, because the latter is sometimes superior, depending on the task (Foley, 2018[90]; Amazon, 2018[91]). Thus, Alexa at times will automatically switch to Cortana. Similarly, Prime Video is accessible through a variety of devices (PCs, mobile devices, smart TVs, game consoles and set-top streaming devices).

The key content driven subscription services are embedded with Prime, so Prime not only gives the consumer enhanced delivery at a fixed cost, it also allows access to music (Prime Music), films/TV (Prime Video) and books (Prime Reading).

Recent acquisitions and joint ventures suggest further development of the overall Amazon model. AWS, for example, was a key business development and the company has made several recent acquisitions to strengthen it. For example, according to Forbes, in 2017 Amazon bought "a record ten start-ups including Harvest.ai, Thinkbox Software, Do.com, Souq.com, GameSparks, Graphiq, Wing.ae, Body Labs, Goo Technologies and Blink Home, the majority of which were acquired to support Amazon Web Services (AWS) growth" (Columbus, 2018[92]).

Amazon has also recently sought to unbundle a range of banking services and explore potential new markets. Although this has not always been a smooth process, as the company has closed down certain ventures that proved relatively unsuccessful, it continues to innovate. For example, in 2017 it

launched Amazon Cash (a service that bypasses banks by allowing people to shop on Amazon without a credit or debit card; instead, they prepay by adding cash to an Amazon account at one of thousands of physical stores) (Liu, Charlie, 2018[93]).

Amazon is also exploring the US health insurance market – a prime target for disruption, as it is widely considered inefficient and expensive. The company announced in early 2018 that it had entered into a joint venture with Berkshire Hathaway and JP Morgan to secure a better, lower-cost, higher-quality, health insurance scheme for their employees. While the focus of this venture is on securing better terms for their own employees, the potential for upending the entire US health insurance sector did not escape some commentators (Humer and Henry, 2018[94]).

Amazon's acquisition of Pillpack in 2018 underscored the potential for disruption in health care generally. Amazon reportedly invested around USD 1 billion in Pillpack, but in doing so it quickly depressed the stock value of the overall US pharmaceutical sector by USD 14 billion (Financial Times, 2018[95]; Crow, 2018[96]).

Another area that appears to be a potential growth opportunity for Amazon is online advertising. In 2018, the company launched an ad marketplace in Europe designed to help app developers and digital content owners to boost their ad revenues (Amazon, 2018[97]). This service leverages Amazon's formidable cloud capacity and positions it to compete directly with some aspects of Google's business.

Conclusion

Amazon has become an e-commerce giant. It did that by implementing a "customer first" strategy, focusing on innovations that reduced retail transaction costs, and keeping profit margins slim. The company also pioneered the strategy of "one-stop" online retail shopping. In the process, Amazon generated enormous transaction volumes and strong customer loyalty.

Amazon's history reveals that, at least for online marketplace platforms, a single platform model, such as the pure X2Y models, is not necessarily stable over time if a company's strategic focus is on enhancing consumer benefits. Not only do evolving consumer expectations and innovation shift the effectiveness of different platform business models, but Amazon's experience suggests pursuing just one model at a time is not optimal. Thus, Amazon has operated and co-ordinated a range of platform models at any given time, though it has also maintained a single overarching brand.

Amazon has worked to make the integration of suppliers and third-party sellers into its supply chain easier, more attractive and more efficient. That has expanded the company's overall line of products and boosted convenience for customers. Moreover, although Amazon's DNA is mostly online, it has invested heavily in "going physical". Specifically, it has honed its fulfilment infrastructure to hasten deliveries, it has invested in consumer devices and it has made forays into traditional sectors like supermarkets.

The company has created common infrastructures whose fixed costs can be spread across a range of activities. At the same time, it has worked to reduce the variable costs for each product or service. The result has been a lean organisation where investment in assets, processes and organisational design are highly flexible and capable of supporting a wide range of products and services.

In common with most platforms, and other successful organisations, Amazon has created and seized opportunities that have arisen through legislative, regulatory, market, and technological arbitrage. Thus, for example, for many years Amazon did not consistently apply local sales taxes in the US because laws did not require it to do so. In terms of technology, Amazon launched AWS because of its own need for large and powerful data centres, and that wound up spawning a significant and profitable business (Bond, 2018[98]), while significantly reducing the minimum scale required for SMEs' IT investments.

Amazon's economic benefits to countries include direct contributions to employment and investment, a trend that has been recently reinforced by the announcement of Amazons Vans, creating new opportunities for small entrepreneurs to franchise "last mile" deliveries (Bond, 2018[99]). Furthermore, by using the Amazon platform, a great many SMEs are able to trade in new geographic markets (including export markets), which increases their sales volumes, drives up revenues and creates new jobs.

Against these gains for consumers, workers, other firms and economies generally, the disruptive innovation and business models pioneered by Amazon necessarily bring about or hasten other changes to economies and societies, such as the alteration of local retail sectors. Local supply chains must evolve or face extinction if they are no longer efficient enough to survive greater competition. Some jobs will be lost or become more fragile, and asset values change. Inevitably, there are mismatches between the distribution of economic gains created by disruptors, such as Amazon, and the losses and costs of adjustment they bring about, at least in the short or medium term, causing a certain amount of hardship.

With its intense focus on reducing transaction costs and driving consumer welfare higher, Amazon has had a profound impact on the markets where it operates and even those where it does not but in which investors believe the existing players are vulnerable. With its economies of scale and scope, low-margin business models and willingness to invest instead of retaining profits, Amazon is capable of transforming a wide variety of markets where limited competition has allowed incumbents to extract economic rents.

In short, Amazon invests heavily, competes aggressively and increases consumer welfare. However, the magnitude of its success has also raised questions about whether Amazon has market power, and if so, whether it exercises that power to the longer-term detriment of consumers.

Apple

Corporate history/evolution

In 1976, Steve Wozniak, a talented, self-taught electronics engineer, designed a small computer for a computer hobbyist club. Sensing Wozniak had made a potentially valuable breakthrough, he and his old friend Steve Jobs sold their most valuable possessions – a van and two calculators – to start a company and market this product. They called it the Apple I and founded their company, Apple Inc. (Apple), on 1 April 1976. A local retailer ordered 50 Apple Is, which the pair built in Jobs' garage. They eventually sold 200 of the machines to computer hobbyists in the San Francisco Bay area for USD 666 each (Funding Universe, n.d.[100]).

Later, Wozniak began work on the Apple II, which was designed to appeal to a wider market than just computer hobbyists. The earliest Apple IIs read and stored information on cassette tapes, which were unreliable and slow. By 1978, Wozniak had invented the Apple Disk II. At the time, it was the fastest and cheapest disk drive made by any computer manufacturer. By presenting the Apple II, along with a user manual, at a consumer electronics show, Wozniak and Jobs signalled that they were expanding beyond the hobbyist market and aiming to turn their computers into consumer items. It was the beginning of a pattern of introducing innovative products that many consumers did not even realise they wanted or needed – yet.

By the end of 1978, Apple had become one of the fastest-growing companies in the United States (Funding Universe, n.d.[100]). It launched an IPO on 12 December 1980, becoming a publicly traded company. By December 1982, Apple was the first personal computer company to reach USD 1 billion in annual sales (Funding Universe, n.d.[100]). After some time away from Apple in the 90s (Fortune, 1997[101]), Steve Jobs returned as the CEO in 2000 and reignited the innovative culture that drove Apple's initial success. He oversaw the launch of iTunes and the iPod in the first half of the 2000s as well as the iPhone in 2007, setting Apple on a course that would see it temporarily become the most valuable publicly traded company in the world.

This is a selection of some of Apple's most popular products and services, with the years in which they were launched:

- **Hardware**. Macintosh computers (1984), iPod (2001), iPhone (2007), iPad (2010), Apple Watch (2015).
- **Services**. iTunes (2003), App Store (2008), iCloud (2011), Apple Pay (2014), Apple Music (2015).

Apple's headquarters are in Cupertino, California. It has significant subsidiaries in the United States, Ireland and China (EDGAR, 2017[102]).

Apple considers itself a manufacturing company. It designs, produces and markets mobile communication and media devices and personal computers. It also sells a variety of related software, services, accessories, networking solutions and third-party digital content and applications. Apple's products and services currently include the iPhone, iPad, Mac computer, Apple Watch, Apple TV, a portfolio of consumer and professional software applications, the iOS, macOS, watchOS and tvOS operating systems, iCloud, Apple Pay and a variety of accessory, service and support offerings. Apple sells and delivers digital content and applications through the iTunes Store, App Store (which has apps for iOS devices, Mac computers, Apple TVs, Apple Watches, etc., though as iOS apps are the largest share of apps on the store, this profile focuses on that aspect of the App Store), Apple Books and Apple Music.

App Store

The App Store was launched in 2008 with 500 apps from third-party developers. Today, more than 2 million iOS apps are available to more than 1 billion App Store customers worldwide.

Business model

Who is being served on each of the App Store's sides?

Apple operates what is commonly known as a "walled garden" (Frieden, 2016[103]) – that is, a somewhat closed ecosystem largely controlled, or "curated", by its owner. Apple designs, develops, manufactures and distributes hardware (for instance, iPhones and Mac computers), the operating systems that run on that hardware, and compatible software. Apple does not license its operating systems to other hardware manufacturers, which means that if a customer wants to use iOS, for example, he or she will need a device manufactured by Apple to run it. The App Store is an online platform and is also a key component of Apple's ecosystem. On one side of the App Store, app developers list, distribute and market apps. On the other side, iOS device (iPhone, iPad and iPod touch) users browse, discover and download apps and purchase in-app content. iOS devices will not ordinarily run apps unless they are distributed through the App Store; however, there are tech-savvy users who resort to sideloading or jailbreaking their devices to run apps downloaded from other sources (Costello, 2018[104]). It is also possible for users to access web apps, which developers deliver to devices over the Internet via a browser interface.

- **App Developers**. The app developers are mostly third-party individuals and companies that devise, build and create software and applications compatible with iOS devices. To be able to list and mark their apps on the App Store, developers must join the "Apple Developer Program". To start building their iOS apps, though, developers need only to create an "Apple ID". By signing in with it, developers may post on the Apple Developer Forums and use Xcode, Apple's integrated development environment for creating apps for Apple platforms. Xcode includes project management tools; analysis tools to collect, display and compare app performance data; simulation tools to locally run, test and debug apps; and tools to simplify the design and development of user interfaces. Developers who join the App Developer programme gain access to tools and guidance that make it easier to build, test and distribute apps for iOS, macOS, watchOS and tvOS. For example, the Developer Program membership provides access to beta software, advanced app capabilities such as Apple Pay, the ability to test apps, access to App Analytics, code-level technical support and distribution on the App Store (Apple, n.d.[105]). Apple handles the financial transactions related to sales of apps on the App Store and charges varying commissions. In some markets, app developers can also advertise their apps on the App Store with Apple's Search Ads service, which increases apps' visibility above App Store organic search results (through bidding on keywords) (Apple, n.d.[106]).
- **iOS Device Users**. These users wish to download apps that are compatible with their iOS devices or to purchase in-app content. To buy and download apps, iOS device users must create an Apple ID and register a credit or debit card as their preferred payment method. The same Apple ID can be used to buy and download digital content on iTunes, the Mac App Store, and Apple Books, and to create an Apple Music membership.

How does the App Store make money?

Reasons for success

The success of Apple's App Store, like that of the whole company, is due to a combination of innovation, resilience, business acumen, network effects and the characteristics of Apple's customer base. Building on Apple's previous financial successes with the iPod and iTunes, the 2007 launch of the iPhone reinforced Apple's position as a rejuvenated technology leader. The iPhone was yet another Apple product that gave the world something unlike anything it ever had previously. It combined in one device many functionalities that traditionally required a stand-alone apparatus, including a mobile phone, an iPod, a digital camera, an Internet browser and many other functionalities performed by apps. The iPhone increased Apple's customer base and reinforced the loyalty of those who were already committed followers.

To realise the iPhone's full potential, Apple decided that iPhone would support third-party applications, which started to become available on the App Store in 2008. With the App Store, Apple took advantage of the iPhone's user base while creating a whole other revenue stream. Because it served an already significant base of iPhone users, the App Store appealed to app developers, who perceived a valuable opportunity for substantial numbers of downloads and in-app purchases. With more app developers joining the App Store, the number and variety of available apps increased, and thus so did the value of the App Store to users, as they could browse and find more apps to their liking. Meanwhile, the greater availability of apps increased the attractiveness of the iPhone, thereby driving more iPhones sales and attracting more app developers. Another factor to consider is that Apple customers, at least in the United States, tend to have relatively high incomes and more education, and to remain loyal to Apple's products. Such tendencies are borne out in comparisons between iOS and Android users, which show that iOS users tend to have higher incomes and are more likely to have a graduate degree than Android users (Hixon, 2014[107]). iOS users also tend to be more engaged with their devices and, crucially, to spend more on apps.

Sources of revenue

Apple charges a USD 99 annual membership fee to join its App Developer program. It charges a USD 299 annual membership fee to join its App Developer Enterprise program, which enables organisations to design and distribute proprietary apps exclusively to their organisations (Apple, n.d.[108]). In addition, Apple charges a 30% commission on each payment for apps and in-app purchases of digital content. When an app generates subscription payments (e.g., monthly payments for a Spotify Premium account) and the subscriptions are set up to renew automatically, Apple's commission drops to 15% after the first year (Apple, n.d.[109]). Lastly, Apple derives revenue from app advertising on the App Store through Search Ads. Search Ads commissions vary depending on the bids placed by app advertisers.

Use of data

Under Apple's general privacy policy, the company collects a variety of personal information from customers, including their name, mailing address, phone number, e-mail address, contact preferences, device identifiers, IP address, location information and credit card information. Apple uses this information for a variety of purposes, such as distributing product announcements, software updates and notice of upcoming events. It also uses the information to create, develop, operate, deliver and improve its products, services, content and advertising; for loss prevention and anti-fraud purposes; for account and network security purposes; and for internal purposes, such as auditing, data analysis and research to improve Apple's products, services and customer communications.

Apple also collects non-personal information, such as occupation, language, postal code, telephone area code, referrer URL, location and time zone where an Apple product is used, to better understand customer behaviour and improve Apple's products, services and advertising. In addition, the company collects information regarding customer activities in the App Store and from its other products and

services. Apple aggregates this information and uses it to provide information that is more useful to users. Apple also uses the information to identify the parts of its website, products, and services that are of most interest to customers. Moreover, Apple may collect and store details of how users use its services, including search queries. It notes that this information may be used to improve the relevancy of results provided by Apple's services. Finally, with users' express consent, Apple may collect data about how an iOS device owner uses the device and applications, to help app developers to improve their apps.

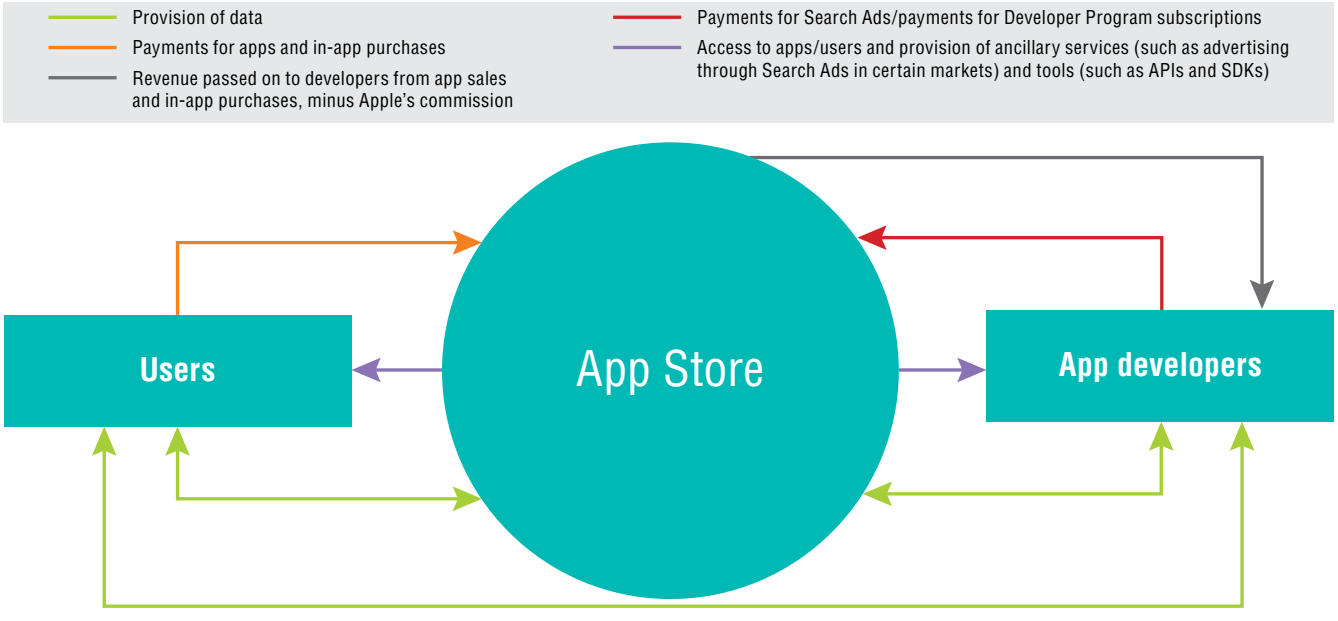
Apple shares personal information with companies that provide services, such as information processing, extending credit, fulfilling customer orders, delivering products to users, managing and enhancing customer data, providing customer service, assessing consumers' interest in Apple's products and services, and conducting customer research or satisfaction surveys. It also discloses personal information when required by law, legal processes, litigation and/or requests from public or governmental authorities, or when it considers that disclosure is reasonably necessary to enforce its terms and conditions or protect its operations or users. Apple does not, however, collect data, including user's personal information, to sell to advertisers or other third-party organisations.

Under the App Store privacy policy in particular, Apple notes that it collects users' personal information so it can provide them with the content they purchase, download, or wish to update. It also uses information about users' App Store accounts, purchases, and downloads to offer advertising and to ensure that Search Ads in the App Store and ads in Apple News, where available, are relevant.

The policy states that, to help identify and prevent fraud, information about how users use their devices, including the approximate number of phone calls or e-mails they send and receive, is used to compute a device trust score that is temporarily stored on Apple's servers. Furthermore, Apple uses browsing, purchase, search, and download information to improve the App Store. The records are stored with an IP address, a random unique identifier (where that arises), and an Apple ID when users are signed into the App Store.

Flow chart

A A.5. The Apple App Store



Note: API = application programming interface; SDK = software development kit.

The App Store's importance to users

How users on each side of the platform benefit

iOS device users. The App Store makes it easy for iOS devices users around the world to discover and download apps from a collection of more than 2 million. The App Store provides access to detailed information on each app, reviews by other users, and recommendations based on each user's revealed preferences. Also, by using the App Store, they benefit from Apple's app policies and review processes, which aim to ensure that the apps they discover and download are of optimal quality, technically secure and incapable of harming their device and content. In addition, all apps available on the App Store are required to adhere to the Developer Program License Agreement and App Store Review Guidelines, which include requirements regarding the protection of user privacy. Moreover, as of 3 October 2018, all apps on the App Store have been required to have a privacy policy. Similarly, under the App Store Review Guidelines, Apple ensures that apps only contain material that is legal and age/content-appropriate (Apple, n.d.[110]). For example, apps cannot contain defamatory, discriminatory, racist or mean-spirited content; realistic portrayals of people or animals being killed, maimed, tortured or abused, or content that encourages violence; overtly sexual or pornographic material; inflammatory religious commentary or inaccurate or misleading quotations of religious texts and false information and features, such as fake location trackers (Apple, n.d.[110]).

App developers. Through the App Store, developers benefit from the possibility to reach Apple's global audience, which – at least in the United States – has relatively more income on average and thus may be more likely to spend more per user on apps and in-app purchases than Android users (Hixon, 2014[107]). Additionally, developers benefit from the fact that Apple handles all the payment processing, as well as from access to tools for managing their apps, tax and banking information, sales reports and tools relating to their marketing and performance on the App Store. Furthermore, app developers benefit from access to free development tools (e.g. APIs and SDK tools, beta-testing tools, code libraries) and guidance on how to make the best possible app. Through the Apple Developer Program, developers also obtain support for building, testing and distributing apps, as well as access to beta software and advanced app capabilities. Moreover, developers benefit from Apple's efforts to create new tools. For example, as part of Apple's iOS 11 update, Apple introduced Core ML, a tool that enables developers to incorporate on-device machine-learning capabilities into their apps, leading to better app performance and more privacy protection for users. Lastly, Apple makes it easier for apps to be discovered through initiatives, such as daily highlights and the Search Ads program.

The amount of business transacted between the App Store's sides

iOS developers earned USD 26.5 billion in 2017, an increase of more than 30% over the 2016 figure of USD 20 billion (Apple, 2017[111]). The 2016 total, in turn, was more than 40% higher than 2015's figure (Apple, 2017[111]). Since the App Store's launch in July 2008, iOS developers have earned a cumulative total of over USD 86 billion (Apple, 2018[350]).

The amount of money that actually flows into the platform is substantially higher. As noted above, Apple typically takes a 30% commission on sales of apps and digital content purchased within apps. So, for example, the USD 26.5 billion that iOS developers received in 2017 implies that iOS users spent up to USD 37.9 billion and that Apple's share of that was up to USD 11.4 billion. The actual figures for total App Store expenditures and Apple's share of them are somewhat less because some payments to developers are for automatically renewing subscriptions, on which Apple takes a commission of 15% rather than 30%. The exact dollar amounts are not publicly available.

Total number of App Store apps available

As the iPhone grew in popularity, the number of available apps rose rapidly until 2016, when it started to level off just above the 2 million app mark (Table A A.6). The strong growth in apps reflects the App Store's desirability to developers as a way to distribute their products.

A A.6. Number of apps available in the App Store

Year	Apps
2008	3 000
2009	100 000
2010	400 000
2011	500 000
2012	700 000
2013	1 000 000
2014	1 300 000
2015	1 500 000
2016	2 000 000
2017	2 200 000
2018	2 100 000

Source: Costello, S. (2019[112]), *How Many Apps Are in the App Store?*, *https://www.lifewire.com/how-many-apps-in-app-store-2000252*.

Social and economic benefits

The App Store is a way for software developers, no matter how small they are or where they are located, to distribute apps while riding on Apple's global economies of scale. Consequently, the App Store has played a role in fostering a global entrepreneurial culture (Madel, 2016[113]). In addition, the APIs and SDKs Apple makes available to app developers help them to create and profit from their ideas more quickly and easily, thereby enhancing their incentives to invest and innovate.

The significance of the innovation and economic activity spurred by the App Store should not be underestimated. Since the App Store launched in 2008, the app economy has flourished, stimulating investment in mobile data networks and innovative applications in myriad fields, leading to further diverse benefits. For example, apps are transforming how hospitals provide medical care and monitor patients' health. The trial of an app that replaces paper medical charts to record patients' vital signs saved more than 750 lives at two hospitals in the United Kingdom over the course of just one year (Williamson, Yi Shen and Wood, 2015[114]). App Store apps have also helped the sharing economy to flourish, resulting in the more efficient use of assets, such as cars and homes (Williamson, Yi Shen and Wood, 2015[114]). The app economy has also created jobs. For example, according to some estimates, the European app economy includes 1.64 million jobs as of January 2016 (Madel, 2016[113]). Not all of those benefits are due uniquely to the App Store; many are attributable to Google's Android mobile operating system and Google Play Store, too. But the launch of the App Store was the starting point for such developments, and it continues to be a rapidly growing source of income for app developers, many of whom are individuals and SMEs.

Additionally, given its virtually worldwide presence and usage, the App Store enables cross-border transactions between consumers and developers located anywhere in the world where Internet access is available, boosting international trade. The facilitation of cross-border transactions and the resulting increased demand for apps lead to greater variety and innovation, higher sales volume and increased productivity. Relatedly, the popularity of the iOS has given rise to indirect network effects between Apple (in its capacity as an original equipment manufacturer [OEM]), end users and app developers, raising demand for handsets and apps alike.

The App Store has also helped non-profit organisations to pursue their goals. For example, in 2016, in partnership with the World Wildlife Fund and (RED), a non-profit organisation that raises money to fight HIV/AIDS in Africa, platform users were empowered to help protect life on earth and join the fight against HIV/AIDS. The custom content created by each campaign's participating developers helped raise a total of more than USD 17 million for the two organisations (Apple, 2017[111]).

Basic financial information

Apple does not break down its financial information by individual lines of business. The information presented below is therefore company-wide.

A A.7. Apple's basic financial information, company-wide

Year	Revenue (USD million)	Net income (USD million)	Net profit margin (%)	Employees
2001	5 363	(25)	-0.46	9 603
2002	5 742	65	1.1	10 211
2003	6 207	69	1.1	10 912
2004	8 279	266	3.2	11 695
2005	13 931	1 328	9.5	14 800
2006	19 315	1 989	10.3	17 787
2007	24 006	3 496	14.6	21 600
2008	32 479	4 834	14.9	32 000
2009	36 537	5 704	15.6	34 300
2010	65 225	14 013	21.5	46 600
2011	108 249	25 992	24.0	60 400
2012	156 508	41 733	26.7	72 800
2013	170 910	37 037	21.7	80 300
2014	182 795	39 510	21.6	92 600
2015	233 715	53 394	22.8	110 000
2016	215 639	45 687	21.2	116 000
2017	229 234	48 351	21.1	123 000

Competitive environment

The geographic reach of the App Store

The App Store has a dedicated version for each of 155 "regions" (which are mostly countries) (Apple, n.d.[115]). Customers in other regions may access other App Stores, unless prohibited by law.

App Store's competitors

The App Store competes with a variety of other app distribution platforms for both developers and consumers. Although the App Store is the only approved source of iOS-compatible apps, numerous platforms distribute apps that run on the other major mobile operating system, Android. These include, for example, the Google Play Store, Samsung Galaxy Apps and the Amazon Appstore (which distributes apps compatible with Amazon's forked version of Android). Apps can also be distributed/accessed via Internet browsers in the form of web apps.

Significant platform-related mergers and acquisitions

- **Chomp**. In 2012, Apple reportedly paid approximately USD 50 million for the company Chomp Inc., which offered a search engine app for mobile devices (Businessweek, 2012[116]).
- **Topsy**. In 2013, Apple was reported to have paid over USD 200 million for Topsy, a social search and analytics company that partnered with Twitter to maintain an index of Tweets going back to 2006. Topsy's technology was thought to be useful to deliver content recommendations based on Twitter trends on the App Store. However, Apple shut down Topsy two years after its acquisition (Hayes-Roth, 2015[117]).
- **OttoCat**. In 2013 Apple acquired the company OttoCat, which had developed a system to organise and promote apps in app stores based on the search terms entered and nested categories of increasing specificity. A version of that system now powers the "Explore" tab in the App Store (Lunden, 2015[118]). The amount of the acquisition is undisclosed.

Other platforms owned by Apple

Mac App Store

The Mac App Store, available for Mac computers, allows users to discover, download and install Mac applications. It is essentially the same as the App Store, but for Mac computers only. App developers must also enrol in the Apple Developer Program, and the same fee structure as in the App Store applies. However, it pales in comparison with the App Store's financial performance, probably due to the low share of Mac computers relative to the mainstream Wintel standard and the increasing popularity of mobile devices over desktop computers (Heisler, 2015[119]).

TV App Store

The TV App Store allows users to access apps and games designed specifically for Apple TV. It is essentially the same as the App Store, but for Apple TV. App developers must also enrol in the Apple Developer Program, and again, the same fee structure as in the App Store applies. The TV App Store, however, does not account for a significant proportion of Apple's revenues.

Apple Books Store

The Apple Books Store, available for iOS devices and Mac computers, features e-books from major and independent publishers, which can be purchased by Apple users. It connects users with e-book suppliers. Apple charges a 30% commission for all purchases through Apple Books (Blurb, n.d.[120]).

Major litigation

Irish tax benefits. Following a state aid investigation, the European Commission concluded in 2016 that two tax rulings issued by Ireland to Apple substantially and artificially lowered the tax paid by Apple in Ireland since 1991. The Commission concluded that Ireland granted undue tax benefits of up to EUR 13 billion to Apple. Ireland was entrusted with the task of recovering the illegal aid. The Commission subsequently decided to refer Ireland to the European Court of Justice for failing to recover the illegal aid from Apple (European Commission, 2017[121]). Both Ireland and Apple have appealed the Commission's determination to the EU General Court. Apple has paid the money in question into escrow in Ireland pending the outcome of the appeals process (Hamilton, 2018[122]).

Baidu

Corporate history/evolution

In the 1990s, Baidu cofounder Robin Li developed the "RankDex site-scoring algorithm" to rank search engine results. The Baidu Chinese language search engine was based on that technology and launched in China in 2000 (RankDex, n.d.[123]), though Baidu, Inc. ("Baidu") was incorporated in the Cayman Islands. Thereafter, Baidu began to incorporate new functionalities, including news and photo search functionalities, a spellchecker, stock quotes, videos, train and transport schedules, and other information. In a nutshell, as will become clearer in the Google profile below, Baidu has replicated the main aspects of Google's business model – not just by putting a search engine at its core, but also by employing a strategy of developing and offering services free of charge to secure user attention and data. Additionally, like Google, Baidu has made strategic acquisitions and expanded into related markets to capture more user attention and data. Both companies are also making significant inroads into artificial intelligence (AI). But the nature of their diversifications has been different, so Baidu is no longer as similar to Google as it used to be.

Baidu listed its American Depositary Shares on the NASDAQ Global Market stock exchange in 2005. Its headquarters are in Beijing.

Baidu has subsidiaries in the Cayman Islands, China, the British Virgin Islands, Japan and Hong Kong (China). All of them are wholly owned or controlled by Baidu.

The Baidu ecosystem

Baidu operates multiple online platforms and, as with Google, they are all part of an interrelated and dynamic ecosystem. It would make little sense to discuss them in isolation. Therefore, this profile describes Baidu more at the ecosystem level than on a platform-by-platform basis.

Business model

Who is Baidu serving on the various sides of its ecosystem?

Broadly speaking, Baidu's ecosystem serves three main groups: 1) users of Baidu's search engine and other online products, services and websites (the "Baidu properties"), who want to find information and content online; 2) advertisers, who wish to reach Baidu's large audience; and 3) content providers, who want to be visible in Baidu's search results page and find ways to monetise their content.

Users

Baidu provides a broad range of products and services that can be accessed through desktop and mobile devices to attract user attention and traffic. Baidu's flagship product, the Baidu search engine, allows users to find relevant information online, including web pages, news, images, documents and other information. The search engine and the majority of Baidu's other online services are free of charge, so competition on the user side is not price-based. Rather, competition takes place on the basis of user experience (i.e. quality and innovation), which is why Baidu has invested heavily in AI. In return, users provide their attention and personal data.

Baidu's free services, which users access through the Baidu app and Baidu.com, include the following:

- **Baidu Search** enables users to retrieve information through search queries in the form of traditional text inputs and through voice and image. Voice search integrates speech technology and search technology to enhance the user experience by providing an easy-to-use input alternative to traditional text input. Image search enables the use of mobile device cameras to capture images and uses visual goal automatic detection and recognition. Users can also use Baidu Search to access transactional services, such as takeout delivery, movie tickets, hotel stays and flights (through Baidu Nuomi, Qunar or otherwise).
- **Baidu Image** enables users to search for millions of images available on the Internet, including by size or file type.
- **Baidu Feed** provides users with a personalised timeline that reveals their interests based on their past online behaviour (such as searching and browsing) and demographics. Feed complements Baidu's search and content platforms and, according to Baidu, contributes greatly to user loyalty.
- **Bear Paw Account** enables verified brands and businesses to aggregate their content from websites, open-platform apps and other online destinations. That makes them searchable in one location, thus making it easier for users to follow and engage with brands and businesses.
- **Baijiahao** is a content platform where individuals, entities and content providers can publish and build a fan base online. It seems to have no exact equivalent in the Western world, as Baijiahao supports many content formats, including articles, books, albums, video, live broadcast, augmented reality and virtual reality.
- **Baidu Post Bar** is a social media platform that attracts users through topics of common interest. Users are able to post text, image, audio and video content, and to reply to original content, thereby forming social networks around discussion topics.
- **Haokan Videos** is an online short-video aggregation platform that provides users with a rich and personalised library of user-generated video. Its interactive tools allow users to like and save content, comment, share and search.
- **iQIYI** is an entertainment/video-streaming/content distribution platform which features a wide selection of user-generated and professionally produced content. It can be seen as a combination of YouTube and Netflix. iQIYI offers membership packages that give members access to premium content and other viewing privileges, as well as the possibility to skip ads. Baidu has a majority stake in iQIYI.
- **Baidu Knows** is a knowledge-sharing platform where users ask questions and give answers.

- **Baidu Encyclopaedia** is an evolving and editable encyclopaedia. Registered users who are experts in their respective fields, ranging from medical care to studio arts, generate its content.
- **Baidu Mobile Assistant** is a mobile app marketplace for Android mobile devices. It offers an array of apps – exact figures are not available – and makes recommendations to users based on big data analytics. It also helps users to manage their smartphones, allowing them to download, upgrade, manage and delete apps easily and conveniently, and to optimise device memory and delete junk files.
- **Baidu Wallet** facilitates online and mobile payment services. It sits on top of credit card networks and enables users to consummate transactions in a seamless manner. In addition, the Baidu Wallet mobile app integrates advanced data technology to recommend consumer financing products or investment products that best fit users' demand profiles.
- **Baidu Education** is a repository of educational and scholarly documents and materials covering over 50 disciplines within the fields of education, engineering sciences and technology.
- **Baidu Wealth Management** provides wealth management services by leveraging big data and technology.
- **Baidu Nuomi** is a transactional platform that offers multiple services and products, including entertainment (such as film, transportation ticketing and tourism), dining, hotel reservations, and health and beauty services. Baidu Nuomi users can access these services through Nuomi.com, Baidu Nuomi's mobile app and additional channels, such as Baidu Search and Baidu Maps.
- **Qunar** is a leading travel platform in China that enables users to find and purchase diverse deals in flight, hotel and holiday packages by processing highly fragmented travel products and information from tens of thousands of travel service providers in China and globally.
- **Baidu Maps** provides services relating to locations, intelligent routing and navigation. It aggregates and optimises available, cost-effective transport options and displays routes and route timing.
- **Baidu Cloud Drive** is a personal cloud service that allows users to upload data, such as documents, photos and address books from various devices and access their data at any time.
- **DuerOS** is a virtual personal assistant/conversational AI platform that enables hardware devices to hear, understand and fulfil users' needs through voice activation. DuerOS has more than 130 partners building over 50 DuerOS-powered hardware products, including televisions, smart speakers, smartphones, smart headsets and other devices.

Advertisers

Baidu enables advertisers to take advantage of its large user base by giving them the possibility to serve targeted ads in the form of text links, images, multimedia files and other interactive formats. Ads are targeted based on user's revealed preferences (derived from the data they provide). Baidu's advertising services include:

- **Advertising services based on search queries** include P4P and other services, such as BrandZone. P4P is an auction-based service that enables advertisers to reach users who are searching for information related to the advertiser's products or services. Advertisers bid for priority placement of their links. Search-based targeting may also be set to target only users located in specific regions of China and/or during specific hours of the day. Baidu leverages its data resources and extensive content with the aid of AI to improve targeting and relevance to users. BrandZone allows the brand image of an advertiser to be prominently displayed on search results pages. The display position for BrandZone may also be shown on Baidu's vertical search products, including Baidu Knows and Baidu Image. P4P advertisers pay when users click on their ads on Baidu search result pages or Baidu Union members properties (see Subsection "Content providers" below), while BrandZone advertisers pay based on the duration of the relevant placement on Baidu search result pages.
- **Advertising based on Baidu Feed** allows advertisers to serve image or video ads between feed headlines or within the feed content. Targeting is determined on the basis of revealed preferences derived from user data collected by Baidu's products and services. Baidu Feed advertisers pay on a cost-per-click (CPC) or CPM basis.
- **Programmatic advertising** is rendered through a complex system that includes a supply-side platform (SSP), a DSP, an ad-exchange platform (Baidu Exchange Service [BES]) and a data-management platform (DMP). The SSP aggregates and manages inventory from Baidu properties and Baidu Union members' properties, optimising ad spending by analysing content, audience and other factors. The DSP is an integrated sales service for advertisers and advertising agents for programmatic media (i.e. purchase of

ad space). BES is the ad-exchange platform where offers of ad inventory (SSP customers) and demand for ad space (DSP customers) meet. The DMP aims to improve the effectiveness and accuracy of ad-serving and ad-inventory management by using data collected from advertisers, Baidu's services and third-party data management platforms.

Content providers

Baidu serves two types of content providers:

- **Baidu Union members**. The "Baidu Union" is composed of a large number of website publishers, software and app developers who serve targeted ads on their respective properties. Baidu offers websites the possibilities to install Baidu's search functionalities on their properties and serve search-based ads. In addition, Baidu Union members may choose to serve display ads that match the content of their properties. App developers must join the DU Ad Platform (DAP, Baidu's global mobile advertising platform) (DU Ad Platform, 2019[124]) to monetise their content. Baidu and Baidu Union members split the revenues derived from ad serving on Baidu Union members' properties under individual revenue-sharing agreements.
- **Content (service) providers per se**. These include app developers who list their apps on the Baidu Mobile Assistant store, copyright holders of videos, films, music and other content who share their content on Baijiahao or other content-oriented Baidu sites, such as iQIYI and Haokan Videos, and service providers/merchants who offer their products and services on Baidu Nuomi and Qunar. Baidu and content/service providers split the revenues derived from distribution of content and services through Baidu properties under individual revenue-sharing agreements.

How does the platform make money?

Sources of revenue

Baidu makes money mainly from its "Baidu Core" and iQIYI segments. Baidu Core revenues are mainly derived from search-based advertising services (P4P services), but also from display ad services, Baidu Feed advertising services and other recent business initiatives, especially the provision of financial services (through, among other things, "Baidu Wealth Management and Baidu Consumer Credit", which provides instalment payment services, education loans and consumer financing). iQIYI derives the majority of its revenues from membership services and online advertising services. A small portion of revenues is derived from on-demand content purchased by users.

Reasons for success

Baidu's success can be explained by a combination of innovation, (mostly indirect) network effects, learning-by-doing, data-driven economies of scale and scope, strategic acquisitions, and regulatory intervention. The RankDex algorithm and the comprehensive web index built by Baidu's crawlers enabled the rendering of satisfactory results in Chinese, as a result of which Chinese Internet users soon began to flock to Baidu to search for information online. Thereafter, economies of scale and learning-by-doing effects came into play. As Baidu had the largest web index (Baidu, 2005[125]) and largest user base (see Subsection "Other important 'snapshot' statistics") among Chinese search engines, the combination of economies of scale and learning-by-doing tipped the Chinese search engine market to Baidu's favour even further.

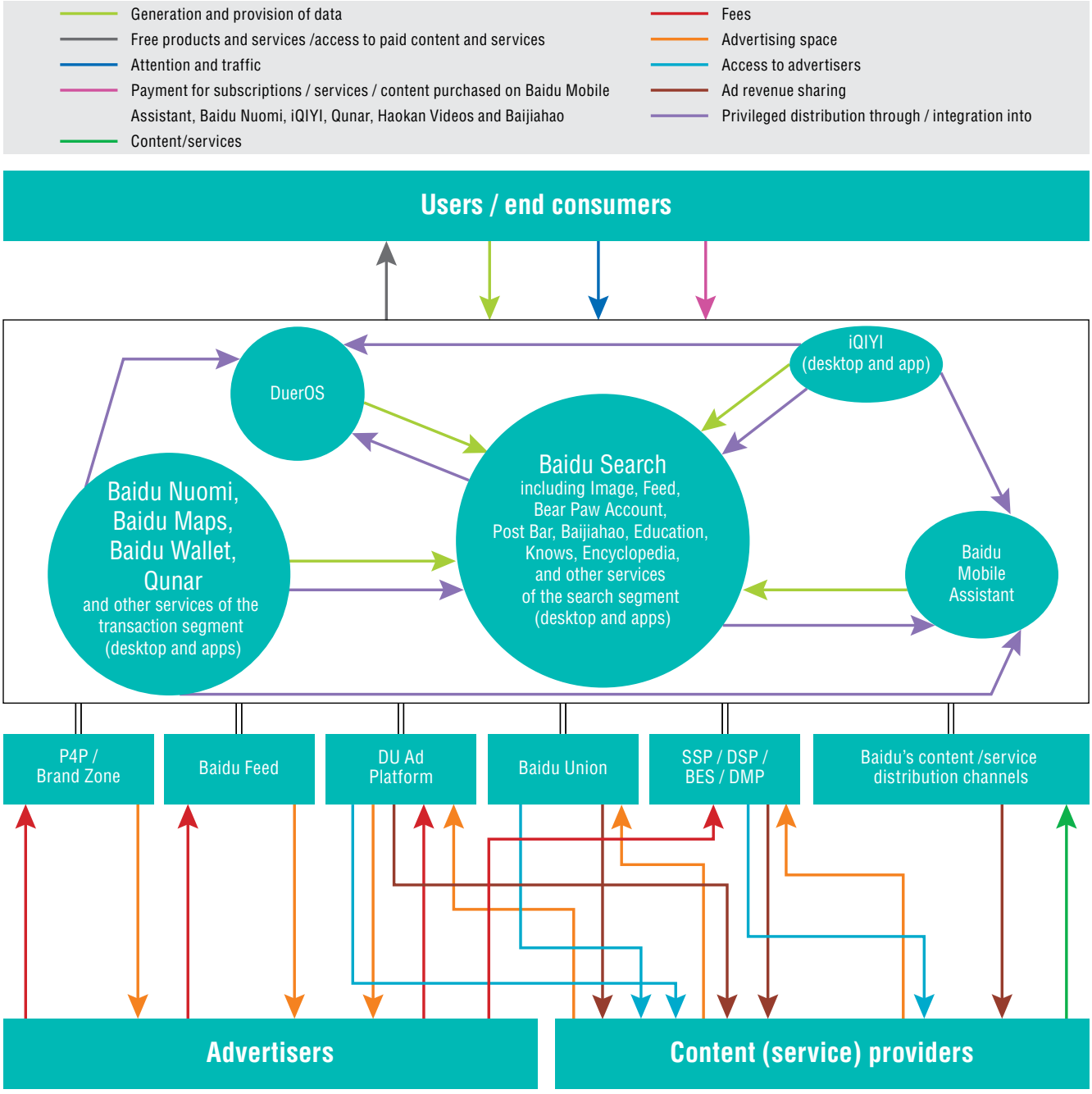
In addition, Baidu's many acquisitions (such as iQIYI) and services introduced at no pecuniary cost to users (such as Baidu Browser and Baidu Maps) enabled it to secure large amounts of data from different sources, thereby triggering data-driven economies of scale and scope. In parallel, indirect network effects ensured Baidu's commercial success: more users on the free side attract more advertisers on the paid side. The combination of these indirect network effects with the economies of scale, scope and learning-by-doing led to a self-reinforcing positive feedback loop. As Baidu attracts more users with its free services (search engine, maps, iQIYI, and so on), it is able to gather larger amounts of user data to improve its search algorithms and other services and develop user profiles, and such user data obtained on the free side can be reprocessed and reused to better target users with advertising.

In turn, by being able to target users with more relevant ads, Baidu is more likely to attract advertisers (since consumers are more likely to click on their ads) and thereby increase its advertising revenues.

Finally, some of Baidu's success is due to the fact that it has been shielded from competition from the world's leading search engine. The Chinese government banned Google in 2010 (see Subsection "Main competitors").

Flow chart

A A.6. The Baidu ecosystem



Note: P4P = pay for performance; SSP = supply-side platform; DSP = demand-side platform; BES = Baidu Exchange Service; DMP = data management platform.

Use of data and information

Baidu collects data through its services, including volunteered information (entered when signing up for an account) and observed data, such as biometric information, contacts, browsing behaviour, search queries, unique device ID, mobile carrier, device type and OS, phone number, location data and IP address.

Baidu collects these data to operate, maintain and provide the features and functionality of its products and services, to communicate with users, to enable "more accurate reporting and improvement" of Baidu's products and services, to measure traffic and usage trends and understand more about the demographics of Baidu's users, to provide personalised content and information, including targeted content and advertising, to diagnose or fix technology problems, and to otherwise plan for and enhance Baidu's products and services.

Baidu shares personal data with 1) third parties, at the request of users; 2) companies owned or controlled by Baidu, including subsidiaries, and its holding company; 3) "other parties" whose products or services Baidu believes may be of interest to users; 4) "third-party vendors, consultants and other service providers" that perform services on behalf of Baidu; 5) third parties in the context of a reorganisation, such as a merger or bankruptcy; and 6) third parties, when required to comply with applicable laws, regulations, court orders, governmental requests and the like, to enforce Baidu's terms of service, to investigate and challenge third-party claims, to protect the rights, property and safety of Baidu and its users, and to detect, prevent and address criminal activity or security issues.

The ecosystem's importance to users

Annual statistics on searches, advertisers and content providers

Users

A time series of data on the number of people using Baidu's services is not publicly available. However, data on Baidu's share of Internet searches in China appears in various indicative sources and it shows that Baidu's share has not been less than 50% since 2004, when it was 45%. From there, it grew to a peak of 85% in 2011, at which point competition from other online advertisers seems to have intensified.

A A.8. Baidu's annual share of Internet searches in China

Year	%
2004	45
2005	56
2006	60
2007	72
2008	73
2009	76
2010	84
2011	85
2012	79
2013	82
2014	71
2015	81
2016	54
2017	59

Sources: CIW Team (2013[126]), *China Search Engine Market Share in 2012*, *https://www.chinainternetwatch.com/1972/china-search-engine-market-share-in-2012/*; Verot (2016[127]), *Baidu Struggles in China!*, *https://www.marketingtochina.com/baidu-struggles-in-china/*, GMA (2016[128]), *Top 3 Chinese Search Engines (2016)*, *http://seoagencychina.com/top-3-chinese-search-engines*; Statcounter (2018[129]), *Search Engine Market Share China*, *http://gs.statcounter.com/search-engine-market-share/all/china*.

Advertisers

Roughly the same pattern shows up in Baidu's advertising customer count, but with a lag. Customers peaked in 2015 and have dwindled since then, suggesting growing competition from other online advertising services.

A A.9. Baidu's online advertising customers

Year	Customers
2004	35 000
2005	76 000
2006	108 000
2007	155 000
2008	300 000
2009	223 000
2010	412 000
2011	488 000
2012	596 000
2013	753 000
2014	813 000
2015	1 049 000
2016	982 000
2017	775 000

Content providers

Baidu had 76 000 Baidu Union Members in 2005 (EDGAR, n.d.[130]). That number rose to over 350 000 in 2010 (Chow, 2010[131]), 600 000 in 2012 (Nakao, 2012[132]), 700 000 in 2014 (Ding, 2014[133]) and over 800 000 in 2015 (Baidu, n.d.[134]).

Other important "snapshot" statistics

A smattering of one-off data points provides further insights about the popularity of Baidu's services in China.

- Baidu.com is the most popular website in China and it ranks fourth globally, as measured by average daily visitors and page views in 2017, according to Alexa.com (Alexa, n.d.[135]).
- As of April 2018, Baidu.com had about 52 million individual visitors and 293 million page views (5.61 per visitor) per day (Hype Stat, n.d.[136]).
- As of April 2018, Qunar.com had about 40 500 individual visitors and 243 000 page views per day (Hype Stat, n.d.[137]).
- In 2017, the DU Ad Platform surpassed 2 400 app developers; it received 3.5 billion daily ad requests and its inventory reached 800 million MAUs (DU Ad Platform, 2019[124]).
- iQIYI is China's largest online video platform, with 51 million paying subscribers, 126 million mobile and 54 million desktop daily active users (DAUs), and 421 million MAUs as of December 2017 (Yoo, 2018[139]).
- In December 2016, Baidu Maps had 341 million MAUs (CIW Team, 2017[140]).
- Baidu Mobile Assistant was the third-largest app store in China in 2017, with over 250 million downloads (CIW Team, 2017[141]).

How the groups on each side of the ecosystem benefit from using it

Users

More Chinese Internet users rely on Baidu than any other search engine. It enables them to find information on the Internet quickly and easily. Baidu constantly improves its ability to provide relevant and personalised search results with the help of AI in generally and deep-learning algorithms in particular. Users also benefit from Baidu's other innovations, such as the possibility to search for information and content based on voice commands or images. Furthermore, as a result of the high level of integration between Baidu's search engine and other services, synergies arise from the data users provide, leading to more relevant content recommendations and a more personalised user experience.

Advertisers

Baidu provides advertisers with cost-effective and efficient advertising services. While traditional advertising often entails wasted spending, as ads are likely to be seen or heard by people who are not interested in the marketed products, Baidu's technology allows ads to be served to people who are actively looking for information on the marketed product or otherwise interested in that product. In addition, under the CPC and CPM payment options, advertisers can be certain of the actual degree of user engagement with the ad or the number of times an ad has been shown. Moreover, advertisers benefit from access to Baidu's impressively large user base, as well as the possibility to serve ads on the millions of websites, apps and other online destinations in the Baidu Union. Also, through its Phoenix Nest service, Baidu helps advertisers to more easily identify popular keywords for their bids and provides them with budget management tools and useful data for effective measurement of their return on investment (ROI).

Content providers

By constantly indexing and analysing the content of websites to provide relevant search results, Baidu generates traffic for websites that might otherwise struggle to reach viewers. In addition, Baidu provides websites with search functionality tools that render their properties more useful and enable them to monetise their content by serving search-based or display ads from Baidu's advertiser base. Moreover, through its Mobile Open Platform, Baidu offers app developers a number of APIs for data analytics, location-based features and cloud storage, among other functionalities, thereby making it easier for developers to build potentially successful and profitable apps. App developers can also monetise their apps through in-app advertising, thereby benefiting from an additional revenue stream, and through Baidu Mobile Assistant they have an effective distribution channel to reach potential customers from Baidu's user base. Also, brick-and-mortar service providers and merchants can access Baidu's user base through properties like Qunar and Baidu Nuomi. Finally, through content-oriented properties, such as Baijiahao, iQIYI and Haokan Videos, Baidu affords holders of copyrighted videos, films, music and other content distribution channels for reaching potential customers, developing a fan base and increasing their popularity and profitability.

Social and economic benefits to countries

Baidu's key contribution as an ecosystem is to help different sets of customers (i.e. users, advertisers and content providers) to find precisely who or what they are looking for, thereby enabling interactions and creating value that might not have been enabled or created otherwise. Baidu achieves that result by significantly reducing transaction and search costs, thus contributing to efficiency, productivity and growth.

In addition, given its large user base and the assortment of products and services it offers, Baidu is able to collect, use and process vast amounts of data (taking advantage of economies of scale and scope), which it uses to optimise its offering, enhance the user experience and develop new products and services, thereby driving innovation and technological progress (for example, by venturing into AI and driverless car technology).

Moreover, by providing technological tools (e.g. APIs and SDKs) to content providers and app developers to improve the usefulness and attractiveness of their properties, as well as to design and distribute their apps and content, Baidu encourages innovation and entrepreneurship.

Furthermore, by providing services that increase users' convenience, such as Baidu Maps, which renders travel time estimates, directions, route planning, reviews and information about businesses that can be accessed through a mobile device, Baidu improves living standards and well-being.

Relatedly, by enabling easy access to information (through Baidu Search and how-to videos on iQIYI), Baidu encourages education, research and, more generally, access to knowledge.

Basic financial information

Baidu does not break down its financial information on a platform-by-platform basis. The information presented in Table A A.10 is therefore company-wide.

A A.10. Baidu's company-wide revenues, net income and employees

Year	Total revenue (USD million)	Advertising revenue (USD million)	Advertising revenue (% of total revenue)	Net income (USD million)	Net profit margin (%)	Employees
2005	40	38	96.3	6	14.9	1 307
2006	107	106	98.9	39	36	3 113
2007	239	239	99.8	86	36	6 252
2008	469	468	99.9	154	32.8	6 387
2009	652	651	99.9	218	33	7 353
2010	1 199	1 199	100.0	534	44.5	10 887
2011	2 304	2 302	99.9	1 055	45.7	16 082
2012	3 580	3 571	99.7	1 668	46.5	20 877
2013	5 277	5 253	99.6	1 711	32.4	31 676
2014	7 906	7 816	98.9	1 973	24.9	46 391
2015	10 248	9 886	96.5	5 007	48.8	41 467
2016	10 161	9 294	91.5	1 670	16.4	45 887
2017	13 034	11 242	86.3	2 810	21.5	39 343

Competitive environment

Geographic reach

Baidu conducts the overwhelming majority of its operations in China. Its main property, Baidu.com, is overwhelmingly visited from China (93% of visitors). A much smaller percentage of visitors come from Japan, Korea, Chinese Taipei, the United States and a few other countries (Alexa, n.d.[135]). The vast majority of Baidu's total revenues (more than 97 %) are generated by its operations in China.

Main competitors

From 2005 to 2010, Baidu's main competitors were US-based Internet search advertising firms that provide Chinese language search services, such as Google, Yahoo! and Microsoft. However, Google was banned from the Chinese market in March 2010 (Guynn, 2010[142]), and neither Yahoo! nor Microsoft ever gained the critical mass necessary to become important players there. Since 2014, Baidu's main competitors have been China-based firms, such as Tencent, Alibaba and Qihoo 360. Baidu competes against them for both users and advertisers on the basis of user traffic, quality (relevance) of search results, availability of services and the ease of their use, distribution channels, and the number of associated third-party websites. For transaction services (such as Baidu Nuomi and Baidu Wallet), Baidu's main competitors are China-based companies such as Meituan-Dianping and Koubei. Lastly, iQIYI's main competitors include companies that operate online video websites in China, such as Alibaba's Youku and Tencent Video.

Publicly announced geographic and product/service expansion plans

Baidu has openly acknowledged the importance of having quality premium and user-generated content for the success of its ecosystem, as well as the necessity to constantly innovate to deepen user engagement and conquer adjacent markets or create new markets. In this regard, iQIYI has filed for a US IPO for USD1.5 billion (Barinka and Ramli, 2018[143]) to be better positioned to acquire quality content; Baidu and Huawei have announced a partnership to work on AI technology (Fadilpašić, 2017[144]); and Bosch and Baidu signed a strategic co-operation framework agreement on smart mobility on 1 June 2017 (Denton, 2017[145]) with the aim to develop an open, comprehensive and reliable software for automated vehicles.

Baidu's three largest (in terms of transaction price) platform-related mergers and acquisitions

- In 2012, Baidu consummated an agreement to purchase shares of iQIYI held by Providence Partners for an undisclosed amount. The transaction gave Baidu control, though not 100% ownership, of iQIYI (Baidu, 2012[146]).
- In 2013, Baidu reached an agreement to buy the app store 91 Wireless for USD 1.85 billion, the then-biggest deal in China's IT sector (Reuters, 2013[147]).
- On 7 May 2013, Baidu announced the acquisition of the online video business of the video provider PPS for USD 370 million (Baidu, 2013[148]). The transaction was consummated in the second quarter of 2013.

Major litigation

- Baidu was the target of a government probe after Wei Zexi, a 21-year-old student, died in April 2016 from a rare form of tissue cancer called synovial sarcoma. Wei spent over RMB 200 000 (approximately USD 30 100) on an ineffective treatment he learned about from a Baidu-promoted link to Wu Jing Er Yuan, a military-affiliated hospital. Before his death, Wei accused Baidu of promoting false medical information, and he denounced the hospital for claiming high success rates for the treatment. On 2 May 2016, the Cyberspace Administration of China announced an investigation into Baidu's role in Wei's death. At the time, promoted search results on Baidu were not clearly distinguished from other content. The investigation concluded that Baidu's pay-for-placement results influenced Wei's medical choices and affected the fairness and objectivity of search results in general. As a result, the government imposed new regulations that require search engines to attach "eye-catching markers" and disclaimers to ads, to limit promoted results to 30% of the results page, and to verify the information in each ad before publishing it (Komar, 2016[149]).
- In 2017, 2 687 complaints regarding copyright and trademark infringement, defamation, unfair competition and labour disputes were filed against Baidu before courts in China and Brazil, with the aggregate amount of damages sought totalling approximately USD 132 million.

Baidu's main policy concerns

- **Regulatory uncertainty in China**. Chinese laws and regulations are constantly evolving. Uncertainties still exist in the legal standards (and their interpretation) for determining liabilities of Internet search and other Internet service providers for supplying links to content on third-party websites that infringe copyrights, or providing file-sharing technology or other Internet services that are used to disseminate such content. The Supreme People's Court of China promulgated a judicial interpretation on the infringement of the right of dissemination through the Internet in December 2012. Under this judicial interpretation, courts will place on Internet service providers the obligation to remove not only the links or content that have been specifically mentioned in the notices of infringement from right holders, but also any such links or content the service provider "should have known" to contain infringing content. Though five years had passed, Baidu's 2017 annual report continued to mention the company's concern that the Court's interpretation would likely impose significant administrative burdens and litigation risks (US Securities and Exchange Commission, n.d.[150]).
- **The government's interventionist approach**. This is another concern mentioned year after year in Baidu's annual reports. Although the Chinese government has implemented measures emphasising the use of market forces for economic reform, including the reduction of state ownership of productive assets, it still owns a substantial portion of such assets. In addition, the government continues to play a significant role in regulating industry development. Furthermore, it exercises significant control over China's economic growth through allocating resources, controlling payment of foreign currency-denominated obligations, setting monetary policy and providing preferential treatment to particular industries or companies. Baidu fears that this approach may eventually have a negative effect on its business.

BlaBlaCar

Corporate history/evolution

BlaBlaCar is a carpooling app that enables people seeking transportation over relatively long-distance routes and drivers who are travelling on those routes to share the journey, the companionship and the costs. One of a rare species, a "unicorn" – a privately held start-up company valued at over USD 1 billion – BlaBlaCar has the even rarer pedigree of being a European unicorn. It was founded in France in 2006 by Frédéric Mazzella, Nicolas Brusson and Francis Nappez (BlaBlaCar, n.d.[151]). The company has grown to embrace about 65 million users. It employs approximately 400 staff and was valued at USD 1.6 billion in its last funding round in 2015.

The inspiration for BlaBlaCar came from the personal experience of Mr Mazzella, who was unable to get a train ticket to travel home for Christmas. The company's About Us page tells the story:

> *When 20-something Fred was trying to get home to his family in the French countryside for Christmas, he struggled as he had no car and all the trains were full. After begging his sister to pick him up, it was on the road when Fred noticed the sheer number of people driving alone. It hit him that all those empty seats in existing cars could be the beginning of a new travel network. Over the next decade, together with co-founders Francis and Nicolas, the trio took this simple idea and built it into the world's leading carpooling platform, connecting millions of people going the same way.* (BlaBlaCar, n.d.[152])

Carpooling, or *covoiturage* as it is called in French, was by no means new in France when BlaBlaCar was conceived. A carpool service known as Allo-Stop was launched 60 years ago and was one of the early adopters of Minitel. Razemon (2014[153]) provides other interesting examples of *covoiturage*. The idea was not new in other countries, either. For example, the United States has actively encouraged carpooling for decades through transport policies, such as high-occupancy vehicle lanes on motorways. In the 1970s, 20% of all commuter journeys in the United States were carpool rides (Xia et al., 2015[154]). As will be seen, though, BlaBlaCar leveraged modern technologies to deliver a more convenient and efficient carpooling service.

Today, BlaBlaCar operates the world's largest long-distance carpooling community, whose members span 22 countries. Its headquarters are in Paris, where it employs approximately 300 people. It has about 100 other employees in other offices, including Hamburg, Madrid, Milan, Warsaw, Kiev, Moscow and Sao Paulo.

Business model

BlaBlaCar matches drivers who have spare capacity in their cars and who plan on driving particular long-distance routes with passengers who want to travel on the same or similar routes. Using the BlaBlaCar app or website, drivers publish a ride, indicating the route, day, time, preferences, number of seats available in the car, and pick-up and drop-off points. Passengers search for available rides and the associated prices on the app or website, select one, and send a booking request. The driver is informed of the request and can approve or refuse. If the driver accepts, then the parties are put in contact, the passenger pays the price, BlaBlaCar takes a commission, and the rest is credited directly to the driver's bank account. Eventually, the driver and passenger make the trip together and the transaction is thus completed. The passenger is responsible for the "last mile" of his or her journey, though as usage of the platform grows, so does the likelihood of finding a ride that is actually door-to-door.

There is a little variation among prices for the same route. These can largely be accounted for by small differences in the pick-up and drop-off points. There is also a way for drivers to propose a different price from the one recommended by the platform, but it cannot be more than 50% higher (otherwise there would be a risk that the driver would be making a profit instead of merely receiving a cost contribution – a point discussed further below). BlaBlaCar recommends a price per passenger of about EUR 0.06 per km, which is about 20 times less than the price charged by taxis in Paris.

However, BlaBlaCar's service is very different from a taxi service. Currently, the average ride offered on BlaBlaCar is around 300 km – far longer than a typical taxi ride. Furthermore, BlaBlaCar is for drivers who are already planning a trip to a particular destination. The idea is not only to defray costs and add a social element by using spare capacity on a ride that will take place anyway, but the passengers also have to plan their participation farther in advance than they would with a taxi service. BlaBlaCar's service is thus also distinguishable from online, on-demand ride services, such as Uber and Lyft, on which the passenger alone determines the destination.

BlaBlaCar's response to the OECD's questionnaire states that its commission is 20% of the price paid by passengers when they book a seat. BlaBlaCar, as a privately held company, is under no obligation to disclose its financial data, though, and indeed it does not disclose much information about its profits and revenues.

Incidentally, BlaBlaCar considers the fees received by drivers to be contributions to their costs. When setting its recommended prices, it seems the company uses the lowest acceptable mileage claim commonly agreed with the tax authorities. For example, in France, "*… nous avons donc pris comme référence la tranche la plus basse du barème fiscal…que nous avons divisée par 5 (4 passagers maximum plus le conducteur)*" ["We have thus taken as a reference point the lowest part of the tax schedule, which we have divided by 5 (a maximum of 4 passengers plus the driver)"] (Terral, 2018[155]). This has significant implications. For the driver, it means any monies received are deemed to be for cost recovery, so there is a basis for not declaring these funds to tax authorities. In addition, because the driver is making no profit, his or her existing insurance remains valid. For BlaBlaCar, this means it is only distributing cost-sharing money, not income, so it does not have to report the distributions to tax authorities.

BlaBlaCar's business model has some other powerful advantages, too. In particular, although it helps millions of people get from point A to point B by car, it does not have to absorb the costs of buying and maintaining a fleet of vehicles. It is a pure two-sided platform that simply connects one set of users with another set. It does not have to invest in training or insuring drivers, either (in fact it sells insurance to drivers). Nor does it have to provide them with benefits, such as health insurance or retirement packages, because they are not employees of the company.

User base

BlaBlaCar has 65 million members in 22 countries (Challenges.fr, 2018[156]). Fifteen million members reside in France, meaning more than three-quarters of the user base is international. A third of BlaBlaCar members use the platform only as passengers, another third only as drivers, and the rest travel alternatively as passengers or drivers. The drivers are private individuals who happen to be doing a long-distance drive for their own needs (mostly to go on holidays or away at weekends). Drivers choose the destination. This is significant, as it means the drivers are not operating at the request of a passenger.

The characteristics of members may vary from one country to another, depending on the maturity of the market, but overall BlaBlaCar has observed a balanced gender split (54% men and 46% female). Drivers are in general a bit older than passengers. Across all of the company's markets, a third of users are aged 18-25, another third are 25-35, and the rest are over 35.

A detailed study of BlaBlaCar users in Italy (Paraboschi[157]) in 2014 made the following findings:

- 71% of users were employed; 29% were unemployed.
- 54% of users were blue collar workers, 21% students and 7% military.
- The average income of users was EUR 24 000.
- 73% of passengers used BlaBlaCar for leisure purposes (predominantly [42%] for "travelling home") and 24% for business activities.
- 81% were occasional/casual users (both passengers and drivers), i.e. less than twice per month, and 10% were heavy users, i.e. at least once per week; 23% of heavy users were drivers.
- 86% of drivers and 94% of passengers said they use BlaBlaCar to save money.
- Occupancy rates varied, with 16% of cars never full, 26% sometimes full, 47% almost always full and 11% always full.

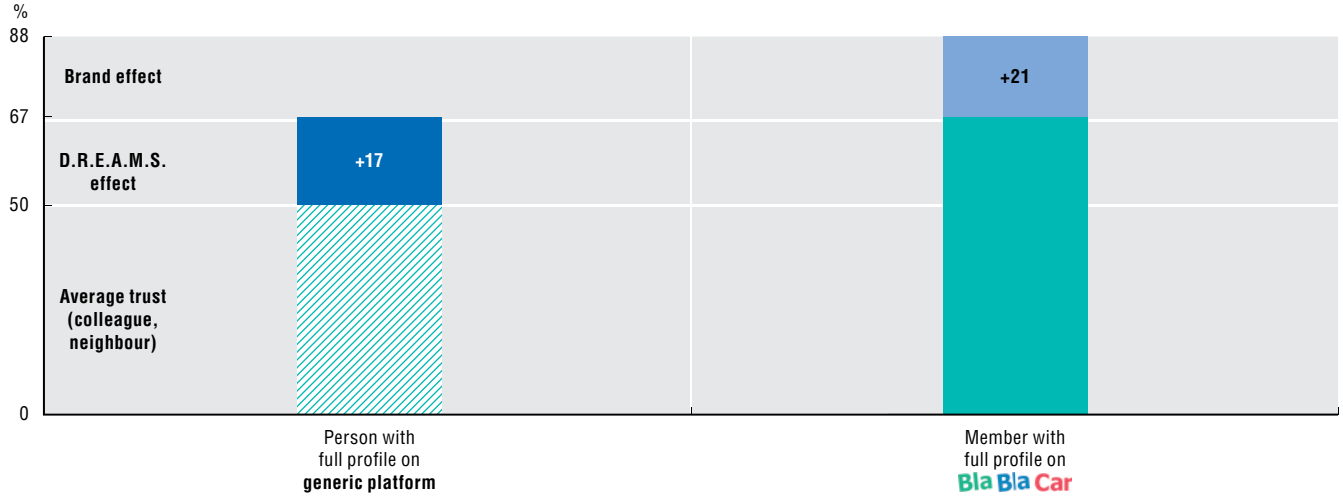
How BlaBlaCar builds and maintains trust

Building trust among users on both sides of its two-sided platform was a key challenge for BlaBlaCar, as achieving scale would not have been possible without it. BlaBlaCar considers itself to be a pioneer in the "Age of Trust" (BlaBlaCar, 2016[158]). Its website contains many references that stress the company's role in building trust between its drivers and travellers. The company's view is that "Digital trust is to interpersonal trust what the invention of the phone was to bilateral communication: a historical breakthrough suddenly introducing unlimited reach and immediacy" (BlaBlaCar, 2016, p. 12[158]).

BlaBlaCar provides mechanisms that enable passengers and drivers to define the conditions under which they will travel, e.g. types of music played and whether smoking is permitted, and in the longer term, through evaluations, to build a reputation on the platform. These mechanisms allow users to make more informed choices about the service they are providing or buying. BlaBlaCar offers a number of additional benefits that increase confidence in the service, such as breakdown, accident and personal liability insurance.

It is a particularly important factor that both the driver and the passenger(s) review each transaction. The reviews are compiled and aggregated into a constantly updated rating of each member. This is a major distinction between online ride-sharing platforms such as BlaBlaCar and more traditional forms of transportation like buses. Everyone is allowed to ride a bus, but passengers with poor evaluations are not likely to be accepted by BlaBlaCar drivers. Similarly, although bus drivers must be licensed, they are not directly dependent on positive evaluations by the people who actually use their services. BlaBlaCar drivers, in contrast, are dependent on such evaluations.

A A.7. D.R.E.A.M.S. and brand effects



Source: BlaBlaCar (2016[158]), *Entering the Trust Age*, *https://www.blablacar.com/wp-content/uploads/2016/05/entering-the-trust-age.pdf*.

The pillars of trust that make people comfortable enough to share a ride of a few hours with others whom they have never met are encapsulated by BlaBlaCar's acronym D.R.E.A.M.S. (GR7 Marketing Consulting Group, 2014[159]):

- "**Declared**" refers to users' declaration of intention. They register their name, a photo, a brief biography and their preferences (musical tastes, smoking/non-smoking preferences, etc.).
- "**Rated**" means that drivers and passengers are evaluated by others who have already shared a trip with them. Good ratings enable passengers to trust a driver they have never met before, and vice-versa.
- "**Engaged**" refers to the users' commitment to be serious and dedicated to carrying out the transaction in a professional way.
- "**Active-based**" means that the value each user derives from the platform depends on how active that user is on the platform. The website shows the last time users were online as well as the ratings they have received. Users who maintain good ratings and have higher levels of usage tend to generate more confidence.

- "**Moderated**" means that the company verifies the authenticity of the information that users publish (e-mail, telephone number, bank account).
- "**Social**" means that BlaBlaCar also relies on other platforms and social media in particular. Digital evidence of a person on Facebook, Twitter and LinkedIn, for example, helps to establish that they are a real person.

Furthermore, a report (BlaBlaCar, 2016[158]) co-authored by Mazzella provides evidence of how the mechanisms used to build the BlaBlaCar brand raised trust beyond what D.R.E.A.M.S. alone accomplishes (Figure A A.7.).

How BlaBlaCar uses members' data

Every transaction carried out on the BlaBlaCar platform requires certain data from members. The completed rides also generate observable data. On the whole, the platform is able to gather information, such as ride histories, pick-up and drop-off points, payment information, and of course names, phone numbers, e-mail addresses, and credit card/bank account data. All of the information is used to help BlaBlaCar improve its services, including by raising trust levels as previously explained.

Financial information

As a privately held company, BlaBlaCar does not face the same reporting requirements that public companies do. It typically discloses little information about its financial situation. However, press reports indicated that in September 2015, BlaBlaCar secured an investment of USD 200 million. That investment placed a value of USD 1.6 billion on the company (Chen, 2015[160]), which qualified it as a unicorn.

Furthermore, the company recently broke its usual silence on financial matters and announced that it has become profitable for the first time (Challenges.fr, 2018[156]). This was because BlaBlaCar's revenues between January and August 2018 were 40% higher than they were during the same period in 2017. The company's international operations were mainly responsible for the increase. Just one year ago, the company also disclosed, it operated at a loss of EUR 10 million (Challenges.fr, 2018[156]). Still, BlaBlaCar declined to reveal exactly how profitable it has become.

Nevertheless, the news is informative because it illustrates that some platforms require a long period of investment, scaling and losses before they can achieve profitability. In BlaBlaCar's case, 11 years of losses preceded its announcement of profitability.

Positive externalities and benefits to society

BlaBlaCar is having beneficial effects in several dimensions. These include:

- **Using existing assets more efficiently**. 76% of trips longer than 100 km in Europe are made in cars with an average of 1.7 people occupying each car. In the BlaBlaCar community, the average occupancy rate is 2.8 people per car and in mature markets it is as high as 3 people per car.
- **Environmental savings**. By connecting people seeking to travel with drivers already going the same way, BlaBlaCar is reducing the number of cars on the road, thereby reducing emissions.
- **Access to affordable mobility at a national level**. By helping to optimise car usage, BlaBlaCar not only saves members money by enabling them to share costs efficiently, it also creates point-to-point connections that simply did not exist before. That significantly improves national transportation networks with no additional infrastructure cost to citizens.
- **Improved comfort and convenience**. In countries with weak transportation infrastructures for long-distance travel, BlaBlaCar has given passengers a new option for reliable, comfortable and affordable travel.

Geographic reach

The company has expanded into 21 countries beyond France, often through the acquisition of local operators in a strategy sometimes referred to as "glocalisation" (Svensson, 2001[161]). BlaBlaCar grew beyond the European market for the first time in 2015, with Brazil, India and Mexico among its major

new territories. Its experiences there illustrate both the company's growth potential and some of the benefits that it brings to economies and societies.

India

In January 2015, BlaBlaCar entered the Indian market through a "greenfield" investment. That market is characterised by high demand for long-distance travel but fragile and expensive inter-city air, bus and rail services. The combination of strong demand and poor infrastructure makes consumers very sensitive to price reductions and quality improvements (especially reliability) and therefore more open to adopting reliable cost-sharing strategies (Sachitanand, 2015[162]). Moreover, transportation price structures in India are regulated and demand-insensitive, which led BlaBlaCar to develop pricing models aimed at both affordability and reliability rather than simply trying to be the cheapest option. After one year in operation, the company claimed to have offered over 1 million seats and provided 55 million km of shared travel across 700 cities in India.

Mexico

Mexico also appeared to offer a market structure that gave an advantage to BlaBlaCar, as public transportation services were straining under excessive demand and the cost of owning and operating vehicles (including petrol) was relatively high. A local start-up, Rides, had emerged as a popular alternative for city-to-city ride-sharing and had received economic support from the National Institute of Entrepreneurship. BlaBlaCar acquired Rides in April 2015 (Lavca, 2015[163]). Within its first 100 days of operating in Mexico, BlaBlaCar reached 12 000 user connections for inter-city journeys between Mexico City and Queretaro, Guadalajara, Puebla, and Monterrey (Rey, 2015[164]).

Brazil

BlaBlaCar began operating in Brazil in November 2015. It, too, was a market characterised by relatively high prices for inter-city transport and inefficient, unreliable connections. Drivers faced expensive tolls on motorways and alternative modes of transport were also costly. In addition, and importantly to BlaBlaCar, there is a high penetration rate of smartphones and high-quality mobile infrastructure in nearly all urban areas in Brazil.

As with many other online platforms, an important element of BlaBlaCar's entry strategy was not to start monetising its operations until it had achieved scale, so initially the company did not take a commission. One report indicates that as of 2016 the company believed it might take up to another two years to build enough scale for a commission to be charged there (Ozores, 2016[165]).

Publicly announced plans for service expansion

At least two services are under development: a subscription model, in which a regular, periodic payment would give monthly or annual access to the list of drivers and routes available through the app; and a ride-sharing service for shorter routes called BlaBlaLines, which is being tested in a few regions in France.

BlaBlaCar's chief policy concern

BlaBlaCar's biggest concern is the legal definition of its activity: carpooling. Carpooling does not exist in the regulatory framework of some countries where BlaBlaCar operates. It is therefore crucial to the company to define the term in national legislation and to exclude it from the scope of commercial transportation. BlaBlaCar has been active in suggesting the introduction of a European definition of carpooling, for instance.

Facebook

Corporate history/evolution

The project that would eventually lead to the creation of Facebook dates back to 2003, when Mark Zuckerberg, then a Harvard student, launched a website called "Facemash". Facemash was an online student directory with photos and basic information about Harvard students. The ideas behind Facemash soon evolved into Facebook (originally thefacebook.com), which was incorporated in the United States in 2004 by current CEO Zuckerberg, Dustin Moskovitz, and Eduardo Saverin (Facebook, n.d.[166]). Originally available only to Harvard students, Facebook soon expanded to include students at other universities and schools, reaching 6 million users by the end of 2005. After opening to the general public in September 2006, the number of users grew to 12 million by December 2006 (Facebook, 2006[167]). Over time, Facebook incorporated new features and functionalities, such as Facebook ads in 2007, which enabled more opportunities for connections between users and businesses (Facebook, 2007[168]), and Facebook Chat in 2008 (Facebook, 2008[169]), a private messaging interface that was later rebranded as Messenger. After surpassing 500 million users in July 2010, Facebook continued to grow, adding custom-built data centres and acquiring photo-sharing platform Instagram in 2012. Facebook also went public in 2012. It acquired the messaging app WhatsApp in 2014.

From a simple online directory with photos and basic information about students, Facebook has become the largest social media platform in the world. It now has over 2 billion users (apart from Instagram and WhatsApp).

Facebook's headquarters are in California. It has subsidiaries in the United States, Denmark, Ireland, Sweden and Singapore.

Facebook

Business model

Who is Facebook serving on each of its sides?

Facebook is a social network platform that serves three distinct groups: users, advertisers and developers/content providers.

Users

Here "users" means parties who are using Facebook's consumer-facing services, rather than all the parties who may use any side of the Facebook platform (which is a group that would also include advertisers, developers and content providers). On this user side of Facebook, people, groups and businesses can build profiles (an exclusive space where they can upload pictures, videos and other content, enter personal information, and organise and display events, activities and other information in a chronological "Timeline"), connect (become "Friends"), share, comment on content, and communicate with others.

One of Facebook's main user features is the News Feed, a regularly updating stream of content posted by Friends, businesses and apps to whom the user is connected on Facebook, plus some occasional, embedded ads. The News Feed includes information such as photos, linked articles, event updates and app updates. Each user's News Feed is personalised based on his or her interests and the sharing activity of his or her Friends. Personalisation and relevance are determined by algorithms fed by user data.

Facebook is free in a pecuniary sense for users, which enables it to attract and retain more users than would otherwise be possible. It also means that competition for users occurs on the basis of quality, service and innovation. However, users engage in a non-monetary transaction with Facebook in which, in exchange for the service, users provide their attention, traffic, (user-generated) content

and personal data, which is the raw material Facebook needs to improve and sell highly customisable and targeted advertising services. Consequently, part of the genius of Facebook is that its users are, in a sense, working for the company. Every time they share a photo, an opinion, a joke or a thought about something, and every time they click on a link or a like button, they feed a large database that enables the company's algorithms to become more adept at advertising to them.

Advertisers

The vast majority of Facebook's revenues are derived from advertisers. Advertisers avail themselves of Facebook's reach, relevance and social context. With over 2 billion registered users, Facebook enables advertisers to reach a vast audience and target users with image, video and slideshow ads based on a wide variety of factors, such as age, location, gender, education, work history, and specific interests that users have chosen to share on Facebook. That targeting relies on algorithms that process user data. In addition, as recommendations of Friends have a strong influence on consumer interests and purchasing decisions, advertisers have the option to include "social context" (i.e. information that highlights a Friend's connections with a particular brand or business) in their ads. However, users can control how Facebook decides what ads to show them by managing their settings in Ad Preferences, which includes choices about ads with social context, education and the types of profile information and interests that influences the ads they see.

Note that Facebook's business model has certain advantages related to that of a traditional advertiser. Facebook can collect data on users' behaviour that has no parallel in the physical world. Traditional advertising companies can only estimate the number of people that see a print advertisement or hear a radio ad, for example, whereas Facebook not only knows exactly how many users are exposed to an ad, it also knows how many of them click on it, who they are, and what their profile is based on their past behaviour.

Furthermore, whereas a traditional advertising firm undertakes external market research, either on its own or by paying a third-party to do the work, Facebook generates its own data for market research thanks to the community of people who use its platform. Moreover, the user-generated content that Facebook collects should enable it to learn more about users' interests and preferences than less personal demographic data would. In addition, Facebook's user data is generated, collected and processed in real-time, unlike data collected via market research surveys. Accordingly, Facebook can rapidly detect trending topics and adjust its advertisements so that users see more of what is likely to attract their attention.

Developers/content providers

The "Facebook Platform" makes available a set of developer tools and APIs. These enable developers and content providers to seamlessly integrate with Facebook and to create social apps and websites that allow users to share their activities with Friends on Facebook. Upon connecting these apps and websites to Facebook, users gain the ability to choose to share information about their use of the app or website, such as the articles, books, movies and songs they are reading, watching, and listening to, or the games they are playing. As a result, developers /content providers increase engagement with their products and services, boost growth, and raise profitability.

Incidentally, the term "content providers" here does not mean businesses that simply have profiles on Facebook. It means, for example, media companies such as *The New York Times*, *BuzzFeed* and *National Geographic* that publish certain content directly to their Facebook Pages instead of (or in addition to) publishing it on their own websites (Abbruzzese, 2015[170]). These content providers are using Facebook in ways and for reasons that are significantly different from those applicable to ordinary users. Specifically, content providers (and developers, for that matter) use Facebook APIs, whereas ordinary users do not. For example, *BuzzFeed* uses an API provided by Facebook to add Facebook share buttons to articles on the *BuzzFeed* website. Moreover, the content providers' reason for using Facebook has a commercial nature: reaching Facebook's large audience. As that is a goal developers have, too, they are grouped together here.

How does Facebook make money?

Sources of revenue

Facebook generates substantially all of its revenue (98% in 2017) from advertising, and to a lesser extent, from fees received from developers using Facebook's "Payments" infrastructure that enables users to purchase virtual and digital goods.

- **Advertising**. Advertising revenue is generated by displaying ads on Facebook and third-party affiliated websites or on mobile apps that are members of the "Audience Network" (see Subsection "How customers on each side of the platform benefit"). Advertisers pay for ads on a CPC or CPM basis.
- **Payments**. Facebook enables payments from users (by using credit cards, PayPal or other available payment methods) to Platform developers. Facebook reportedly charges a fee of up to 30% to Platform developers when users make purchases using Facebook's Payments infrastructure. Use of the Payments infrastructure is mandatory for game apps on Facebook, and fees associated with Payments are generated almost exclusively from games (Lim, 2012[171]).

Reasons for success

Facebook's success can be explained by a combination of innovation, direct and indirect network effects, learning-by-doing, data-driven economies of scale and scope, strategic acquisitions (e.g. WhatsApp and Oculus), and the fact that its core services are offered at no charge to end users. After it was launched, Facebook soon displaced the then-leading social network MySpace with the help of innovative features such as the Like button as well as an eye-catching and better organised user interface. The growth in Facebook's user base resulting from its innovative efforts was accelerated by direct network effects: the more users a social network platform has, the greater the value of the network to its members. The more Friends the average user can connect with through Facebook, the more his or her profile and participation are worth to him or her personally, because the user does not have to go somewhere else to keep in touch.

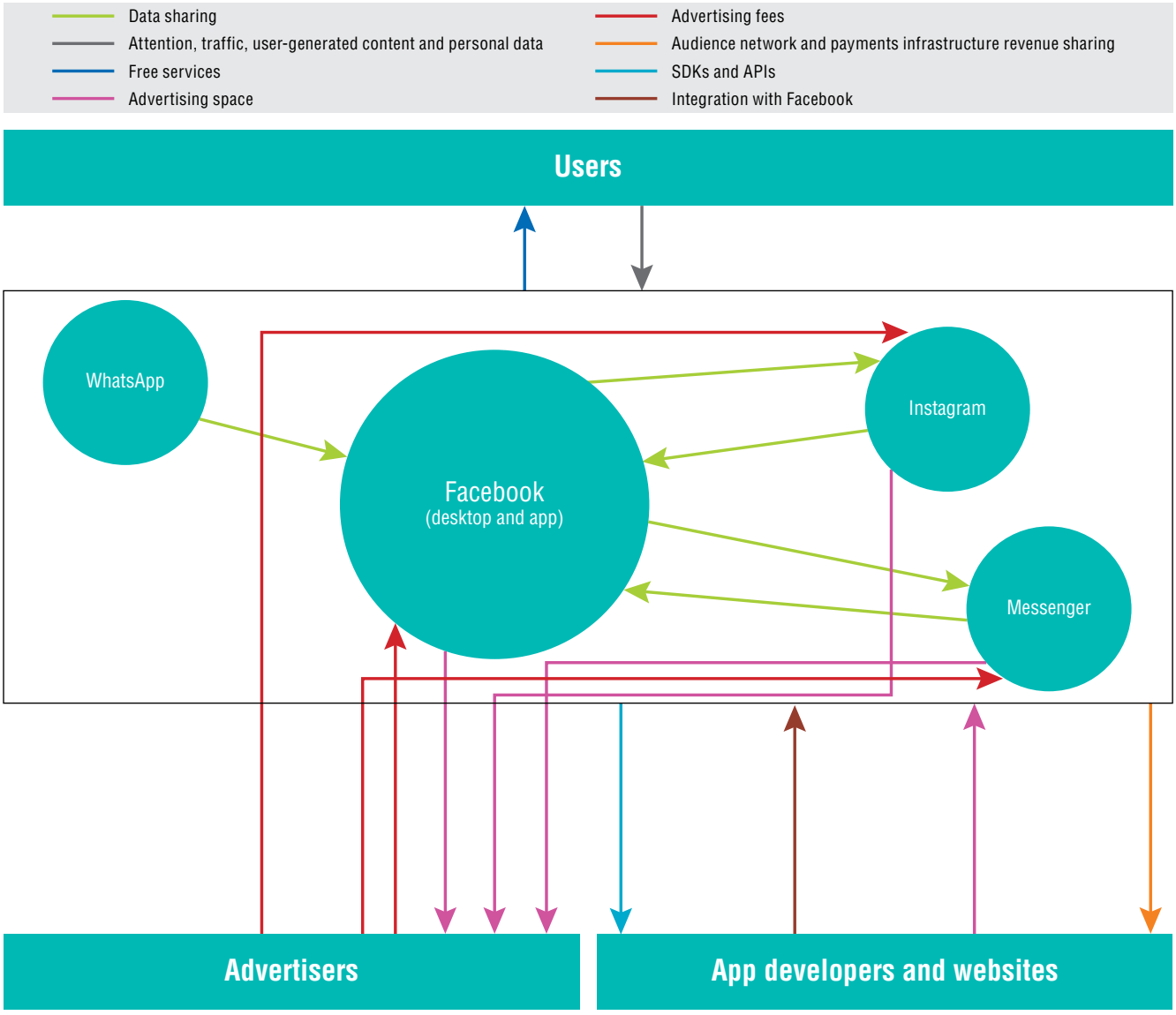
In parallel, indirect network effects flow between the user side and the developer/content-provider side, and from the user side towards the advertiser side. More users increase Facebook's appeal to developers and content providers because their apps and content can reach a larger audience, and more developers/content providers enhance the value of the platform to the user side by putting more apps and content at users' disposal. In addition, as Facebook's user base grows it attracts more advertisers because their ads will reach more eyeballs.

The growth spurred by these positive direct and indirect network effects enabled Facebook to capitalise on data-driven economies of scale and scope and to accelerate the benefits of learning-by-doing. The more users there are and the more time they spend on the platform, the richer the data they provide in the form of posts, comments, likes, pictures, videos, stories and other content.

Facebook's acquisitions of Instagram and WhatsApp provided it with more valuable data, too. (However, the Facebook and WhatsApp platforms do not share data with each other in the European Union or India, and users in other locations may opt out of this sharing.) Facebook processes that data and uses it to improve algorithms, innovate, develop a more comprehensive understanding of its users, enhance the user experience and draw inferences and insights to improve ad targeting. Enhanced ad targeting capabilities and a growing user base, in turn, attract more advertisers who want to improve their ROI as well as more developers/content providers who wish to reach Facebook's large audience, in a positive feedback loop.

Flow chart

A A.8. The Facebook ecosystem



Notes: API = application programming interface; SDK = software development kit. WhatsApp no longer shares user data with Facebook for product or advertising purposes in Europe (Fioretti, 2017[172]; UK Information Commissioner's Office, 2018[173]; WhatsApp Inc, 2018[174]), nor does WhatsApp share user data with Facebook for such purposes in India. Users in the rest of the world may opt out of this sharing.

Use of data and information

Facebook collects all of the information end users provide as they use Facebook's services, including when signing up for an account, creating or sharing content, following Friends, and messaging or otherwise communicating with other users. This encompasses information other users provide, including information about other users. Facebook also collects information about the people and groups users are connected to and how they interact with them, information about payments and information from and about the devices on which users install or access Facebook (including geographic location, mobile number and IP address), information from websites and apps that use Facebook's services (for example, websites that contain the Like button or Facebook log in or that use Facebook's measurement and advertising services), information about Facebook's users from third-party partners, and information about Facebook's users from companies that are owned or operated by Facebook (such as Instagram, WhatsApp and Oculus).

Facebook uses that information to provide, improve and develop services – that is, to display and personalise content, make suggestions and understand how users use and interact with Facebook's services, as well as to learn about the people or things users are connected to and interested in both on and apart from Facebook's services. Location information is used to suggest local events and serve location-based ads. The information above is also used for research, troubleshooting activities, and to conduct audits. In addition, the information is used to improve ad targeting and measure the effectiveness and reach of ads and services, and for safety and security purposes.

Thus, Facebook uses data for two main purposes: to attract and retain users who have profiles on Facebook while increasing their use of the platform, and to help advertisers reach their desired customers. Growing the size of the network and the amount of time users spend on it leads to greater advertising revenue. Therefore, data gleaned from user-generated content and user behaviour on the platform are used to improve the Facebook experience for users generally as well as to feed them content that is more likely to interest them. That induces the users to spend more time on the platform. The more time they spend, the more likely they are to see and click on an ad, which leads to more revenue. Meanwhile, the placement of that ad in the user's feed is also the result of analysis of that user's content and behavioural data. Overall, the larger the number of users, the more they post, and the more time they spend on the platform, the greater the amount of data they generate and the more money Facebook can make.

The information collected and processed by Facebook is shared with other Facebook users, apps, and websites with whom users have agreed to share content or communicate, and with Facebook's affiliates and subsidiaries. Users determine which other users they share their content and profile information with through a variety of privacy controls. Users may authorise a limited set of information to be shared with apps and websites that are integrated with the Facebook platform. Information may be shared with Facebook's family of apps, subject to data controls and privacy settings, and with certain service providers, as outlined in Facebook's Data Policy (Facebook, 2018[175]). Facebook also shares aggregated statistics and insights with advertisers and businesses that use their services.

Moreover, users can delete their Facebook accounts in their entirety, or they can delete specific pieces of information connected to their profile using the Facebook Activity Log. Users can also download a machine-readable copy of the data they have shared with Facebook. Note, however, that even if users delete their accounts, information others may have shared about them will not be deleted. For more, see Facebook's Data Policy (Facebook, 2018[175]), which provides detailed information on the types of data Facebook collects and how it is used. Facebook provides more user-friendly information on its Privacy Basics site (Facebook, n.d.[176]).

It is important that policy makers understand that Facebook does not sell or license user data to third parties (though it sometimes gives the data to third parties without charging them). Instead, it uses that data itself to provide services like ad targeting capabilities.

Facebook's importance to its users

How customers on each side of the platform benefit

Users who have profiles on Facebook

People and businesses that maintain Facebook profiles benefit from a free service that allows them to find and stay connected with their friends, family, colleagues and customers, as well as with public figures, and to express their ideas and opinions, share photos and videos, and, if applicable, conduct public relations for their business (all subject to Facebook's terms and conditions and applicable laws). In addition, through the Messenger interface, they benefit from a free electronic communications service. Messenger is integrated into Facebook but can also be downloaded as a stand-alone app. It enables users to chat and have voice and video calls with their contacts.

Furthermore, users with profiles can benefit from being able to sell products through Facebook's Marketplace and to enjoy professionally produced (in addition to user-generated) content on Facebook Watch. Marketplace is a C2C platform embedded in the Facebook website and app that shows users items offered for sale by other nearby users (Chadha, 2017[177]). Facebook Watch is a personalised content

platform for live or recorded episodes that follow a theme or story line. Watch makes recommendations based on what one's Friends and communities are watching (Facebook, 2017[178]).

Advertisers

Advertisers benefit from the ability to serve targeted ads to segments of a large audience, as well as from innovative advertising methods. Advertising on Facebook is premised on the idea that social interactions create new opportunities for businesses to engage with interested customers. Facebook's advertising services offer new and innovative ways for advertisers to interact with Facebook's users, such as ads that encourage comments, include polls, invite people to an event or help users discover and install mobile applications. Facebook provides an end-to-end solution comprising the entire infrastructure necessary to buy and insert the ads, as well as to analyse an ad campaign's performance (Bierdeman, 2014[179]).

In addition, brands or businesses can have a presence on Facebook by creating a Facebook Page. When a Facebook user "Likes" a Page, the Page obtains the opportunity to publish stories to the person's News Feed. Pages enable businesses to drive traffic to their e-commerce websites or physical stores, increasing sales, and, ultimately, customer loyalty. Facebook does not charge businesses for their Pages, but they can use Facebook ads to gain more prominent distribution. Ads can appear on different locations on the Facebook website and app, on Instagram, Messenger (Facebook, n.d.[180]), and across the Audience Network (a network of apps and websites outside Facebook that show Facebook ads within their content). Audience Network campaigns aim to achieve a number of predefined objectives, including increased brand awareness, reach, traffic engagement, app installs, video views, conversions and product catalogue sales (Facebook, n.d.[181]). Also, Facebook and Instagram ads may include a "click-to-Messenger" (Facebook, n.d.[182]) or "click-to-WhatsApp" (Marketing Land, 2017[183]) button, which opens a conversation with the user.

Moreover, Facebook offers an assortment of hardware-neutral apps that enable businesses to increase their popularity and sales. For example, IFrame allows them to create customised Facebook Pages that keep visitors more engaged; Newsletter enables businesses to manage contact lists and send mass e-mailing campaigns; Automatic Newsletter is similar but more automated; Store allows businesses to display their products and services on their Facebook Pages, and to manage inventory, design, shipping and payment (customers can check out with PayPal or be redirected to the relevant business' e-commerce site); Add a Link allows businesses to direct traffic to any website from a Facebook Page; and Coupons aims to boost loyalty by rewarding fans with coupons that are made available on Facebook Pages (Iframe Apps, n.d.[184]). Lastly, advertisers can use Facebook Analytics to track and optimise the performance of their campaigns (Facebook Analytics, n.d.[185]).

Developers

Both app developers and publishers benefit from access to SDKs and APIs to create apps and websites that integrate with Facebook seamlessly. As a result of this integration, they are able to reach Facebook's global user base and monetise their content in different ways. For example, game developers may offer their games on Facebook's Games page and receive payments through Facebook's Payments infrastructure. Alternatively, they may offer their apps free of charge but may collect users' personal data (subject to Facebook's rules and applicable laws), which they may subsequently use for myriad purposes. In addition, they can monetise their apps or content by showing Facebook ads (i.e. by joining the Audience Network) (Facebook, n.d.[186]). Also, more generally, publishers may use social plugins (such as the Like button) to increase user engagement and brand awareness.

Registered/active users on each side of the platform

Users who have profiles on Facebook

Table A A.11 shows the steady growth in Facebook's worldwide MAUs and DAUs with profiles from 2005 to 2017. Data availability is less consistent prior to the company's IPO in 2012.

A A.11. Worldwide Facebook users

Year	MAUs	DAUs
2005	6	..
2006	12	..
2007	..	..
2008	..	..
2009	360	..
2010	608	..
2011	845	483
2012	1 060	618
2013	1 230	757
2014	1 390	890
2015	1 590	1 040
2016	1 860	1 230
2017	2 130	1 400

Notes: .. = not available. MAUs = monthly active users; DAUs = daily active users.

Advertisers

As of March 2018, 70 million businesses used Facebook Pages (WordStream, 2018[187]).

As of 24 February 2015, 2 million businesses actively advertised on Facebook (Facebook Business, 2015[188]), 3 million as of 2 March 2016 (Facebook Business, 2016[189]), 4 million as of September 2016 and 5 million as of April 2017 (BI Intelligence, 2017[190]).

Developers

More than 10 million apps and websites were integrated with Facebook as of 31 December 2012.

Other important statistics

- Facebook's total worldwide average revenue per user (here, meaning end users of Facebook and Messenger) was USD 5.32 in 2012, USD 6.81 in 2013, USD 9.45 in 2014, USD 11.96 in 2015, USD 15.98 in 2016 and USD 20.21 in 2017 (Statista, 2018[191]).
- About one in every five worldwide mobile minutes is spent on Facebook and Instagram (Facebook, n.d.[181]).
- Four million likes are generated and 400 new users sign up for a profile on Facebook every minute (WordStream, 2018[187]).
- Facebook.com is the third most popular website globally, according to Alexa. com (Alexa, 2018[192]).

Social and economic benefits

Keeping in touch with friends and relatives living in most parts of the world with Internet access became remarkably simple thanks to Facebook. Indeed, Facebook facilitates social interactions that would not be possible were it not for its platform. Through the News Feed feature, Facebook also helps people to learn about what is happening in the world, both near and far.

Moreover, Facebook's communication-enabling power is not limited to ordinary interactions, as it has proved highly useful in emergency situations such as natural disasters. For example, 8.5 million people were marked as safe through the Safety Check feature after the 2015 earthquake in Nepal and 770 000 people used Facebook to donate over USD 17 million during the week following that earthquake (Facebook ebook Research, n.d.[193]). Likewise, when Mexico was hit by an earthquake in 2017, Facebook helped

friends and families there to stay in touch. In the aftermath of natural disasters like those, traditional communication channels are sometimes overwhelmed or not working at all. Therefore, being able to turn to an online platform that is regularly checked by so many people can be an invaluable resource not only for victims and their loved ones, but rescuers as well. In particular, Facebook can help aid organisations to determine where food, water and medical supplies are most needed.

The platform can be used to promote health in other ways, too. Health organisations use Facebook Pages to share information on improving public health and to promote campaigns such as blood drives. For instance, Facebook launched a blood donation feature in India in 2017. The purpose was to help address the shortage of safe blood by more efficiently connecting people and medical facilities in need of blood with donors. So far more than 7 million donors have signed up through the platform (Budaraju and Mehta, 2017[194]).

Facebook has become so widely used that it also plays a fundamental role in enabling freedom of expression, giving people a way to share their opinions, ideas, photos and videos with audiences ranging from their closest friends to the general public. In fact, the platform also enhances opportunities to reach out to elected officials and can facilitate political demonstrations. Moreover, given the detailed information Facebook has about its users, it has the ability to drive the attention of large numbers of people in ways that can strengthen democracy. For example, in the 2016 US elections, Facebook persuaded over 2 million people to register to vote and then to vote (Facebook notes, 2017[195]).

Facebook has also enabled other socially beneficial initiatives. For example, more than 100 million users belong to "meaningful groups", which aim to help other users, such as new parents or victims of rare diseases.

In addition, as a result of its advertising services and initiatives such as Facebook Marketplace, Facebook has been an enabler of e-commerce, turning users into sellers and consumers. Also, with social media, consumers are likely to influence the purchasing decisions of other buyers through customer reviews or likes. In addition, through initiatives such as "Find a job using Facebook", businesses and organisations can advertise job positions on their Facebook Pages and users can directly find jobs in the Jobs dashboard (Facebook, 2018[196]). These factors are drivers of consumption, productivity, employment dynamism and economic growth.

Moreover, more than 70 million businesses, big and small, use Facebook to connect with people. Facebook Pages provides a "home for your business", while ads on Facebook's platforms help businesses to build brand awareness and enable people to discover new products and services. Facebook also offers free online and offline training, tools, and research to SMEs. The training programmes have reached over 2.5 million businesses and people.

The company provides another economic boost to SMEs through community hubs in Spain, Italy and Poland. In partnership with local organisations, these hubs offer training in digital skills, media literacy and online safety to underrepresented groups. Over the next two years, Facebook and its partner Freeformers will offer in-person and online training to 300 000 people in the United Kingdom, France, Germany, Poland, Italy and Spain.

Furthermore, given its large user base and user engagement with its products and services, Facebook is able to collect, use and process large amounts of data to optimise its services, enhance user experience and develop new products and services, thereby driving innovation and technological progress (for example, by venturing into AI and virtual reality). By providing tools (e.g. APIs and SDKs) to content providers and app developers to devise and distribute their apps and content, Facebook encourages innovation and entrepreneurship outside the company itself.

Basic financial information

Facebook does not break down its financial information on a platform-by-platform basis. The information presented in Table A A.12 is therefore company-wide.

A A.12. Facebook's company-wide revenue, net income and employees

Year	Total revenue (USD million)	Advertising revenue (USD million)	Advertising revenue (% of total revenue)	Net income (USD million)	Net profit margin (%)	Employees
2011	3 711	3 154	85.0	1 000	27.0	3 200
2012	5 089	4 279	84.1	53	1.0	4 619
2013	7 872	6 986	88.7	1 500	19.1	6 337
2014	12 466	11 492	92.2	2 940	23.6	9 199
2015	17 928	17 079	95.3	3 688	20.6	12 691
2016	27 638	26 885	97.3	10 217	37.0	17 048
2017	40 653	39 942	98.3	15 934	39.2	25 105

Competitive environment

Facebook's geographic reach

Facebook reaches virtually all countries in the world, except for a few where it has been banned, such as China, the Islamic Republic of Iran and the Democratic People's Republic of Korea (FreeBrowsingLink.com, 2018[197]). As of September 2016, Facebook was available in 101 languages (USA Today, 2016[198]).

Main competitors

Facebook competes with:

- companies that offer products across broad platforms that replicate functionalities Facebook provides, such as LinkedIn and, to some extent, Twitter, and to a more limited extent with a number of specialised social network sites that revolve around age (for example, Kidzworld.com), language learning (for example, My Happy Planet), music (such as loudup.com), news (Reddit.com) or other aspects of identify or affiliation (such as CafeMom.com for mothers or Ravelry.com for people interested in knitting)
- companies that develop applications, particularly mobile applications, that provide social or other communications functionality, such as messaging, photo and video sharing, and microblogging (e.g. Pinterest, Viber, Skype, Snapchat, YouTube and Telegram)
- companies that provide regional social networks that have strong positions in particular countries, such as Russia's Vkontakte and India's Sabakuch
- traditional, online and mobile businesses that provide media for marketers to reach their audiences and/or develop tools and systems for managing and optimising advertising campaigns, such as Google's AdWords and AdSense programmes, DoubleClick for Advertisers and Publishers and DoubleClick Ad Exchange, Microsoft's Bing Ads and Microsoft Advertising Exchange, and Amazon Associates.

Significant platform-related mergers and acquisitions

- In 2012, Facebook acquired Instagram, Inc. (Instagram), a mobile social network platform, for USD 1 billion (Endgadget, 2014[199]).
- In 2014, Facebook acquired WhatsApp Inc. (WhatsApp), a privately held cross-platform mobile messaging company, for USD 19 billion (Olson, 2014[200]).

Other platforms owned by Facebook

Instagram

Instagram is a social network platform that enables people to take photos or videos, customise them with filter effects, and share them with Friends and followers in a photo feed or send them directly to Friends. It is available both as a website and as an app for mobile devices. Instagram's business model is the same as Facebook's, but it has a different target demographic group (mainly 18-29 year-olds) (Sprout Social, 2017[201]) and a strong focus on photo-sharing and other photo functionalities.

At the time of its acquisition by Facebook in 2012, Instagram had over 100 million registered users (EDGAR, 2012[202]). As of September 2017, Instagram had over 800 million MAUs and over 500 million DAUs. Eighty percent of users follow a business on Instagram and over 300 million use Instagram Stories (a feature that lets users post photos and videos that vanish after 24 hours) every day (Instagram for Business, 2018[203]).

Messenger

Messenger was originally Facebook's chat function, but it is now also a stand-alone app. It allows users to communicate with people and businesses, and it serves targeted ads. Messenger also supports ads on its home screen, as well as click-to-messenger ads and sponsored messages.

As of September 2017, Messenger had 1.3 billion MAUs (Facebook Investor Relations, 2018[204]), and it was the second most popular mobile messaging app worldwide (after WhatsApp) (Statista, 2017[205]).

WhatsApp

As of this writing, WhatsApp does not qualify as an online platform under the definition used in this report (see Chapter 2) because it has only one set of users: people who send messages through the app at no charge. However, WhatsApp could quickly evolve into an online platform. If it adds new features that bring in a different set of users, such as advertisers, who use WhatsApp to interact with existing users, then it would become a two-sided business and would be Facebook's fourth major online platform. In fact, the press has begun to anticipate that WhatsApp will feature advertisements (Gunter, 2017[206]; Wagner, 2017[207]). WhatsApp currently has approximately 1.5 billion users around the world. As of 2017, they were transmitting 55 billion messages and 4.5 billion photographs per day (Deahl, 2017[208]).

Significant legal and regulatory issues

- **2011 privacy violations**. In 2011, the US Federal Trade Commission (FTC) filed a complaint against Facebook alleging it breached the commitments in its privacy policy, including commitments about sharing personal data with third-party apps, certifying the security of third-party apps, sharing personal data with advertisers, and complying with the US-EU Safe Harbor Framework. Facebook settled the charges and entered into a consent order that obligates Facebook to take steps to keep its promises in the future, including giving consumers clear and prominent notice and obtaining their express consent before their information is shared beyond the privacy settings they have established. The consent order also requires ongoing monitoring. It expires in 2032 (Federal Trade Commission, 2012[209]). In March 2018, the FTC confirmed it had an open non-public investigation into Facebook's privacy practices (US Federal Trade Commission, 2018[210]).
- **Fine related to the acquisition of WhatsApp**. In May 2017 the European Commission levied a EUR 110 million fine against Facebook for providing incorrect or misleading information during the Commission's 2014 investigation of Facebook's acquisition of WhatsApp. When Facebook notified the regulator about its intended acquisition of WhatsApp, Facebook indicated it would be unable to establish reliable automated matching between Facebook users' accounts and WhatsApp users' accounts. However, in August 2016, WhatsApp announced updates to its terms of service and privacy policy, including the possibility of linking WhatsApp users' phone numbers with Facebook users' identities. The Commission found that, contrary to Facebook's statements during the merger review, the possibility to automatically match Facebook and WhatsApp users' identities already existed in 2014 and Facebook staff were aware of such a possibility (European Commission, 2017[211]).
- **Cambridge Analytica and other uses of personal data by third parties**. Facebook has been the subject of some criticism regarding its handling of personal data, its subsequent misuse by various parties, and the effects that such misuse may have had on elections and on societies generally. For example, in March 2018 it was revealed that Cambridge Analytica, a political analytics company, acquired and exploited the data associated with up to 87 million Facebook profiles to attempt to influence the outcome of the 2016 US presidential election and the United Kingdom's Brexit Referendum. In response, the UK Information Commissioner's Office announced an investigation of Facebook and Cambridge Analytica, among dozens of other companies (UK Information Commissioner's Office, 2018[212]). Moreover, reports surfaced in June 2018 that Facebook had data-sharing agreements with phone and other device makers for several years that gave the manufacturers access to the data of users' Friends without their explicit consent (Dance, Confessore and LaForgia, 2018[213]). Facebook has announced that it is now taking steps to ensure the appropriate use of personal data by third parties (Ingram, 2018[214]).

Facebook's chief policy concern

Regulatory uncertainty. From Facebook's perspective, the laws and regulations to which it is subject are constantly evolving and may continue to change significantly. Facebook believes the application, interpretation, and enforcement of these laws and regulations is uncertain, especially as the markets in which it operates evolve rapidly. The laws and regulations may be inconsistent from country to country or interpreted and applied inconsistently from jurisdiction to jurisdiction. For example, regulatory or legislative actions affecting the manner in which Facebook displays content to its users or obtains consent to various practices could adversely affect user growth and engagement. Such actions could affect the manner in which Facebook provides its services or adversely affect its financial results. Facebook is particularly concerned about uncertainty over the EU-US Privacy Shield and the European General Data Protection Regulation.

Freelancer

Corporate history/evolution

Freelancer.com was born out of Matt Barrie's need to have a substantial data entry task completed in 2007. He spent several months trying to find a person to do it, but to no avail. In frustration, he went online and found a website called GetAFreelancer.com, where anyone could post a project and hire a freelance worker. After receiving numerous bids in only a couple of days, he awarded the job to a team in Viet Nam that performed the task satisfactorily. Realising there was great potential to build a larger worldwide marketplace for freelance jobs and services, he founded Freelancer (World Economic Forum, 2016[215]).

After initially using freelancers hired from GetAFreelancer to build a very similar website, Mr Barrie raised funds in 2009 to buy the GetAFreelancer.com website outright. He soon rebranded it as Freelancer.com and incorporated Freelancer Limited later that year. Freelancer Limited launched an IPO on the Australian Stock Exchange in 2013, raising a total of AUD 37.5 million (Jack, 2013[216]; Crunchbase, n.d.[217]). Meanwhile, the company had been growing steadily, and then continued to do so, going from 1 million users in September 2009 to more than 26 million in December 2017 (Freelancer, 2017[218]). At least some of that growth is attributable to Freelancer's acquisitions of crowdsourcing marketplaces, including EUFreelance.com (TechCruch, n.d.[219]), Freelancer.de Booking Center (Lundgren, 2012[220]), LimeExchange (Olsen, 2010[221]), Scriptlance.com (Lundgren, 2012[220]), Freelancers.net (Freelancer, 2018[222]), Webmaster-talk.com (GoRumors, 2010[223]) and vWorker (Lunden, 2012[224]). Currently, Freelancer.com is the world's largest freelancing and crowdsourcing platform as measured by the number of users and posted projects (Freelancer, 2017[225]: 10). Freelancer Limited has also expanded its operations onto adjacent markets with the acquisition of platforms, such as Freemarket.com and Escrow.com (discussed below).

Freelancer Limited is based in Sydney, Australia. It has subsidiaries in Australia, Canada, China, India, the Philippines, Singapore, Switzerland, the United Kingdom and the United States (Freelancer, 2017[233]: 81).

Main platform: Freelancer.com

Business model

Who is Freelancer.com serving on each of its sides?

Freelancer.com is a two-sided platform that serves freelancers and employers.

- **Freelancers**. The term "freelancers" encompasses diverse types of individuals who possess skills and talents required to perform the tasks/projects/jobs posted by employers. Freelancers must sign in to the platform, complete a profile, and indicate the categories of skill they possess, such as Websites, IT & Software, Mobile Phones & Computing, Design, Data Entry & Admin, Engineering & Science, and Sales & Marketing (Freelancer, n.d.[227]). Freelancers can then browse the job listings. When they see

a job they are qualified for and interested in, they can place a bid. Jobs typically go to the freelancer who places the most attractive bid (based not only on the bid price but also on feedback left by other employers about the freelancer). Freelancers have an incentive to carry out the relevant task to the best of their abilities, as not only does this ensure prompt payment, but it also motivates the employer to leave positive feedback, which makes it easier to find more work on the platform. Alternatively, freelancers can enter contests posted by employers, such as, for example, a best cheesecake recipe contest. Contest winners receive a prize.

- **Employers**. Employers are individuals and businesses that need someone to perform a specific task, job or project. Employers post their projects on the platform and then wait for bids. Compensation may be either a fixed price or an hourly rate. Most projects receive their first bid within 60 seconds (JungleWorks, 2015[228]). Employers then review the profile and reputation of each bidder and award the job. They then need to deposit a "Milestone Payment", which is held by Freelancer until the project is completed to the employer's satisfaction. At that point, Freelancer releases the Milestone Payment to the worker. Conversely, if the outcome is unsatisfactory, employers can file a dispute, and if it is ultimately successful, they get their money back (JungleWorks, 2015[228]).

Some users are active on both sides of the marketplace, working as freelancers while also hiring freelancers for jobs they wish to outsource.

How does Freelancer.com make money?

Sources of revenue

Freelancer charges fees to both employers and freelancers.

- For **employers**, posting a project is free of charge. However, when the employer chooses to award a project and the freelancer accepts it, Freelancer charges a 3% or GBP 2 (whichever is higher) fee for fixed-price projects and a 3% fee on each payment made to the freelancer for hourly projects. Posting and awarding contests is free of charge. There are also fees for additional services related to posting projects and contests, such as labelling them "Featured" (GBP 7.90 for projects and GBP 30 for contests) or "Urgent" (GBP 7.90 for projects and GBP 25 for contests), or providing a Non-Disclosure Agreement template and that freelancers must digitally sign before they are given a job (GBP 14.90 for projects and GBP 20 for contests).
- For **freelancers**, creating profiles, receiving project notifications, discussing project details with employers, bidding on projects (free members receive initially eight bids per month) and entering contests are all free of charge. When workers accept fixed-price projects, Freelancer charges a 10% or GBP 3.50 fee, whichever is higher. For hourly projects, there is a 10% fee on each payment made to the worker. Submitting entries to a contest is free, but Freelancer takes a 10% or GBP 3.50 fee (again, whichever is higher) when the contest prize is awarded. There are other fees for additional services, such as sponsored bids, which are placed at the top of the bid list (0.75% of bid amount), and highlighted bids, which do not go to the top of the list but stand out visually (GBP 1). In addition, membership plans (i.e. Intro, Basic, Plus, Professional and Premier) are available. Their prices range from GBP 0.99 to GBP 39.95 per month. Memberships allow freelancers to place more bids per month, mention more skills in their profiles, bookmark more projects, gain the possibility to customise their profiles, and access an array of additional services and privileges (Freelancer, 2018[229]).

Reasons for success

Freelancer owes its success to a combination of business acumen, piggybacking on another, already-established platform to gain scale, innovation, strategic acquisitions and indirect network effects. Mr Barrie realised that there were global marketplaces for products like eBay, Amazon and Alibaba, but no global marketplaces for project-based jobs and services with sufficient scale. Barrie understood the need to capitalise on network effects, so he boosted Freelancer's growth on a global scale by acquiring numerous small marketplaces in the four years following Freelancer's incorporation. These included Freelancer.co.uk and LimeExchange in 2010, EUFreelance.com and Freelancer.de in 2011, and Scriptlance and vWorker in 2012. Barrie also expanded the company's operations to Hong Kong (China), India, New Zealand, the Philippines and Singapore. With over 4 million users in 2012 after the

acquisition of Scriptlance, Freelancer.com had a user base more than 2.5 times larger than that of its nearest competitor (Freelancer, 2012[230]).

Having achieved critical mass, Freelancer benefited from indirect network effects between freelancers and employers. The more employers joined the platform, the more opportunities freelancers found on it to increase their earnings and thus the more freelancers joined. That, in turn, made the platform even more attractive to employers, as the pool of freelancers became larger, more diversified, and more competitive.

In addition, Freelancer added a feedback mechanism so employers could make more informed judgments about whether a given freelancer would complete the posted task on time and to a high level of quality. Reputations built on the platform become an important switching cost, especially for freelancers, as they can require years to develop and do not carry over to other platforms. Accordingly, freelancers with established reputations on Freelancer have an incentive to stick with that platform.

Furthermore, Freelancer has invested in functionality that enhances trust, the attractiveness of the platform and the likelihood that tasks will attract bidders, be completed and result in a payday for the workers. For example, Freelancer has implemented security measures, such as e-mail and SMS verification to confirm users' identities, video chat and instant messaging (IM) to facilitate communication between employers and freelancers, and the Milestone Payments system, which ensures that freelancers get paid only when employers are satisfied with the quality of their work. In addition, in 2015 Freelancer acquired Escrow.com, a platform that serves as an escrow agent to facilitate online payments and reduce the risk of fraud (see more on Escrow.com below). Freelancer's users can choose Escrow.com as one of the alternatives to process payments on Freelancer.com.

Use of data

Freelancer.com collects and processes a great deal of information on each user, including:

- account details (username, password, profile picture)
- contact information (e-mail address, phone number)
- location (physical address, billing address, time zone, GPS position)
- identity (full name), proof of identity (such as drivers licence, passport), proof of address (such as utility bills), user photograph
- financial information (credit card number, wire transfer details, payment service [such as Skrill, PayPal] details, tax ID numbers)
- user-generated content (project descriptions, bid description, user profiles, user reviews, contest descriptions, user messages)
- metadata (IP address, computer and connection information, referring web page, standard web log information, language settings)
- device information (device identifier, device type, device plugins, hardware capabilities)
- users behaviour (pages viewed, buttons clicked, time spent viewing and search keywords).

Freelancer uses the information to provide the services requested by its users and technical or other support, to respond to complaints, and to promote its other programmes, products, and services. It also uses the information to debug, test and otherwise operate its platforms (more of them are discussed below), to conduct data analysis and research, and to build and improve its platforms. In addition, Freelancer uses the information to comply with legal and regulatory obligations, court orders and subpoenas, and for other purposes with the consent of the relevant user.

Users' personal information may be stored or processed by third-party service providers located outside of Australia. These service providers are bound by contract to use personal information only on Freelancer's behalf and under its instructions. The service providers include cloud hosting, storage, networking and related providers, SMS providers, payment and banking providers, marketing and analytics providers, and security providers. The specific identities of the third-party service providers are, however, undisclosed.

Freelancer.com's importance to its customers

How customers on each side of the platform benefit

Freelancers. Freelancers benefit from access to work opportunities posted by employers from different parts of the world who are looking for people with the skills listed in their profiles, enabling matches that would otherwise be more difficult or even impossible. This benefit is particularly significant for individuals in locations where employment opportunities are relatively hard to find (such as remote locations and developing countries) or who cannot work, or do not wish to work, during ordinary business hours (such as single parents or individuals taking care of sick or elderly family members). In addition, freelancers benefit from access to technology and functionalities that enable them to be more visible and appealing to potential employers and, once hired, to get in touch directly with them to discuss project-related issues through messaging and video-chat features. Freelancers also benefit from greater certainty that they will be paid upon successful completion of the project under the Milestones Payment system, as well as from access to a dispute resolution mechanism (Freelancer, n.d.[231]).

Employers. Employers benefit from access to a large, global freelancer base having almost any skill set they need. In addition, they benefit from the possibility to commission projects at more competitive rates than would otherwise be possible. Furthermore, employers benefit from a simplified and expedited hiring/employment process (post a job, review bidders' profiles, award the project, wait for its acceptance, put compensation into escrow) and 24/7 availability of freelancers interested in executing the posted tasks. Moreover, employers benefit from technology and functionalities that enable them to quickly obtain valuable information including feedback about the people bidding on their projects. Lastly, employers benefit from Freelancer.com's Milestone Payment system, as they are obligated to release the payment only if they are satisfied with the work done.

Registered/active users on each side of the platform

Freelancer Limited reports the number of its registered users only in an aggregated fashion (freelancers plus employers).

A A.13. Total number of registered Freelancer users on both sides of the platform combined

Total number of registered Freelancer users on both sides of the platform combined

Year	Registered users
2012	6.9
2013	9.7
2014	14.3
2015	18.5
2016	23.3
2017	26.6

Source: Freelancer (2013-17[232]), *Limited Annual Reports for the Years Ending on 31 December 2013, 2014, 2015, 2016 and 2017, https://www.freelancer.com/investor#ReportsAndPresentations.*

Other important statistics

Other indications of the extent of usage of the Freelancer.com platform are that, as of December 2017, 80% of the jobs posted receive a bid within 60 seconds, 504 000 messages are sent on Freelancer.com every day, USD 193 is the average completed project value, and the total value of jobs posted was over USD 3 billion (Freelancer, 2017[233]: 8).

A A.14. Posted projects and contests, per year

Year	Posted projects and contests (million)
2012	4.1
2013	5.3
2014	6.9
2015	8.0
2016	10.6
2017	13.0

Source: Freelancer (2013-17[232]), *Limited Annual Reports for the Years Ending on 31 December 2013, 2014, 2015, 2016 and 2017*, *https://www.freelancer.com/investor#ReportsAndPresentations*.

Social and economic benefits

Freelancer.com has opened up opportunities for individuals and SMEs to participate in labour markets on a global scale, connecting millions of entrepreneurs, professionals and individuals looking for work with employers who need them, thereby breaking down geographical barriers. Freelancer often connects employers from developed countries with workers from emerging markets, such as Bangladesh, India, Pakistan and the Philippines, thus providing employment to skilled workers who might not be able to find a job locally, or at comparable wages. The access to opportunities and income that would not otherwise be available can raise the quality of life for freelancers in general, but particularly those from the developing world.

Freelancer further benefits individuals from the developing world by providing education to workers who cannot access better jobs in their areas. In the Philippines, for example, the company has collaborated with the Department of Science and Technology for its Rural Impact Sourcing workshops, with the aim of empowering communities through skills training and information on how to make money online. Freelancer has also teamed up with the Colombian government to disseminate, implement and support the *Plan Vive Digital* (Live Digital Plan). The goal is to create a co-operation framework that incentivises freelance work in Colombia to increase business productivity, generate sustainable mobility, encourage organisational innovation, improve the quality of life of employees, and promote the effective use of ICTs.

In addition, Freelancer has reduced search and transaction costs dramatically for both freelancers and employers. Employers can quickly find and communicate with skilled freelancers on one platform. Moreover, employers gain access to high-quality work that can be performed relatively quickly and inexpensively (as individuals working with private assets, not bound to comply with heavy regulation in some cases, are likely to price their service lower than more "traditional" service providers). As a result, for example, SMEs can have websites and apps of a standard that otherwise would be out of their reach. Similarly, freelancers can browse for jobs that suit their qualifications and interests upon completion of a profile. By excelling at matching one side of the market (freelancers) with the other (employers), Freelancer boosts efficiency and productivity for both sides at once.

On a more general level, Freelancer enables people to convert idle time into productive time, giving them opportunities to derive additional (and sometimes unique) sources of income. Furthermore, by increasing the number of people looking for work in different markets, Freelancer increases competition in them.

Basic financial information

Freelancer Limited does not break down its financial information by individual lines of business. The information presented below is therefore company-wide.

A A.15. Freelancer Limited company-wide revenues, income and employees

Year	Annual revenue (USD million)	Annual net income (USD million)	Net profit margin (%)	Gross payment volume[1] (USD million)	Employees
2012	10.6	9.3	88	51	140
2013	18.8	16.4	87	84	269
2014	26.1	22.8	87	104	462
2015	38.6	33.5	87	229	284
2016	52.7	45.6	87	666	470
2017	50.3	44.1	88	558	442

1. Gross payment volume is total payments to Freelancer users for products and services transacted through the Freelancer website plus total Freelancer revenue.

Source: Freelancer (2013-17[232]), *Limited Annual Reports for the Years Ending on 31 December 2013, 2014, 2015, 2016 and 2017*, *https://www.freelancer.com/investor#ReportsAndPresentations*.

Competitive environment

Freelancer's geographic reach

As of December 2017, there are 53 regional Freelancer.com websites on five continents. The websites operate in 34 languages and with 39 currencies. Most of Freelancer's users come from India, Pakistan, the Philippines, the United States and the United Kingdom. However, users hail from 247 countries, regions and territories. The company has offices in Buenos Aires, Jakarta, London, Manila, Sydney and Vancouver.

Freelancer's main competitors

Freelancer's main competitors are Upwork, Skyword, Fiverr and EngineerBabu (Crowd, 2018[234]).

Significant platform-related mergers and acquisitions

- In 2010, Freelancer acquired the freelance jobs marketplace Freelancer.co.uk, which at the time was one of the largest domestic freelance marketplaces in the United Kingdom (Freelancer, 2010[235]). The amount of the transaction was undisclosed.
- In 2012, Freelancer acquired vWorker, which was then fourth-biggest IT recruitment marketplace globally. It had 2.5 million users worldwide. The price of the acquisition was undisclosed (Lunden, 2012[224]).
- In 2016, Freelancer acquired two major competitors in the Latin American, Spanish and Portuguese markets, Nubelo and Prolancer, thereby adding 750 000 registered users and 122 000 posted projects to the platform. The terms of the transaction were undisclosed (Chaney, 2018[237]).

Other platforms owned by Freelancer Limited

Freemarket.com

In 2010, Freelancer Limited acquired Freemarket.com, which is an online marketplace for buying and selling virtual goods and digital content (such as website templates, domains, chatbots and gaming blogs). It is a two-sided market that connects buyers with sellers (Freelancer, 2010[238]). Listing websites and content is free. Freemarket.com charges a 5% commission on sales (Freelancer, n.d.[227]).

Escrow.com

In 2015, Freelancer Limited acquired Escrow.com for USD 7.5 million. Escrow.com is a two-sided platform that reduces the risk of fraud online by acting as a trusted third-party that collects, holds and disburses payments (but only when both buyers and sellers are satisfied). After registering at Escrow.com and agreeing upon the terms of a transaction, the buyer submits a payment by an approved payment method (for example, money order, credit cards or PayPal) to a secure Escrow Account. Escrow.com

verifies the payment and notifies the seller that funds have been secured "in escrow". Upon payment verification, the seller is advised to send the merchandise or perform the service, and submit tracking information if applicable. Escrow.com verifies that the buyer receives the merchandise satisfactorily or that the seller has satisfactorily performed the service, and the buyer has a number of days to raise any objections. If the buyer accepts the merchandise or service, Escrow.com releases the funds to the seller from the Escrow Account (Escrow.com, n.d.[239]).

Escrow.com charges different types of commission depending on the transaction amount (Escrow.com, 2018[240]).

Freelancer's policy concerns

Money Laundering, financial fraud, identity theft and terrorism financing. These unlawful activities are Freelancer's chief policy concerns. To avoid them, the platform has implemented different initiatives, such as an anti-money laundering risk awareness programme. In addition, a fraud team monitors all transactions by using a combination of automated and manual techniques. The company also implements different security processes to minimise the risk of fraud and money laundering, including mandatory identity checks and account verification.

Google

Corporate history/evolution

Google began in 1996 as a research project by Stanford University Ph.D. students Larry Page and Sergey Brin. They developed a search engine that revolves around their "PageRank" algorithm, which assigns a measure of importance to web pages based on the number of links to them from other relevant web pages. That innovation enabled Google to provide better (i.e. more relevant) results for search queries and was the key driver of the company's early success. Google was incorporated in 1998 and went public in 2004.

Initially, Google's search engine had no advertisements. That changed in 2000, when Google launched its online search advertising programme "AdWords".

Google soon began to offer other online services, launching Google News in 2002, Gmail in 2004, Google Maps in 2005, Google Chrome (Internet browser), Android (mobile operating system), Google Play (digital distribution platform and app store for Android) in 2008 and Google+ (social network platform) in 2011. In 2015, Google became a wholly owned subsidiary (Google LLC) of Alphabet, Google's holding company.

Google's headquarters are located in Mountain View, California, and Alphabet's subsidiaries are located in many countries around the world.

The Google ecosystem

After Google's reorganisation, Alphabet became a collection of businesses. Broadly, the businesses can be divided into Google businesses, which includes Alphabet's most successful and popular online platforms and from which Alphabet derives most of its revenues, and non-Google businesses, which include ventures, such as CapitalG, Nest and Waymo.

As will become clear, Google operates multiple online platforms and it would make little sense to discuss them in isolation. Google has created a complex ecosystem composed of many interrelated platforms, products and services, making its business model more like a web than a series of separate strands. Therefore, this profile describes Google more at the ecosystem level than on a platform-by-platform basis.

Business model

Who is Google serving on the various sides of its ecosystem?

Google's ecosystem is designed to attract and retain relationships with:

- **Users**. Here, by "users", we specifically mean the parties who are using Google's consumer-facing products and services, rather than all parties who may use any side of Google's platforms, which is a group that would also include advertisers and content providers, among others. Google strives to attract user traffic and attention to its websites, apps, products and services ("Google properties"). Most of the services Google offers to users are free, so as a general rule competition on the user side is not price-based. Rather, competition is based on quality and innovation (for example, relevance of search results and the availability, features and ease of use of other products and services). In return, users provide the data Google needs to develop, operate and improve its offerings, as well as the attention that makes Google valuable to advertisers.
- **Advertisers**. Google derives most of its revenues from advertising. To attract and retain advertisers, Google strives to increase the ROI realised by advertisers that use Google's advertising programs (search and display advertising bought on AdWords). Ads are shown on Google properties and other online destinations comprising the Google Network (a collection of more than 3 million websites, smartphone apps and blogs using AdSense and AdMob).
- **Content providers**. Google endeavours to attract and retain content providers – that is, members of the Google Network and other content providers for whom Google distributes or licenses content – on the basis of the size and quality of its advertiser base, its user base, and its ability to help these partners generate revenues.

Users

Google Search lies at the centre of the Google ecosystem. Broadly, Google Search is a search engine that delivers "organic" or "paid" search results in response to search queries entered by users. "Organic" search results are based on an index of the World Wide Web that is built and constantly updated with the aid of "crawlers" or "spiderbots". They systematically search the web to construct an index of it that is as comprehensive as possible. The organic search results are then delivered by algorithms that rank their likely relevance to the queries entered by users. "Paid" search results (also known as "search-based ads"), may appear, too, depending on the outcome of an auction in which advertisers bid for search query terms known as "keywords", such as "guitars", "electric guitars" or "guitar shop" (see Subsection "Advertisers"). Simply put, Google Search enables users to find information online, including on specific topics ("what does EBITDA mean?"), locations ("where is Birmingham?") or potential commercial transactions ("cheap flights to Spain").

Over time, Google has integrated an array of related search services into Google Search, such as:

- **Google Books**, which allows users to search the full text of a collection of books to find books of interest and where to buy or borrow them
- **Google Finance**, which provides a user interface to navigate and visualise financial information, including linking together different data sources, such as news events overlaid on stock price
- **Google Images**, a searchable index of images found across the web
- **Google Maps**, which allows users to explore cities and locations from their desktop or phone using global mapping data, satellite imagery, and street view imagery
- **Google News**, which gathers information from thousands of news sources worldwide and presents news stories in a searchable format within minutes of their publication on the web
- **Google Scholar**, which allows users to perform a broad search for relevant scholarly literature including peer-reviewed papers, theses, books, abstracts, and articles
- **Google Shopping**, which allows users to find and compare products from merchants
- **Google Trends**, which allows users to track the popularity of keyword searches over time on Google.

Google's assortment of search services enables it to attract and retain traffic and user attention, as well as a larger audience to whom ads may be shown. In addition, increased traffic and a larger user base provide Google with the possibility to collect more data, which it subsequently processes to increase personalisation of its services, improve them and create new ones (see Subsection "Use of data and information").

Moreover, to be better positioned to distribute its search and advertising services and procure data from different sources, Google offers a number of other zero-priced (except for hardware) platforms, products and services, including:

- **Chrome**, an open-source browser for Windows, Mac and Linux. Google Search is its default search engine
- **Chrome OS**, an operating system developed by Google that uses Google Chrome as its main user interface. Chrome OS is only available pre-installed on hardware from Google manufacturing partners
- **Android OS**, a free, open-source mobile operating system
- **G Suite**, a group of productivity tools or apps, such as Gmail, Calendar, Hangouts (includes IM, video chat, SMS and voice over Internet Protocol [VoIP] functionality), Drive (storage, synchronisation and file sharing) and Docs, Sheets and Slides (word processor, spreadsheet and slideshow software) – all available as web apps, mobile apps for Android and iOS and desktop apps on Chrome OS
- **Blogger**, a blog-publishing service that allows multi-user blogs
- **YouTube**, an online video-sharing platform
- **Google Play**, the official app and digital entertainment distribution store for Android
- **Google Assistant**, a virtual personal assistant capable of engaging in two-way conversations. It supports a variety of devices, including laptops, mobile devices and smart home appliances
- **Google Pay**, an online payment system that powers in-app and tap-to-pay purchases on mobile devices (Google provides an API that allows merchants to add the payment method to websites, apps and Google Assistant. Google Pay relies on users' payment cards (e.g. credit, debit), which must be linked to their Google accounts. It is therefore different from mobile payment platforms that do not rely on payment cards, such as Alipay and WeChat Pay)
- **Hardware**. Over time, Google has launched a number of hardware products, including smartphones and tablets (under the Pixel brand), laptops (under the Chromebook and Pixelbook brands), Chromecast (a device allowing consumers to display online content on their TV screens) and Google Home (a smart speaker that enables users to use voice commands to interact with services through Google Assistant).

Google's products and services are integrated enough to make switching from one to another seamless, but they are also mostly interoperable across devices and operating systems. Thus, for example, services like Google Search and YouTube are not exclusive to Android, but are available on other operating systems, such as iOS and Windows. An exception is the Google Play Store, which contains apps that run only on Android, although versions of the same apps are often available in other app stores for other operating systems. Google requires users to create a Google account for access to some services, including G Suite, Google Play, Blogger and Google Pay. Services such as Google Search, Google Maps and YouTube do not require a Google account.

Advertisers

For advertisers seeking to market their products over the Internet, Google offers AdWords, (Google, n.d.[241]) an auction-based, global advertising programme that enables advertisers to deliver ads to customers across the Google properties and through the Google (Search and Display) Network (see Subsection "Content providers" below) and DoubleClick Ad Exchange partners. Advertisers in the AdWords programme create text-based or display ads, bid on the keywords that will trigger the appearance of their ads, and set daily spending budgets. Ads are ranked for display in AdWords based on a combination of the advertisers' willingness to pay for prominence, click-through rates and other factors used to determine the ads' relevance.

Broadly, Google strives to serve ads that are highly relevant to the user. In the case of Search ads, advertisers choose keywords to bid on and relevance depends on how well the chosen keywords match the user's query. In the case of Display Ads, relevance can depend on the words on the content

page, previous visits to the advertiser, the user's interests (as suggested by the types of web pages the user visits), device type, location, demographics, language, and "customer match" (ads are shown to customers based on data they share with Google – available only on Search, Shopping, YouTube, and Gmail) (Google, n.d.[242]).

Google also offers the DoubleClick Ad Exchange, a real-time auction marketplace for trading display ad space. It connects ad networks with content publishers and resembles a stock exchange, where sellers and buyers interact. Advertisers may purchase ad space in this exchange through an "ad broker", which may be Google (AdWords) or other ad networks. In addition, with the DoubleClick technology (DoubleClick Campaign Manager), advertisers can plan, run and measure their advertising campaigns.

Lastly, Google Analytics ("Analytics Advertising Features") allows advertisers to create "remarketing audiences" based on behaviour, demographic and interest data. In other words, advertisers can segment their audience of past site users and deliver relevant ads for Search and Display campaigns based on the actions those users took on their sites. Advertisers can also create segments based on the demographic and interest data in their Analytics report (Google, n.d.[243]).

Content providers

Website publishers who wish to monetise their content can use AdSense (Google, n.d.[244]), a programme that enables websites that are part of the Google Network to deliver ads that are relevant to the search results or content on their pages. In addition, through their AdSense interface, content publishers may sell display ad space to ad networks and agencies operating on the DoubleClick Ad Exchange. The AdSense programme includes:

- **AdSense for Search**. This programme allows content providers to add Google search functionality to their web pages in the form of customisable Google search boxes. Doing so also allows content providers to generate additional revenue by serving relevant AdWords ads targeted to the search results. Ads shown through AdSense for Search are text ads. Enrolled websites are part of the Google Search Network (comprises all of the sites that have incorporated Google search functionalities and are therefore capable of serving search ads).
- **AdSense for Content**. Content providers are also able to generate revenue by serving relevant AdWords ads (and ads traded on the DoubleClick Ad Exchange) targeted to web content. This is known as contextually targeted ads. Google's technology analyses the providers' web content and serves relevant advertising. For example, a web page on an automotive blog that contains an entry about vintage cars might display ads for vintage car parts. AdSense for Content allows text, image, flash, video and expandable ads. Websites enrolled in AdSense for Content are part of the Google Display Network (comprised of all sites where advertisers can serve display ads bought through Google, including AdSense for Content and DoubleClick Ad Exchange partners, as well as Google properties, such as YouTube, Google Finance, Gmail, Google Maps and Blogger). Relatedly, through DoubleClick for Publishers, Google provides publishers and agencies ad-serving tools that enable them to serve ads on web pages and other online content sites, as well as features for managing the sale of online ads.

For app developers wishing to monetise the content of their apps, Google offers AdMob, a programme that enables apps that are part of the Google Display Network to deliver AdWords and DoubleClick Ad Exchange ads (Google, n.d.[245]).

Moreover, for app, game and software developers, booksellers, book publishers, musicians, music managers, filmmakers, and video-on-demand aggregators who want to market and sell their digital products or content, Google offers access to the Google Play Store under different programmes, depending on the content type.

Lastly, publishers can use Google Analytics, a digital service that tracks and reports website traffic and, more generally, enables the analysis of business data for a deeper understanding of the customer experience. When integrated with AdWords (content providers are often also advertisers), users can review their ad campaigns by tracking goals, including sales, lead generation and views of a given page.

How does Google's ecosystem make money?

Sources of revenue

Google derives most of its revenues from advertising fees (see Section "Basic financial information"). AdWords ads are usually paid on a CPC basis, which means that an advertiser pays only when a user clicks on one of its ads. Display advertisers can also choose to pay on a cost-per-impression basis, meaning that advertisers pay based on the number of times their ads appear on Google Network members' sites specified by the advertiser. Google's revenues are divided into Google properties revenues, Google Network Members' property revenues and other revenues. Google properties revenues are generated on search properties (e.g. Google.com) and other Google-owned and operated properties like Maps, Play and YouTube. Google Network Members' property revenues are generated from ads placed on Google Network Member properties through AdSense, AdMob and DoubleClick Ad Exchange. Other revenues are primarily from apps, in-app purchases and digital content in the Google Play Store, Google Cloud offerings and hardware.

Reasons for success

Google's success is due to a combination of innovation, indirect network effects, algorithmic learning, economies of scale and scope, and strategic acquisitions. The PageRank algorithm led to the emergence of a search engine whose quality and convenience was markedly superior to that of incumbents, such as Yahoo! and Altavista. As a result, Internet users soon began flocking to Google. Thereafter, economies of scale and algorithmic learning effects came into play. The more comprehensive the index of a search engine is, the greater its competitive advantage over other search engines (as it has a larger universe from which to draw information that may be of relevance for users). In addition, search engines' algorithms improve the more they are used: with every search query and the user's subsequent browsing behaviour, users provide search engines with valuable information that teaches them how to deliver more relevant results. Therefore, the larger the user base a search engine has, the more and the faster it improves.

As Google soon had (and continues to have) the largest web index and user base (see Subsection "Registered/active users") among search engines, the combination of economies of scale and algorithmic learning worked in Google's favour. In addition, several acquisitions (such as YouTube and DoubleClick) and new services offered at no pecuniary cost (such as Chrome and Android) enabled Google to secure large amounts of data from other sources, thereby triggering more data-driven economies of scale and scope. The more data are available, and the more sources from which they are available, the greater the opportunities for Google to improve its search and other free services. That, in turn, attracted more users on the "free" side.

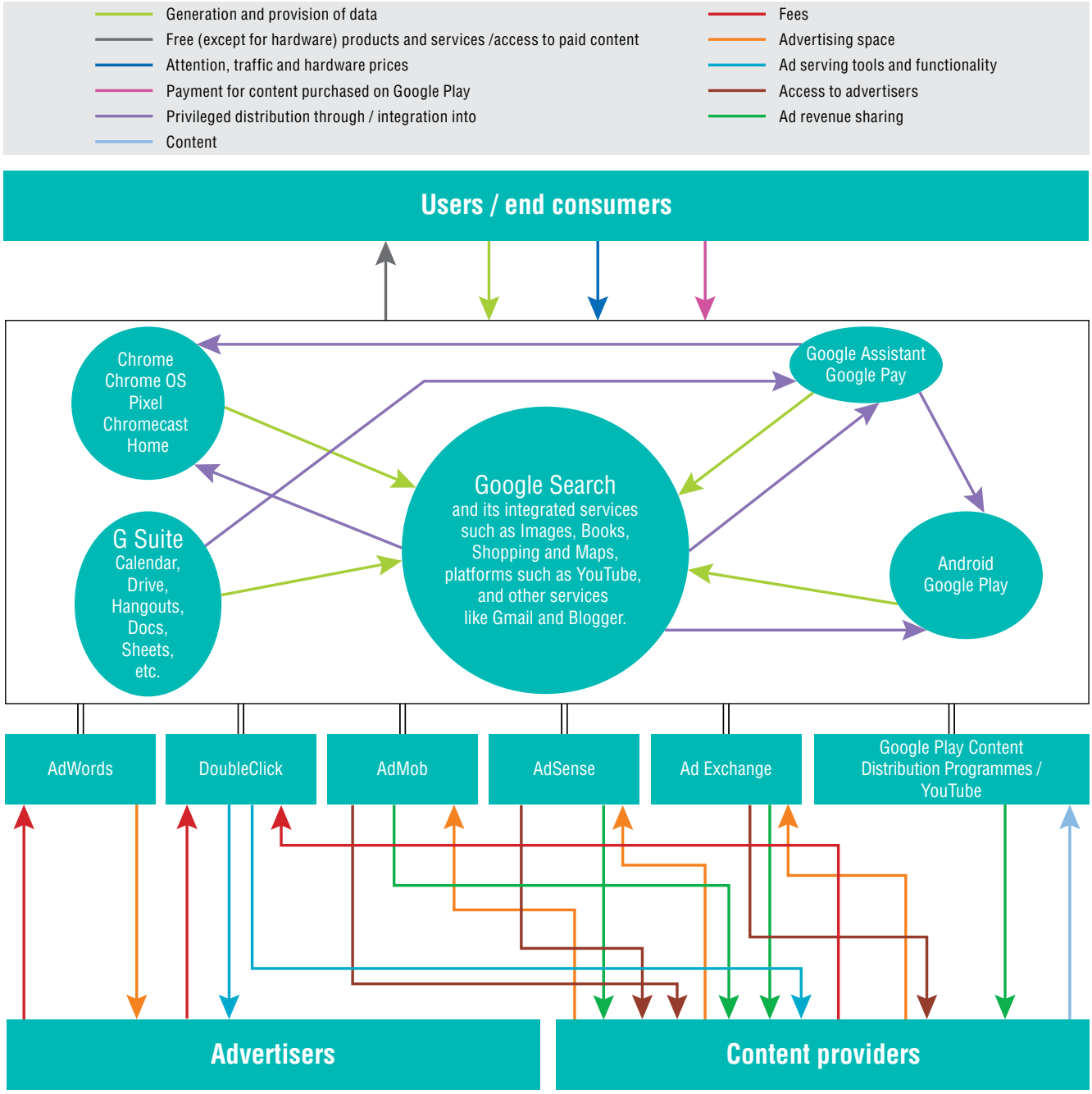
In parallel, indirect network effects ensured Google's commercial success: more users on the free side attracted more advertisers on the paid side because advertisers value a larger audience. The combination of these indirect network effects with the economies of scale and scope and algorithmic learning led to a positive feedback loop. As Google attracted more users with its free and improving services (search engine, maps, YouTube, Android and so on), it was also able to gather more data to improve its services as well as to better target users with advertising. Being able to target users with more relevant ads also helped Google to attract advertisers and thereby increase advertising revenues. Android was instrumental in that regard, as it gives Google the possibility to collect (with users' permission) many different types of data, such as the location of the devices being used. That information can then be used to provide, among other things, targeted geomarketing services to advertisers. Moreover, Google can target users with ads not only across devices, but across services, too (such as search services, Maps, and YouTube). That increases the likelihood of consumers clicking on a relevant sponsored ad or seeing a display ad.

Of course, all of these outcomes do not just happen by chance or without effort. Additional factors behind Google's success include the talent of the company's employees, the billions of dollars of investment in R&D made every year, and the foresight of the management team. Thus, elements like indirect network effects, scale without mass, and algorithmic learning are real and significant, but it also takes highly competent personnel and substantial investments to capitalise on them.

Flow chart

A flow chart may be of assistance for understanding how the Google ecosystem works (Figure A A.9).

A A.9. The Google ecosystem



Use of data and information

Google's use of data is outlined in its overarching privacy policy (Google, n.d.[246]), which applies to all of the services offered by Google and its affiliates, including YouTube, Android-related services and advertising services. Some services have specific privacy practices explained in separate documents, but the Google Privacy Policy remains the main document governing Google's data practices under these services.

Google collects volunteered data (e.g. information required to sign up for a Google account) and observed data (information collected from users' interaction with Google's services, like when watching a YouTube video or visiting a website member of the Google Network). Observed data includes device information (such as hardware model and unique device identifiers), log information (such as details of how someone used a service, like search queries entered, and IP address), user location information, unique application number (numbers and information originate upon installation of a service), and cookies or similar technologies to identify browsers and devices.

Google uses the information it collects from all of its services to provide, maintain, protect and improve them, to develop new ones, to protect Google and its users, and to offer tailored content (such as giving more relevant search results and ads). Improving user experience and "making it easier to share things with people you know" are other stated goals. The privacy policy explains that Google may combine personal information from one service with personal information from other Google services, but does not identify the circumstances in which that may happen.

Google only shares personal data, provided it obtains prior user consent, with companies, organisations and individuals outside of Google 1) for domain administration purposes (when a Google account is managed for a user by a domain administrator); 2) for legal reasons (to meet laws, regulations or governmental requests, prevent fraud or enforce its terms of service); and 3) for external processing. External processing means Google provides personal data to its affiliates and "other trusted businesses or persons" to process it for Google, based on its instructions and in compliance with its privacy policy.

The ecosystem's importance to users

Registered/active users

- **Google Search**. We do not know how many people use Google to search for information, but we do know Google handled 1 billion search queries in 1999, 14 billion in 2000, over 55 billion per year between 2001 and 2003, 73 billion per year between 2004 and 2008, over 365 billion in 2009, 1.2 trillion per year between 2012 and 2015 and over 2 trillion in 2016. 2 trillion searches per year is equivalent to 63 000 searches per second, or 5.5 billion per day (Sullivan, 2016[247]).
- **AdWords**. As of February 2015, Google had 4 million AdWords advertisers (O'Reilly, 2015[248]). As of March 2016, the average conversion rate for Google AdWords search ads was 2.7%, while for display ads it was 0.89% (Kim, 2016[249]).
- **AdSense**. As of March 2017, over 2 million publishers were using AdSense (AdSense, 2017[250]).
- **AdMob**. As of March 2018, more than 1 million apps use AdMob; AdMob has paid over USD 3.5 billion to app developers; there has been a 200% increase in CPMs since 2013; there are over 200 billion global ad requests per month; and more than 1 million advertisers participate on the platform (Google, n.d.[245]: 6).
- **Google Maps**. As of July 2014, there were 1 billion monthly users of Google Maps and more than 1 million third-party websites using Google Maps APIs (Privat, 2014[251]).
- **Android OS**. Although smartphone operating systems are not considered to fall under the definition of online platforms used in this report (because they have offline functionality, too), this information is included due to Android's importance to the Google ecosystem: in 2017, there were over 2 billion monthly active Android devices (Hollander, 2017[252]).
- **Google Play**. As of October 2017, Google Play had over 1 billion MAUs and more than 8 billion new app installs per month globally (Protalinski, 2017[253]); as of December 2017 it had over 3.5 million apps available (Statista, n.d.[254]); 388 000 developers as of January 2015 (Adweek, 2015[255]); over 40 million music tracks available in 2016 (Bilinski, 2016[256]); over 5 million books available (Samat, 2017[257]); and over 1 billion active users in 190 countries as of 6 March 2017 (Samat, 2017[257]).
- **YouTube**. As of November 2017, YouTube had 1.5 billion logged-in monthly users (Thomson, 2017[258]); in 2015, it had local versions in 85 countries (YouTube, 2015[259]); it had 180 million US users in 2016 (eMarketer, 2017[260]); and 400 hours of videos were being uploaded every minute (Tran, 2017[261]).
- **Other important statistics**. Google.com is the most popular website in the United States as well as globally, as measured by Alexa.com. (Alexa, 2018[262]). The second most popular website in the United States and globally is YouTube (Alexa, n.d.[263]).

How users on all sides of the platforms/ecosystem benefit

Google Search + AdWords and AdSense for Search

Together, these services operate in a three-sided market, connecting users who are looking for information on Google's search engine, advertisers who want to target users with ads relevant to users' search queries, and content providers who want to add search functionality to their web pages and monetise their content.

Benefits for users include free, instantaneous access to relevant and useful information, with the possibility to customise search preferences. Use of this service under a Google account enhances personalisation, as a result of the interoperability and integration among the array of Google services. Advertisers benefit from the ability to target their ads only towards people seeking information on what the advertisers are selling, thereby increasing their ROI. In addition, they gain access to the Google Search Network, enabling them to reach a larger audience (people entering search queries on websites affiliated to AdSense for Search). Content providers benefit from the traffic they gain if their websites are indexed and are relevant to users' search queries. In addition, by joining AdSense for Search, they can increase the usefulness of their websites (through the inclusion of a search box) and create an additional revenue stream. Google pays publishers 51% of the revenues taken in through their participation in AdSense for Search.

AdWords + AdSense for Content + DoubleClick Ad Exchange

These services operate in a two-sided market, connecting advertisers who wish to target display ads and content providers wishing to monetise their content.

Advertisers benefit from the ability to target their audience, thereby increasing their ROI. They also benefit from access to popular Google properties, such as YouTube and the Google Display Network, raising the likelihood of their ads being seen by more people. Content providers, in turn, gain benefits from access to a sizeable advertiser base and an additional revenue stream. Google pays publishers 68% of the revenues taken in through their participation in AdSense for Content.

As explained earlier, DoubleClick Ad Exchange is like a stock exchange for display ad space. As with the major stock exchanges, only the largest brokers plug directly into Ad Exchange. These large players are large online publishers (sellers), such as portals, entertainment sites and news sites; and ad networks and agency holding companies that operate networks (buyers) – that is, companies that connect websites with advertisers. However, AdWords advertisers and AdSense publishers can also participate in the Ad Exchange using their AdWords and AdSense subscriptions as if they were trading through an online broker, thereby gaining access to the extra publishers and certified ad networks in Ad Exchange.

By gaining access to a bigger market of advertisers, sellers (content providers) in the Ad Exchange benefit from increased monetisation of their ad space. In the past, many sellers had inventory that went unsold or was sold for less than its potential market value. In addition, sellers benefit from simplified reporting and payments (which are managed by the exchange). Moreover, AdSense publishers benefit from being able to offer their ad space to certified ad networks in the Ad Exchange, which means more quality display advertisers competing for their ad space, and therefore higher returns. On the other side of the market, AdWords advertisers benefit from access to a bigger market of websites (those in the Ad Exchange plus members of the Google Display Network) and therefore to more ad space, as well as technology that allows them to bid for that space in real time.

Exact fees for using the DoubleClick Ad Exchange are available only upon request, but publishers pay their fee out of the budget spent by the advertiser. It may be up to 20% of that budget. Advertisers also pay a fee, but the percentage varies.

AdMob + AdWords + DoubleClick Ad Exchange

Together, these services operate in a two-sided market connecting advertisers and ad networks that want to target specific audiences, with app developers who wish to monetise their apps through advertising.

AdMob is Google's advertising platform for promoting and monetising mobile apps. It allows app developers to promote their applications through in-app ads, monetise their apps by enabling in-app advertising, and provides technology and tools to measure and maximise revenues (i.e. Google Analytics).

AdMob's benefits for app developers include providing sources of revenue through access to the Google Display Network and ad networks that trade on the DoubleClick Ad Exchange, plus the ability to promote a new app in the developer's existing apps. App developers can also use the "Mediation" feature to increase monetisation by having access to over 40 ad networks looking for ad space in AdMob. Mediation determines which ad network is paying the most and requests an ad from that network to be served in the relevant developer's app. It does so by comparing the historical performance of the ad network's CPM with real-time AdMob, AdWords and DoubleClick Ad Exchange bids. AdMob also provides developers with tools and options to measure and maximise ad revenues through seamless connection to Google Analytics. Joining AdMob is free and Google shares 60% of the revenues it recognises under each AdMob subscription with the relevant app developer.

In addition, by connecting AdMob to AdWords, app developers can create "Universal App campaigns", which are designed to get more people to download promoted apps. Under these campaigns, apps are promoted across Google's properties including Search, Google Play, YouTube and the millions of members of the Google Search and Display Networks.

Google Maps, Google Finance, Google Shopping, Blogger + AdWords (+ AdSense in the case of Blogger)

The combination of any of these Google Search functionalities (whether linked to Google Search run on browsers or as stand-alone apps) with AdWords connects advertisers who want to target ads to specific audiences or on the basis of narrow criteria, with users who are looking for a specific type of information (i.e. maps, financial, retail, or blogs).

Users benefit from Google Maps by being able to look up addresses, get point-to-point directions, find accurate and detailed transport, route and traffic information, and obtain the precise location of businesses, for free. For example, if a user searches for "restaurants near me", a number of restaurants near the user's location will be shown. Behind the scenes, advertisers are using location targeting and are bidding by location on AdWords. Thus, advertisers benefit from having the ability to reach users on the basis of their location, which tends to increase advertisers' ROI, especially if they are local businesses. Importantly, Google offers third-party websites Google Maps APIs so they can include Google Maps functionalities in their properties. As a result, content providers benefit both by making their sites more useful and from an additional revenue stream whenever users click on Google Maps ads that are embedded in their properties.

A similar logic applies to Google Finance and Blogger. Ads will be shown in the Google Finance website or app or in the relevant blog depending on the type of information being accessed by users. Users benefit from easy and free access to content, while advertisers benefit from the ability to serve targeted ads. In the case of Blogger, blog creators also benefit from the technology and interface provided by Google to create, store, maintain and edit blogs, and by joining AdSense, they can derive benefits in the form of a revenue stream from advertising.

Google Shopping is somewhat different. It is a dedicated shopping search engine that is part of Google's ad system (available at Google Search), but unlike regular search there are no organic results, which means all listings on Google Shopping are paid for by advertisers. To add products to Google Shopping, sellers must sign up for Google's Merchant Center and enter information for their listings. Thereafter, they need to create an AdWords campaign. However, instead of keywords, Shopping ads use the Merchant Center data to determine when and where to show the ads. Just like other AdWords ad formats, Shopping ads also participate in an ad auction, but advertisers pay only when a user clicks on an ad that leads to the seller's website. Shopping ads are shown in Google Shopping (in select countries), Google Search (next to search results and separate from text ads) and on websites that are members of the Google Search Network, including YouTube.

The benefits derived from Google Shopping for sellers (advertisers) include increased traffic to their websites and listings, increased attractiveness of the ads and listings (given that they include detailed product information), broader presence (since ads are shown in Google Search and other popular sites), and access to useful reporting and competitive data. Shoppers benefit from access to detailed information on products of their interest, as well as from the ability to compare prices on the same web page.

YouTube + AdWords

YouTube is an ad-supported online platform that allows people to upload, view, share, rate and comment on audio and video recordings as well as live streams. The majority of YouTube's content is generated by individual, amateur users, but corporations, such as the BBC, CBS and Vevo, also offer some of their content on YouTube.

The combination of YouTube and AdWords constitutes a three-sided platform that connects those who upload content, those who consume it, and advertisers who wish to serve targeted ads based on the nature of the content.

Content consumers benefit from free access to a universe of material (see YouTube statistics below). In addition, when used under a Google account, the recommendations and search results that YouTube displays are based on the consumer's revealed preferences and thus are likely to be more relevant to their interests. Uploaders benefit from the ability to post videos, as well as the possibility to develop a fan base and propagate their views and artistic creations. Advertisers can activate "TrueView Ads" on their AdWords interface, giving them the ability to serve video ads on YouTube and the websites comprising the Google Display Network. Accordingly, they benefit from the possibility to target YouTube's audience on the basis of the videos that viewers watch.

Google Play + AdWords

Google Play is mainly a third-party B2C online distribution platform where users can buy games, music, magazines, films, books and Android-compatible apps. It is a key component of Google's ecosystem, connecting content consumers with content providers and advertisers. Google Play features user reviews and ratings, category browsing, and search functionality.

Apps and game developers are able to sell their content on Google Play by creating a Developer Account and paying a one-time, USD 25 registration fee plus a 30% transaction fee for all payments including app purchases, in-app purchases and subscriptions. In addition, advertisers and developers can show search ads on Google Play, thereby raising awareness of their apps.

Book authors and publishers are able to sell their content on Google Play by creating a publisher account. That gives them access to the Google Play Books Partner Centre, where they can manage their book catalogue and payment settings. The Preview Programme enables publishers and authors to promote their books online on Google Books, enabling users to view some pages before deciding whether to buy. Google also scans the books' full text, thereby allowing each word to be a possible match for Google Books searches. The author or publisher decides the percentage of the book that becomes browsable. Publishers and authors receive 52% of their book's list price.

Recording artists and managers are able to sell content on Google Play under the Artist Hub. Google charges a one-time, USD 25 registration fee for creating an artist page plus a 30% transaction fee on all music revenues. Artists set their own retail price. They may also choose to include their releases in Google Play Music's subscription service, which enables on-demand streaming. Earnings from the subscription service are determined on the basis of the relevant artist's percentage of all streamed tracks relative to the overall revenue derived from streaming on Google Play in a month, for which reason they are variable.

Filmmakers and film/video aggregators can also sell (or rent) their content on Google Play. Google provides monthly and weekly reports to help content providers track the performance of their content. To distribute films, filmmakers must go through a film or video aggregator certified by Google Play, and the revenue-sharing percentage will vary depending on the agreements between filmmakers, film/video aggregators and Google Play.

Benefits provided to consumers by Google Play include access to a comprehensive store where they can find highly detailed information on apps, music, films and other content, buy or rent content, and enjoy the content on a variety of devices. Recommendations are shown based on users' Play store searches and revealed preferences, for which reason they are likely to be more relevant and appealing. When a keyword search term is entered into Play Search, the apps that are returned are ranked by relevance to the information the developer registered for the app in question. Google also uses a variety of signals, including number of installs, reviews and app quality, among other things, in deciding how apps are ranked. In turn, content providers benefit from the Google Play's large user base and tools for managing their content. In addition, advertisers benefit from the ability to serve targeted ads to a large base of users.

Social and economic benefits to countries

Perhaps the key benefit Google provides is helping various parties (i.e. users, advertisers and content providers) to find precisely what they are looking for, thereby facilitating interactions and creating value. Google greatly reduces search and transaction costs, which enhances efficiency and productivity.

Moreover, Google promotes transparency in many ways. For example, it promotes market transparency by enabling Google Shopping users to easily compare prices, products and services and to read reviews. It promotes government transparency by putting civic information at citizens' fingertips so they can track what their elected representatives are doing. It promotes corporate transparency by giving investors convenient access to financial information about companies.

In addition, due to its large user base and its assortment of products and services, Google is able to collect, use and process a large volume of data, which it uses to optimise its offerings, enhance user experience and develop new products and services. That, in turn, helps to drive its innovation (for example, AI and driverless car technology). Relatedly, by providing data analytics services and ad campaign management tools, Google helps businesses to better understand markets and adapt their products to the needs of consumers, enhancing efficiency.

Moreover, by providing technological tools (e.g. APIs and SDKs) to content providers and app developers for improving their properties, as well as for distributing their apps and content, Google enables and encourages innovation and entrepreneurship. According to Google's Economic Impact Report, in 2017 Google's search and advertising tools helped provide USD 283 billion of economic activity for more than 1.5 million businesses, website publishers, and non-profits in the United States (Google, 2017[264]). Additionally, given the worldwide usage of Google Play, Google enables cross-border transactions between consumers and content providers located in any part of the world where Internet access is available. Similarly, the popularity of Android OS has given rise to indirect network effects between OEMs, users and app developers, raising demand for both handsets and apps. Cross-border transactions and increased demand for these products lead to greater variety and innovation, higher sales volume, increased productivity and ultimately economic growth.

Furthermore, by providing services that can be accessed through a mobile device and that increase users' convenience, e.g. Google Maps, which renders travel time estimates, directions, route planning, reviews and information about business, Google raises living standards and the well-being of its users.

Similarly, by enabling easy access to information (e.g. through Google Search and learning-related videos on YouTube), Google facilitates education, research and, more generally, access to knowledge. Informed citizens, in turn, may be more prone to engage with government officials and ultimately contribute to stronger democracies. The latter benefit may be enhanced through user participation on the YouTube social media platform, which provides an open virtual space for exchanging and sharing ideas and opinions.

Basic financial information

Alphabet does not break down its financial information on a platform-by-platform basis. The information presented in Table A A.16 relates to the entire Google segment of the company.

A A.16. Google segment revenue, net income and employees

Year	Total revenue (USD million)	Advertising revenue (USD million)	Advertising revenue (% of total revenue)	Net income (USD million)	Net profit margin (%)	Employees
2004	3 189	3 143	99	399	12.5	3 201
2005	6 139	6 065	99	1 465	23.8	5 680
2006	10 605	10 493	99	3 077	29	10 674
2007	16 594	16 413	99	4 204	25	16 805
2008	21 796	21 129	97	4 227	19.3	20 222
2009	23 651	22 889	97	6 520	27.5	19 835
2010	29 321	28 236	96	8 505	29	24 400
2011	37 905	36 531	96	9 706	25.6	32 467
2012	46 039	43 686	95	10 619	23	53 861
2013	55 519	51 072	92	12 733	22.9	47 756
2014	66 001	59 624	90.7	14 136	21.4	53 600
2015	74 989	67 390	90.4	16 348	21.8	61 814
2016	90 272	79 383	88.7	19 478	21.5	72 053
2017	110 855	95 373	87	12 662	11.4	80 110

Competitive environment

Google's geographic reach

Google (whether the search engine or any of its properties) is available in virtually every country, with a few exceptions, such as China and the Syrian Arab Republic where it has been banned (Google, n.d.[265]).

Main competitors

Generally, the online platforms that are part of Google's ecosystem currently face competition from general purpose search advertising and information services, such as Yahoo!, and Microsoft's Bing; from vertical search advertising and e-commerce websites, such as Kayak (travel queries), LinkedIn (job queries), WebMD (health queries), and Amazon and eBay (e-commerce), since some users navigate directly to such content, websites, and apps rather than going through Google; from social networks, such as Facebook, LinkedIn, and Twitter, since some users are increasingly relying on social networks for product or service referrals, rather than seeking information through traditional search engines; from other online advertising platforms and networks, including Criteo, AppNexus, and Facebook, that compete for advertisers with AdWords; from providers of online products and services that provide answers, information, content, videos, and services, such as Quora and Netflix; and from other Android (e.g. AppBrain, SlideMe) and non-Android app stores (e.g. Apple's App Store and the Microsoft Store).

Publicly announced geographic and product/service expansion plans

On 19 March 2018, Google introduced the Shopping Actions programme. The programme is intended to enable merchants to offer their products on new platforms like the Google Assistant with voice shopping, and give users an effortless shopping experience with a shareable list, a universal cart and an instant checkout with saved payment cards that will work across Google Assistant and Search, regardless of the device they are using (Google, 2018[266]).

Google's three largest platform-related mergers and acquisitions

- In 2006, Google acquired YouTube, Inc. for USD 1.65 billion.
- In 2008, Google acquired DoubleClick, Inc. for USD 3.1 billion.
- In 2013, Google acquired Waze, Inc. for USD 1.3 billion.

Major platform-related legal actions

- **Android bundling case**. In July 2018, the European Commission found that Google had abused a dominant position by 1) requiring manufacturers to pre-install its search and browser apps on Android devices if the manufacturers also wished to include the Google Play Store app; 2) paying manufacturers and mobile network operators to pre-install the Google search engine on their devices; and 3) obstructing the development of competing Android-based operating systems. The Commission found that, by taking these actions, "Google has used Android as a vehicle to cement the dominance of its search engine" (European Commission, 2018[267]). The Commission imposed a fine of EUR 4.34 billion and ordered Google to halt the practices in question. Google has appealed this decision.
- **Google Shopping case**. In 2017, the European Commission (2017[268]) found that Google had abused a dominant position by systematically giving prominent placement to its own comparison shopping service and demoting rival comparison shopping services in Google's search results. The Commission levelled a EUR 2.4 billion fine and ordered Google to stop the practice. Google has appealed this decision.
- **Google Street View scandal**. In 2007, Google began circulating cars that photographed streets and gathered 3-D images of cities and towns around the world. The cars were also fitted with antennas that scanned local Wi-Fi hotspots. Wi-Fi information is particularly important for location-based services, such as online maps. After an audit requested by the Data Protection Authority of Hamburg concerning the data collected by the cars, Google admitted it had mistakenly collected samples of information sent over the Internet from non-password-protected Wi-Fi networks. That information included e-mail and text messages, passwords, Internet usage history and other highly sensitive personal information, such as names, addresses, sexual preferences, and medical history (Federal Communications Commission, 2012[269]). The incident gave rise to multiple privacy/data protection investigations. Sanctions were imposed in France, Germany, Italy, Korea, Switzerland, the United Kingdom, the United States and other countries (Swiss Federal Supreme Court, 2012[270]; Daily Telegraph, 2014[271]; The Korea Herald, 2014[272]; Halliday, 2013[273]; Matussek, 2013[274]; Spencer, 2011[275]).

Google's chief policy concern

Regulatory uncertainty. Google observes that regulators around the world are considering a number of legislative and regulatory proposals concerning data protection, including measures to ensure that its encryption of user data does not hinder law enforcement agencies' access to that data. In addition, Google finds that the interpretation and application of consumer and data protection laws in the United States, Europe and other parts of the world are often uncertain and in flux. Google fears these laws may be interpreted and applied in a manner inconsistent with its data practices. If so, in addition to the possibility of fines, this could result in an order requiring a change of Google's data practices, which could have an adverse effect on its business and results of operations. Complying with the laws could give rise to substantial costs or require that Google change its business practices in a manner adverse to its interests.

MercadoLibre

Corporate history/evolution

MercadoLibre was conceived in 1999, a time when commerce was just starting to make the transition from offline to online. Noticing the trend, founder Marcos Galperin wrote MercadoLibre's business plan while he was a student at Stanford Business School. Galperin did not try to mirror too closely the business models of e-commerce platforms that were starting to thrive in developed economies. Instead, he aimed to create a marketplace that would simplify the lives of Latin American users and that took into account the specific traits of Latin American economies. Those traits included their macroeconomic situations, infrastructure and Internet access, regulations, users' preferred payment methods and logistics. In other words, MercadoLibre's approach has been to strive for growth based on the actual possibilities and limitations of each Latin American country, working as quickly as possible to overcome barriers that hinder e-commerce adoption.

The company started operating as an e-commerce platform in Argentina in 1999. Subsequently, it expanded to 18 other, mostly Latin American, countries. In 2007, the company successfully completed its registration process with the US SEC and consummated its initial public offering, earning net proceeds of approximately USD 50 million. Today, MercadoLibre is valued at well above USD 20 billion.

Although MercadoLibre is registered as a Delaware (United States) corporation, its principal executive offices are located in Buenos Aires. The company has subsidiaries in Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Spain, the United States, Uruguay and Venezuela (EDGAR, 2017[276]).

Business model

MercadoLibre's platforms and their users

MercadoLibre was created as an online trading platform that enables buyers and sellers to meet in a virtual space and consummate transactions. Over time, however, MercadoLibre added features and complementary services that transformed it into one of the largest online e-commerce ecosystems in Latin America. Today, the company offers six integrated e-commerce services:

- **MercadoLibre Marketplace** is a fully automated, topically arranged online commerce platform where businesses and individuals list a variety of merchandise and consummate transactions either at a fixed price or in an auction format. Accordingly, MercadoLibre Marketplace connects sellers with buyers.
- **MercadoPago** is an online payments solution designed to facilitate transactions both within and outside of MercadoLibre Marketplace by enabling buyers and sellers to securely, easily and promptly send and receive payments online. When it launched, MercadoPago operated as an in-store payment system similar to PayPal: buyers and merchants connected their MercadoPago accounts to their MercadoLibre accounts, whereupon they could make payments (after linking a payment card or adding credit derived from sales) for and receive money from completed purchases on MercadoLibre. The "credit" added to an account after completion of any payment could be used for further purchases on MercadoLibre or be withdrawn for a fee. Over time, however, MercadoPago became a stand-alone online payment service that allows users to make and receive payments from transactions completed not only within MercadoLibre, but with online and brick-and-mortar merchants affiliated to MercadoPago. MercadoPago has now moved beyond payment processing. For example, it recently launched Mercado Crédito, which provides loans to certain merchants and consumers. As a result of the digital traces left by users on its platform, MercadoLibre possesses abundant and valuable data about them. With the aid of big data analytics that take approximately 400 variables into account, MercadoLibre can determine which potential borrowers are good credit risks. Its data and analytics are robust enough that the company is able to offer worthy borrowers better interest rates than credit card companies and banks would offer them (if any banks were willing to lend to them in the first place, that is). Consequently, MercadoPago also connects buyers with sellers/merchants, but the user base on both sides is wider, including members and non-members of the MercadoLibre Marketplace.
- **MercadoEnvios** is a shipping programme through which third-party shippers deliver products sold on the MercadoLibre Marketplace. Sellers opting into the programme are able to offer a uniform and seamlessly integrated shipping experience to their buyers at competitive prices. Accordingly, this programme connects sellers in need of cost-effective shipping with shippers.
- **MercadoLibre Classifieds Service** is an online classified ad listing service under which users can list and buy motor vehicles, vessels, aircraft, real estate and services. The listings are a section within the Marketplace, but they differ from other Marketplace listings in that sellers pay placement or "up-front" fees but never final value fees (explained below). This service also connects sellers with buyers.
- **MercadoLibre Advertising Programme** enables MercadoLibre's sellers and large advertisers (which need not be sellers on MercadoLibre Marketplace) to place, or "serve", text, display or banner ads on MercadoLibre's web pages. Advertisers pay on a CPC or cost-per-impression basis. This service connects end users (buyers looking for products on MercadoLibre Marketplace) with advertisers. It is worth noting that the Advertising Programme does not support the placement of ads onto websites created with the aid of MercadoLibre´s MercadoShops service (see below).
- **MercadoShops** is MercadoLibre's online store solution, under which users can set up, manage and promote their own online store. These stores are hosted by MercadoLibre and merchants can choose integration with MercadoLibre's payment and shipping services. Users can also choose either a basic, free store or pay a monthly subscription fee (Mercado Shops, n.d.[277]) ranging from approximately USD 27 (for a standard plan) to approximately USD 45 (premium plan) for enhanced functionality and VASs. Full functionality connects sophisticated merchants (who set up their own store) with buyers in and outside of MercadoLibre Marketplace (through MercadoPago) and parcel delivery companies (through MercadoEnvios). Incidentally, to generate traffic to these websites, MercadoLibre recommends they buy

online advertising from Facebook and Google´s AdWords (Mercado Shops, 2014[278]). That recommendation may be surprising, coming from a company that sells advertising services itself, but it is likely due to the superior scale and performance of Facebook's and Google's advertising solutions and the fact that the MercadoLibre Advertising Programme supports the placement of ads only on MercadoLibre Marketplace.

How do the platforms make money?

Sources of revenue

In its public filings, MercadoLibre identifies two main revenue streams: Marketplace revenues, which come from the company's core business, and Non-Marketplace revenues, which come from the company's other services.

- Marketplace revenues are generated from: 1) **final value fees** (10% to 12% of the sale value, charged to the seller when an item is successfully sold); and 2) **placement / up-front fees** (charged to the seller in exchange for improved exposure of listings. These fees are charged regardless of whether the relevant items are sold, and apply to classified items only (MercadoLibre, n.d.[279]) – for example, up-front fees for motorbikes and car listings range between approximately USD 7 and USD 15; fees for real estate listings range between USD 6 and USD 12).
- Non-Marketplace revenues are generated from: 1) **payment fees** (revenues derived from MercadoPago, including 4.45% of the sale price, paid by sellers, for transactions consummated outside the Marketplace; fees charged to buyers who choose to pay in instalments with MercadoPago, either within or outside the Marketplace; fees charged to sellers when they withdraw cash from MercadoPago; and interest and fees from merchant and customer loans made under Mercado Crédito); 2) **advertising fees** (fees from ads purchased on the Advertising Programme); and 3) **shipping fees** (fees generated when a buyer chooses MercadoEnvios from among the shipping options offered by merchants).

Reasons for success

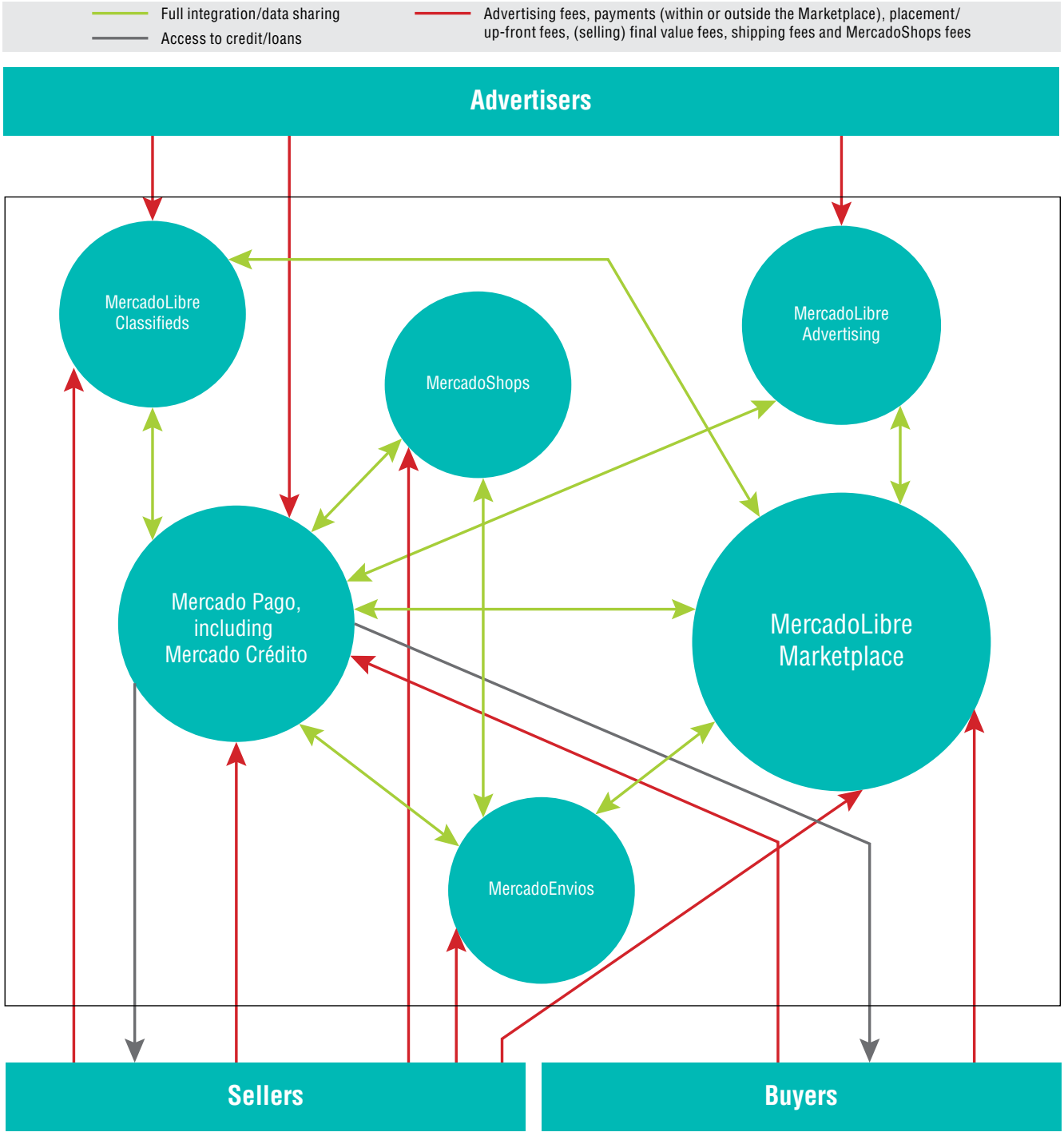
Broadly speaking, MercadoLibre's success is the result of innovation, business acumen, indirect network effects and strategic acquisitions.

- MercadoLibre implemented an e-commerce platform in a region where such services were not previously available. As it began to attract buyers and sellers, indirect network effects came into play. Accordingly, the platform's value increased for both types of users as more and more of them participated. Sellers valued a larger audience of buyers, and buyers valued a larger number of sellers who offered more products and more competition.
- By acquiring several Latin American firms, MercadoLibre was able to broaden its offering of integrated, complementary services (i.e. to expand into classified ads, advertising, software-as-a-service with MercadoShops and online payment services with MercadoPago). The combination of these services made MercadoLibre more attractive to users.
- MercadoLibre understood the needs of the region where it operates and devised an appropriate business plan. When MercadoLibre debuted, there was rampant distrust in online payments among Latin American consumers. Coupled with the fact that in Latin America debit and credit cards were not as popular as in developed countries, this greatly limited e-commerce's potential. MercadoPago, MercadoLibre's response to the credit card problem, quickly became a successful solution because it met the need for an alternative, secure payment method. It contributes greatly to increasing the company's overall sales volume and, more generally, to realising e-commerce's potential in the region. In addition, MercadoLibre effectively managed users' distrust. In the early days of the platform, buyers were not comfortable paying for products they were not sure they would ever receive. The company's user feedback systems, dispute resolution mechanisms, transaction monitoring and buyer protection programmes reduced the rate of fraud dramatically and led to an increase in users' trust. Relatedly, the transport infrastructure in Latin America often hampered shipping services' efficiency, resulting in delayed deliveries. To address that obstacle, MercadoLibre launched MercadoLibre Fulfilment (Meil Marketing.com, 2017[280]), which is a pick, pack and deliver service through which MercadoLibre handles delivery logistics for its merchants' businesses. Based on big data analytics and partnerships with local delivery companies, MercadoLibre has been able to improve delivery times for the products sold on its platform and increase reliance on e-commerce in Latin America generally.

- In Latin America, SMEs commonly face great difficulties accessing credit, as banking institutions are not very interested in financing them. Through Mercado Crédito and the analysis of the data that MercadoLibre collects and processes, the company is able to determine which businesses and consumers are low-risk borrowers. Armed with that information, MercadoLibre provides financing to those borrowers, which increases both investment and consumption to the benefit of the users as well as MercadoLibre itself.

Flow chart

A A.10. The MercadoLibre ecosystem



Note: Data flows back and forth between MercadoLibre's various users and its different services. However, to avoid cluttering the chart, those flows are not shown.

Use of data

MercadoLibre collects, stores and processes personal data, such as username, name, identity document or card number, contact information; social network account information (when a user logs in to MercadoLibre via Facebook or other social network), including information on users' interests, likes, contacts, posts, photos and videos; and browsing behaviour and user activities on MercadoLibre, including information on purchases or sales, ratings, messages posted in forums and other information. MercadoLibre states that this information is necessary for providing services and functionalities that better suit users' needs and make the user experience as pleasant as possible. More specifically, the information allows MercadoLibre to help buyers and sellers contact each other directly; to study their interests, behaviours and demographics so as to better understand their needs and offer them better services; to enhance MercadoLibre's marketing and commercial initiatives and improve and customise content; to send information about new services via e-mail or SMS; and to select advertisements, promotions and banners that will interest users.

MercadoLibre shares users' personal data with service providers and outsourcing companies that enhance or facilitate transactions on MercadoLibre, such as transportation services, payment processing services, insurance brokers or payment collection agencies, call centres, and public and/or private agencies providing credit information. MercadoLibre notes that Google also obtains information about user activity on MercadoLibre's websites as well as their IP addresses, with the aid of cookies, and processes it on behalf of MercadoLibre to analyse and prepare reports with a view to improving the services provided by MercadoLibre. Google is free to share this information with third parties when required by applicable laws or when third parties process that information on Google's behalf.

The platforms' importance to users

How customers on each of the platforms' sides benefit from using them

- **Marketplace**. Marketplace benefits buyers and sellers by offering them access to product and geographic markets that are larger and more diverse than they are able to reach via offline venues in Latin America. Marketplace overcomes the traditional limitations of those offline venues, which tend to be fragmented and regional, offer a limited variety of products and services, have high transaction costs, and provide buyers with less information with which to make purchasing decisions. MercadoLibre attracts buyers by offering variety, value, convenience and important commercial information. It attracts sellers by offering access to broad markets, efficient marketing and distribution costs, and ultimately the opportunity to drive sales and profits higher. Both groups experience additional advantages in the form of reduced search/transaction costs and a variety of complementary services and programmes that enhance the shopping and selling experience. An example of such programmes is the recently launched loyalty programme named Mercado Puntos, available in Brazil, Mexico, Colombia and Chile, under which buyers accumulate points for each transaction made on the Marketplace and enjoy certain benefits, such as free shipping, as they reach predefined tiers of activity.
- **MercadoPago**. As recently as five or six years ago, the volume of online payments in Latin America was low. MercadoPago, which enables registered users to send and receive online payments in connection with purchases/sales made both within and outside of the MercadoLibre Marketplace, is meeting the growing demand for convenient and trusted Internet-based payments in Latin America. As a result, not only MercadoLibre Marketplace users, but an even larger set of buyers and merchants benefit from a service that fulfils previously unmet demand. Moreover, MercadoPago has greatly improved the convenience and efficiency of payments for purchases made in the MercadoLibre Marketplace, reducing the payment clearance and withholding times dramatically. This is because MercadoPago has agreements with all main issuers of credit and debit cards, as well as with local suppliers of payment methods, such as Pagofacil, Rapipago and Banelco (Increase, 2014[281]). Furthermore, since MercadoPago does not require users to have a traditional bank account, MercadoPago has provided millions of unbanked buyers with access to online payment and credit services. That means they are able to participate in online markets that they were not previously able to access. MercadoPago

also benefits small merchants by providing them with affordable payment processing technology and payment methods they likely would not have been able to access through traditional channels. In particular, MercadoPago allows merchants to facilitate checkout and payment processes on their websites while enabling users to simply transfer money to each other either through the MercadoLibre website or by using the MercadoPago app. Accordingly, MercadoPago improves selling processes on merchants' websites and increases convenience for buyers. And in 2016, MercadoPago launched the Mercado Crédito programme in Argentina, under which merchants and consumers meeting specific criteria may apply for loans. Therefore, both individuals and SMEs benefit from access to credit which in most cases would not be available to them via traditional banking institutions. In turn, SMEs can use these to grow their businesses.

- **MercadoEnvios**. Given the scale of MercadoLibre's operations, local post offices and private couriers offer MercadoEnvios low shipping rates and a reliable delivery service. These benefits are passed on to merchants, as a result of which they can offer a trustworthy shipping experience to their buyers at competitive prices. Buyers benefit from a good delivery service and merchants benefit from increased attractiveness of their offerings. Sellers benefit from increased convenience because instead of having to arrange shipping themselves, this task is carried out by MercadoEnvios. Parcel delivery firms and post offices benefit from having a good customer that ensures a dependable, increasing volume of business.
- **MercadoLibre Classifieds Service**. This service benefits sellers by allowing them to prominently display on the MercadoLibre Marketplace their offerings related to vehicles, real estate and services traded outside the Marketplace. As a result, they can reach a larger audience of buyers. Buyers benefit from access to a specialised space where they can see listings for certain types of items that are of interest to them.
- **MercadoLibre Advertising Programme**. Retailers and service providers of all sizes benefit from the possibility to advertise their products and services traded both on and outside the MercadoLibre Marketplace on a popular website visited by users who are there to make purchases. Because ads are targeted based on users' preferences and interests (determined by algorithms and data processing), they are more likely to be of interest for potential buyers.
- **MercadoShops**. Retailers, especially SMEs, benefit from the possibility to create their own website at low cost, and from access to MercadoLibre's handy shipping and payment services, which enhance the usefulness, convenience and attractiveness of their stores.

Data illustrating the importance of MercadoLibre's Marketplace and MercadoPago to users

A A.17. Listings, users and volume of items sold on Marketplace

Year	Daily listing (million)	Product categories	Registered MercadoLibre users (million)	Unique sellers (million)	Unique buyers (million)	Sold items (million)
2007	1	2 000	25	2.0	5.5	18
2008	3	2 000	34	2.4	6.5	21
2009	4	2 000	43	3.0	9.1	30
2010	8	2 000	53	3.9	11.3	39
2011	11	2 000	66	3.7	14.1	53
2012	14	2 000	82	4.4	16.9	67
2013	18	3 000	100	5.1	20.2	83
2014	23	2 600	121	5.5	22.0	101
2015	37	2 800	145	6.2	23.6	128
2016	65	1 359	175	7.6	27.7	181
2017	114	1 461	212	10.1	33.7	270

A A.18. MercadoPago payments and gross merchandise volume on Marketplace

Year	MercadoPago payments volume (USD million)	Percentage of GMV on Marketplace paid with MercadoPago	MercadoLibre's GMV on Marketplace (USD million)
2007	158	10.5	1 512
2008	256	12.3	2 079
2009	383	13.9	2 751
2010	698	20.5	3 406
2011	1 312	27.2	4 820
2012	1 787	31.3	5 704
2013	2 498	34.2	7 305
2014	2 582	36.5	7 082
2015	3 765	52.6	7 151
2016	5 627	69.9	8 048
2017	9 628	81.9	11 749

Note: GMV = gross merchandise volume.

Other important statistics

The following statistics are from the company's 2017 Sustainability Report (MercadoLibre[282]).

- As of December 2017, 270 million products had been sold on MercadoLibre. Throughout 2017, users made 518 million searches per day in 1 461 product categories, at the rate of 6 000 searches per second, and made 9 purchases per second.
- As of December 2017, 231 million transactions and USD 13.7 billion had been processed through MercadoPago.
- In 2017, 150.7 million shipments were made through MercadoEnvios, a 43% rise over 2016.
- As of December 2017, 161 279 advertisers were using MercadoLibre's Advertising Programme.
- As of December 2017, there were 212 000 active MercadoShop stores.
- As of December 2017, MercadoLibre was the most popular platform (in terms of unique visitors) in Latin America and ranked seventh globally.

Social and economic benefits to countries

MercadoLibre has created a large and growing marketplace where buyers and sellers from different geographic locations meet to fulfil their needs. Given the Marketplace's size and the variety of products it offers, more sales are likely to be consummated than if each retailer could sell only in its own brick-and-mortar and/or online shop. The higher volume of transactions increases the welfare of both buyers and sellers. MercadoLibre also facilitates sales through its classified listings and targeted advertising services. In addition, MercadoEnvios's logistics and MercadoPago's payment processing options facilitate effective communication between merchants and consumers and offer cost-effective delivery and secure online payments solutions. These enhance the online shopping and selling experience on Marketplace, further encouraging sales growth on that platform.

More broadly, MercadoLibre has promoted sustainable economic growth in Latin America. According to MercadoLibre's internal data, around 581 000 families have gotten their livelihood from selling on MercadoLibre's Marketplace.

Furthermore, MercadoPago is helping to fulfil Latin America's demand for online payment services, thereby enhancing the welfare of consumers and merchants. Because MercadoPago facilitates payments both within and outside of Marketplace, the benefits of this payment method (convenience, ease of use, safety and the option to pay in instalments), accrue well beyond the Marketplace user base.

In addition, through Mercado Crédito, MercadoLibre extends credit directly to its users. Presently, it lends the equivalent of hundreds of millions of US dollars per year to SMEs (which previously had few borrowing options because banks tend not to be interested in lending to small players) and to

individuals, including unbanked individuals. MercadoLibre currently makes loans up to USD 100 000 to individual SMEs, which helps them to grow their businesses, thereby promoting entrepreneurship and contributing to the economic growth of the countries in which Mercado Crédito is available. In 2017, sellers received USD 127 million in loans through Mercado Crédito so they could expand their offers (MercadoLibre, 2017[282]). Relatedly, with access to credit, consumers are able to make more purchases on and outside the MercadoLibre Marketplace, which further promotes economic growth.

Basic financial information

MercadoLibre does not disaggregate its financial information by individual lines of business. The information presented below is therefore company-wide. (The dramatic drop in profits in 2017 is largely due to increased sales and marketing expenses [from USD 326 million in 2016 to USD 1.5 billion in 2017] plus a USD 86 million loss on deconsolidation of Venezuelan subsidiaries.)

A A.19. MercadoLibre's company-wide revenue, net income and employees

Year	Revenue (USD million)	Net income (USD million)	Net profit margin (%)	Employees
2007	85	10	11.3	932
2008	137	19	13.7	1 295
2009	173	33	19.2	1 466
2010	217	56	25.8	1 567
2011	299	77	25.7	1 633
2012	374	101	27.1	1 892
2013	473	118	24.8	2 171
2014	557	73	13.0	2 559
2015	652	106	16.2	3 298
2016	844	136	16.1	4 146
2017	1 398	14	0.9	5 582

Competitive environment

Geographic reach

MercadoLibre Marketplace operates in Argentina, the Plurinational State of Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Portugal, El Salvador, Uruguay and the Bolivarian Republic of Venezuela.

MercadoPago is currently available in Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay and Venezuela. Mercado Crédito is currently available in Argentina, Brazil and Mexico.

MercadoEnvios is currently available in Argentina, Brazil, Chile, Colombia and Mexico.

Main competitors

MercadoLibre Marketplace competes with a few marketplace platform operators, such as Amazon and Rakuten (mainly in Brazil and Mexico), and to a lesser extent eBay and AliExpress.

In the classified advertising market MercadoLibre competes with regional players, such as OLX and Vivastreet, and with local players, such as Webmotors and Zap.

MercadoPago competes with traditional online and offline payment methods, particularly cash, debit and credit cards, checks, money orders, and electronic bank deposits; international online payments services, such as PayPal and Google Pay; local online payment services, such as PayU in Argentina, Chile, Colombia, Peru, Brazil and Mexico, Bcash, PagSeguro and MOIP in Brazil, and Conecta in Mexico; and money transfer services, such as Western Union.

Publicly announced geographic and product/service expansion plans

MercadoLibre has recently launched the "MercadoLibre Fulfilment" service for sellers active on its platform. When a seller opts to use that service, MercadoLibre handles all the logistics of the seller's business (pick, pack and deliver), which allows sellers to save time and focus more on improving their sales. MercadoLibre charges a fee for undertaking this role, and end consumers receive the merchandise purchased on the platform faster. This service is valuable because it provides a solution to the poor infrastructure common in Latin American countries, and which prevents quick delivery of goods purchased online (Meil Marketing.com, 2017[280]).

Three largest mergers and acquisitions

- In 2005, MercadoLibre acquired certain operations of its then-main competitor in online trading, DeRemate.com Inc., including all of its operations in Brazil, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela, and the majority of shares of its subsidiaries (except for the Argentine and Chilean subsidiaries), for an aggregate purchase price of USD 12.3 million.
- In 2008, MercadoLibre acquired the remaining operations of DeRemate.com inArgentina, Chile, Mexico and Colombia for an aggregate purchase price of USD 37.6 million.
- In 2014, MercadoLibre acquired 100% of the capital stock of VMK S.A., Inmobiliaria Web Chile S. de R.L. de C.V. and Inmuebles Online S.A. These companies operated online classified advertisement platforms dedicated to the sale of real estate in Chile through the *Portal Inmobiliario* brand (www.portalinmobiliario.com) and in Mexico through the *Guia de Inmuebles* brand (www.guiadeinmuebles.com). The aggregate purchase price was USD 38 million.

Major litigation

- In 2007, Sao Paulo tax authorities assessed taxes and fines of approximately USD 5.9 million against MercadoLibre's Brazilian subsidiary, relating to the period 2005 to 2007, for failure to pay taxes. MercadoLibre made a USD 4.5 million payment to settle the dispute in 2011.
- In 2012, Sao Paulo tax authorities assessed taxes and fines against MercadoLibre's Brazilian subsidiary relating to the period 2007 to 2010, for failure to pay taxes. MercadoLibre made a USD 16.6 million payment to settle the dispute in 2013.

MercadoLibre's policy concerns

- **Regulatory uncertainty**. Internet regulation in some of the countries where MercadoLibre operates is scarce, which creates uncertainty. For example, in some jurisdictions, one set of judges may decide Internet service providers are liable for the sale of counterfeit items on MercadoLibre Marketplace, while another set may decide the responsibility lies solely with the offending seller. The unsettled nature of the law may lead to rulings against MercadoLibre that could set adverse precedents, which individually or in the aggregate could harm MercadoLibre's business.
- **Government intervention**. Governmental actions to control inflation, as well as other policies and regulations, have involved price controls, currency devaluations, capital controls and limits on imports. MercadoLibre's financial condition, results of operations and prospects can be adversely affected by such actions and policies.

Rakuten

Corporate history/evolution

Rakuten, Inc. ("Rakuten") is a Japanese company that provides e-commerce and other Internet-based services, founded in 1997 by Hiroshi Mikitani. Its flagship, Rakuten Ichiba, is an e-commerce platform that launched in 1997 with 13 merchants. It is now Japan's largest e-commerce site and operates in countries around the world.

Rakuten's success is a direct consequence of its management: its founder firmly believed that creating an interrelated set of Internet services would create synergies and enhance consumption and profits. After its IPO in 2000, Rakuten expanded through diverse acquisitions into online travel booking, securities brokerage and credit cards, and allowed users to access all of its services under a single user ID in 2005. With those and other initiatives (such as the Super Points programme, which rewards users with points upon completion of certain purchases), Rakuten cemented its reputation in e-commerce and moved into a unique position to expand to other online and offline markets.

Today, Rakuten remains highly diversified. It operates an online bank, a variety of financial services, e-book stores, online digital content distribution platforms, a digital marketing platform and even a baseball team. Fuelled by the large volumes of data its products and services generate, Rakuten's innovations have improved the online experience of its users and led to new products and solutions.

Rakuten's head office is in Tokyo. It has subsidiaries in Japan, Canada, the United States, Luxembourg, France, Germany and Spain.

The Rakuten ecosystem

Business models

Rakuten offers several products and services, many but not all of which qualify as online platforms, that are integrated into the Rakuten ecosystem. Users access these products and services with a single membership ID that identifies them as Rakuten Group Members.

- **Rakuten Ichiba** is Rakuten's online shopping mall service, launched in 1997. This business-to-business-to-consumer platform provides an entertaining shopping experience, which is a departure from the traditional product-centric approach of other e-commerce sites. For example, Rakuten Ichiba allows merchants to design their own sites within the platform and communicate with end users through e-mail, social media, apps (in particular, Viber, which Rakuten owns) and other communication channels. In addition, it has implemented a member status scheme. Members can see their status upgraded to silver, gold or platinum, depending on the frequency of their purchases and their accumulated points. Higher-tier members benefit from privileges, such as invitations to exclusive sales and various promotions. A key driver of sales has been the "Rakuten Super Points" programme. For each JPY 100 consumers spend on Rakuten Ichiba, they receive 1 point, which is worth JPY 1. Points can be spent on future purchases at Rakuten Ichiba and other Rakuten services like travel bookings and banking. Because Rakuten Ichiba has a significant merchant base, it has a rich variety of offerings, which makes it a shopping mall with a "long tail" – essentially an economies of scope feature that attracts more consumers.
- **Rakuten Card**. To promote Rakuten Ichiba, Rakuten needed to encourage the use of credit cards. Thus, in 2004 Rakuten launched the Rakuten Card. The Rakuten Card has helped to raise user loyalty towards Rakuten Ichiba, largely because of its link to the Super Points programme: Rakuten Card members earn points for purchases made with the card outside the Rakuten Group and double points for purchases made on Rakuten Ichiba. According to Rakuten's internal data, Rakuten Card users spend about 50% more on Rakuten Ichiba than they would without the card in order to earn more Super Points. In addition, Card purchases not only give Rakuten more transactions, but also the transaction data of its cardholders that goes with those transactions. That data is then analysed and used to help Rakuten improve its products and services.
- **Rakuten Bank** has more accounts than any other online bank in Japan. It offers a variety of banking services.
- **Payment Services**. Rakuten Edy is a prepaid e-money service that can be used in over 400 000 member stores in Japan. To use the service, customers must purchase an Edy card and charge it with stored value (the cards can store up to JPY 50 000 [about USD 450]). This service has proved very successful with Japanese consumers. With Edy, customers ensure they can spend only their available Edy balance (Rakuten, 2017[283]). In addition, in 2017 Rakuten launched *Rakuten Pay*, a unified in-store settlement service that supports 14 major e-money brands, 6 international credit card brands and Android Pay. This service can be used on Rakuten Ichiba and in an increasing number of brick-and-mortar shops.
- **Rakuten Travel** is Rakuten's online travel booking service. It includes an array of services, such as hotel bookings, overseas and local travel packages, flight reservations, rental car reservations, diverse business class bookings, and an auction system for hotel reservations.
- **Rakuten Securities** provides online securities brokerage and related services, such as "Market Speed" (real-time trading software), "iSPEED" (mobile trading software), and "Raku Raku Support" (customer support). Rakuten Securities offers a low-fee, diversified product portfolio with an easy-to-use website. Rakuten Ichiba users open approximately one-third of new Rakuten Securities accounts, which illustrates the synergies between services in the ecosystem.
- **Portal and Media (Infoseek)**. In 2000, Rakuten acquired the portal "Infoseek Japan K.K." with the aim of shifting from an online shopping mall to a broader media corporation. The portal offers different services, such as a search engine; "Infoseek Money", which offers financial news and information; "Rakuten Women", which offers content specifically tailored to women; "Rakuten Blog", an Internet blog service; and "Rakuten Map", a map with review functionalities that allows for the creation of local communities.

- **Digital Content**. After the acquisition of Kobo (e-books) and Wuaki.tv (video streaming) in 2012 and Viki (video streaming) in 2013, Rakuten fully expanded its digital content business. Kobo offers an e-book store, Android tablets and other e-reading devices. Wuaki.tv and Viki stream diverse content, including TV programmes and films, and Viki's users subtitle content on a voluntary basis. The 2015 acquisition of Overdrive, a provider of e-book distribution services for libraries, reinforced this segment.
- **Rakuten Data Marketing**. Launched in 2017, this service provides marketing solutions by combining big data from Rakuten's member accounts with exclusive data on mass media and other areas (including television audience data) provided by the Densu Group (a joint controller of Rakuten Marketing, Inc.). One of its products, the Rakuten Marketing Platform Brand Gateway, allows companies to establish brand sites in Rakuten Ichiba. However, Rakuten Marketing also offers the possibility to show display ads on its global affiliate network (a network of third-party sites and apps that show advertising) and search ads on Google and Bing (based on Rakuten's partnership agreements with those search providers).
- **Viber**. In 2014, Rakuten acquired Viber Media for USD 900 million (Kim, 2014[284]). Viber is a mobile messaging and VoIP services app that had a user base of 300 million registered users at the time. Currently, Rakuten offers the possibility to advertise on Viber through different formats (normal display ads, shopping ads, promotional stickers, and even business messages).

Who are the customers on each of the ecosystem's sides?

The Rakuten ecosystem serves the following groups of customers: 1) users of Rakuten's products and services that have a membership ID. Users may choose to use only one service (for example, Rakuten Ichiba) or more than one (for example, Rakuten Securities, Viber and Rakuten Card); 2) merchants active on Rakuten Ichiba, as well as online and brick-and-mortar merchants that accept Rakuten Pay; 3) travel services providers, which include hotels, airlines, train operators and rental car operators that have entered into agreements with Rakuten Travel to list their services on its platform; and 4) advertisers who want to promote their products, brands, content or services in the Rakuten ecosystem or third-party websites and apps.

How does the ecosystem make money?

Sources of revenue

Rakuten derives revenue from two main segments: 1) the Internet Services segment, which comprises the shopping mall Rakuten Ichiba, Rakuten Books (online book store), Rakuten GORA (online golf course reservation service), Rakuten Travel, Kenko.com (online seller of health products), Rakuten Kobo (e-book services), Rakuten Marketing, Ebates (online cashback site), content distribution services, such as Viki and OverDrive, and Viber (mobile messaging and VoIP services); and 2) the FinTech segment, which comprises online finance services, such as Rakuten Securities (online banking and securities), Rakuten Card (credit card) and e-money.

Both segments are growing (Table A A.20). Although the Internet Services segment has higher revenues, the FinTech segment has higher profit margins.

A A.20. Basic financial performance of Rakuten's Internet services and FinTech segments

	2015			2016			2017		
	Revenue (JPY million)	Profit (JPY million)	Profit margin (%)	Revenue (JPY million)	Profit (JPY million)	Profit margin (%)	Revenue (JPY million)	Profit (JPY million)	Profit margin (%)
Internet services	493	91.0	18.4	561	55.6	9.9	680	101	14.8
FinTech	275	63.9	23.2	296	65.6	22.1	333	72.8	21.8

Reason for success

Rakuten's success is due to a combination of business acumen, strategic acquisitions, network effects and innovation. When Rakuten Ichiba launched in 1997, virtually no people in Japan shopped online. Rakuten's founder understood that Rakuten needed to attract both merchants and buyers to its site, so he transposed a local concept ("shopping is entertainment") to the online world. He strived to

make the platform as consumer-centred as possible, departing from the traditional product-based approach prevailing in most e-commerce sites at that time. Rakuten offered highly customisable home pages for users and began to acquire companies to expand into other online segments while helping to promote Rakuten Ichiba. In 2002, Rakuten launched the Rakuten Super Points programme, under which customers earn points for purchases made within Rakuten Ichiba (and subsequently within the Rakuten ecosystem, as well as outside the ecosystem with the Rakuten Card) that can be used for future purchases. This programme dramatically increased Rakuten Ichiba's sales volume and user base.

The launch of the Rakuten Card in 2004 brought more synergies between credit card payment services and Rakuten's e-commerce segment, thereby improving revenues and usage of Rakuten Ichiba. Rakuten's management carefully planned and implemented the foregoing steps based on the business vision Mr Mikitani had at its inception. Rakuten's founder believed a highly loyal customer base of one service (online shopping mall) could be leveraged to achieve success in other, connected segments (travel, finance, advertising, etc.), and in turn, more users in these related segments could consolidate the success of Rakuten's main service. To propel that vision, the company invested in promoting the Rakuten brand (e.g. by incorporating Rakuten Baseball Inc., the operators of the Rakuten Eagles baseball team), replaced its disparate logos with a single Rakuten brand in 2005, and implemented a one-stop system that could give to its users access to all Rakuten services with a single user ID.

Indirect network effects also played an important role in Rakuten's success: more buyers opening Rakuten accounts, whether as a result of increased awareness of the Rakuten brand, better service quality, online services linked to Rakuten Ichiba, or something else, increased the attractiveness of Rakuten Ichiba for merchants because it meant they could access a larger audience to market their products. In addition, Rakuten's innovative efforts came into play. Recognising the competitive advantage big data can provide, Rakuten linked its member database and the Super Points system in 2006. The resulting Super Database, which contained not only the profile information but also the purchasing history of every Rakuten Group Member, was essential for driving higher sales and more cross-utilisation of services, even enabling the company to offer marketing solutions as a stand-alone service. Rakuten has continued acquiring companies, such as Kobo in 2012, and Viki, Wuaki.tv and Viber in 2014, to expand into other online segments and continue implementing its overall plan.

Use of data

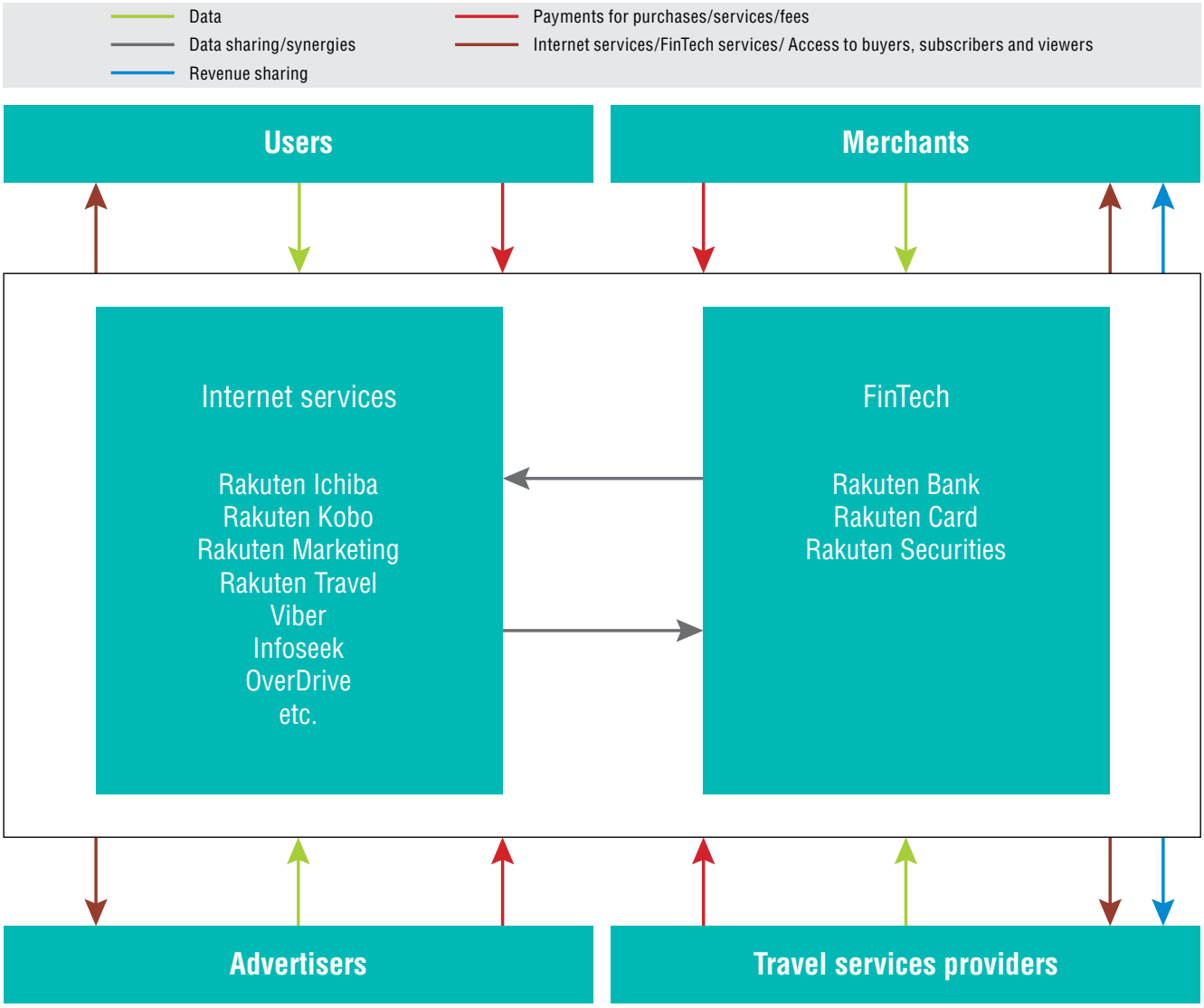
According to Rakuten's privacy policy, Rakuten may collect personal information when users register and set up an account, order a product or service, register for a Gift List, enter contests or sweepstakes, apply for the Rakuten.com branded credit card, fill out surveys, and send feedback. For example, personal information might include a user's name, billing address, shipping address, telephone number, e-mail address, credit card or other payment information, as well as products viewing or purchase history. In addition, Rakuten collects information about users' interactions with Rakuten, including the type of device or browser they use, IP address, browsing behaviour while on Rakuten's website, and the URLs of the websites a user was viewing before visiting Rakuten's site.

Rakuten states that it collects personal information to provide a superior customised online experience, as well as to fill orders, contact purchasers to inform them of their order status, send promotional information and enhance the operation of Rakuten's website. In addition, personally identifiable information may be transferred to third parties who act for or on its behalf in accordance with the purpose(s) for which the data were originally collected or may otherwise be lawfully processed, such as services delivery, evaluating the usefulness of its website, marketing, data management or technical support. Furthermore, Rakuten uses the data it collects to improve Rakuten's marketing and promotional efforts, improve product offerings, and customise its content, layout and services.

The Rakuten ecosystem has relied to a great extent on data analysis to enhance its performance and innovate. Upon merging several databases from separate services into a sole database in 2005, Rakuten was better able to benefit from data mining and maximise cross-utilisation of the company's services (see Rakuten's cross-use ratio in "Other important statistics" below), such as by reducing user acquisition costs. Moreover, merging the databases allowed Rakuten to launch and strengthen its targeted marketing solutions.

Flow chart

A A.11. The Rakuten ecosystem



The ecosystem's importance to users

How do the customers on each of the ecosystem's sides benefit from using it?

- **End users (buyers)**. Rakuten's end users benefit from the availability of a wide range of products and services, the greater competition made possible by Rakuten's platforms (which make it easier for more sellers to enter markets), user-friendly interfaces, the Rakuten Super Points Programme and the Safe Shopping guarantee (which guarantees a full refund if a product is not delivered). Users also benefit from being able to access all of Rakuten's services with a single account (that is, access to online booking services, Internet portal sites, e-book stores, video streaming services, and an IM app, among other services) and from the synergies that arise from cross-usage of services. For example, by making purchases on Rakuten Ichiba, users earn Super Points that can subsequently be used in Rakuten's securities, travel and bookstore businesses. Similarly, Viber users can avail themselves of the "Transfer by Viber" service from within the Rakuten Bank app, which enables easy money transfers to any contact on the relevant user's Viber contact list.

- **Merchants**. Merchants selling on Rakuten Ichiba benefit from access to its huge user base (see the next subsection below), the consulting services provided by Rakuten's E-commerce Consultants (supervisors that boost performance and efficiency in shop management), access to "Rakuten University" (an offline educational academy that provides shop management courses), and the possibility to qualify for Asuraku (Rakuten Ichiba's next-day delivery service). Merchants also benefit from the enhanced consumer spending enabled by the Super Points Programme and the Rakuten Card, given that transactions that accrue Super Points (when made on Rakuten Ichiba or paid for with a Rakuten Card) increase the purchasing power of end users. In addition, retailers that are not active on Rakuten Ichiba but that accept Rakuten Pay derive important benefits from this service. These merchants have welcomed Rakuten Pay as a solution to problems with commercial practices in the credit card industry, including long payment lead times and high costs.
- **Travel service providers**. Hotels, airlines, train operators and rental car companies benefit from the possibility to offer their services to Rakuten's large user base. They also benefit from increased sales arising from synergies within the Rakuten Group. For instance, consumers make more purchases with their accumulated Super Points. They also make more purchases with the Rakuten Card in order to earn more points.
- **Advertisers**. Advertisers benefit from the possibility to promote their products and services on various sites within the Rakuten ecosystem and thereby accessing its large user base, as well as on sites that are members of the Rakuten affiliate network. Advertisers also benefit from being able to target users with greater precision based on Rakuten's membership database. In particular, advertising on Viber has proved attractive for advertisers, given Viber's current base of over 1 billion users worldwide (Rakuten, 2017[285]: 6). On Viber, advertisers are able to choose among different advertising formats, including banners, display ads, shopping ads and Business Messages (messages sent by businesses to users after a brief authentication process by Viber) (Rakuten Viber, n.d.[286]).

Statistics on Rakuten's user base and transaction volumes over time

Table A A.21 shows that the core Rakuten user base (Rakuten members) remains of modest size in comparison to those of most of the other ecosystems and platforms profiled in this report. Growth has been uneven in spite of the company's innovations and service expansions, as well as its leading position in Japan. However, the acquisition of the Viber messaging platform in 2014 may provide a means for Rakuten to accelerate its growth.

A A.21. Registered end users and merchants, global gross transaction volume and domestic gross merchandise sales

Year	Rakuten members (with membership ID) (million)	Rakuten Ichiba merchants	Rakuten Group's global gross transaction value (JPY trillion)	Rakuten Group's domestic GMS (JPY trillion)	Viber's registered users (million)
2012	82	40 000	3.3	1.4	..
2013	90	42 000	5.2	1.7	..
2014	70	41 442	6.7	2.0	305
2015	79	44 200	9.0	2.7	711
2016	88	44 500	10.7	3.0	858
2017	95	45 000	12.9	3.4	1 000

Notes: .. = not available. Gross merchandise sales (GMS) refers to the gross amount of sales of products (merchandise) consummated on Rakuten's e-commerce sites, whereas gross transaction value is a broader metric that includes among other things merchandise sales, online travel services, Rakuten Marketing and credit card transactions.

Other important statistics

- Kobo, at the time of its acquisition by Rakuten in 2012, had a user base of 6.5 million. By 2014, this user base had grown to approximately 23 million people, and the service had been extended to over 190 countries.
- Also in 2014, the Kobo e-book service became Japan's No. 1 supplier in terms of e-book usage ratio.
- As of December 2014, Viki had a monthly global audience of approximately 40 million people, and total viewer hours reached 2.4 billion minutes.

- Rakuten's cross-use ratio (the ratio of Rakuten members who have used two or more Rakuten services during the past 12 months) was about 60% in 2015, 59% in 2014, 55% in 2013, 50% in 2012, 41% in 2009, 37% in 2008 and 33% in 2007.

Social and economic benefits to countries

Rakuten's most significant contribution has been to create an ecosystem that integrates many features, brings together different sets of users, and facilitates their interactions and transactions. Consequently, Rakuten has reduced transaction and search costs, leading to greater efficiency. In particular, Rakuten has created a vibrant marketplace where buyers and merchants from different geographic locations meet to engage in e-commerce. Given Rakuten Ichiba's size and the variety of products it offers, more sales are likely to be consummated on this platform than if each retailer could sell only in its own brick-and-mortar and/or online shop.

Higher transaction volumes increase the welfare of both buyers and merchants. Furthermore, Rakuten's logistics and payment processing options enhance Rakuten's shopping and selling experience, further promoting sales growth. Additionally, the Super Points programme and related Rakuten Card schemes fuel general consumer consumption and consequently contribute to economic growth, as users have an incentive to complete more purchases to derive greater benefits. Lastly, the integration of Rakuten's diverse products and services under one single ID account increases convenience and enhances user experience, thereby adding to consumer welfare.

Moreover, given its large user base and the assortment of products and services it offers, Rakuten is able to collect and process large troves of data, which it subsequently uses to optimise and expand its offerings, as well as to enhance user experience. For example, in 2017 Rakuten added data-driven AI features (chatbots) to many of its services, which improved accessibility and enabled real-time responses to customers' inquiries and needs.

Rakuten has also implemented initiatives to achieve sustainability in different areas. For example, Rakuten created an "Earth Mall" within Rakuten Ichiba for users interested in purchasing products that support more sustainable lifestyles. Similarly, through Rakuten Energy, Rakuten's customers (including hotels and merchants active on Rakuten Travel and Rakuten Ichiba) are able to access electricity from low-cost and renewable sources.

Basic financial information

Rakuten does not break down its financial information on a platform-by-platform basis. The information presented below is therefore company-wide.

A A.22. Rakuten's company-wide revenue, net profit and employees

Year	Annual revenue (JPY million)	Annual net profit (JPY million)	Annual net profit margin (%)	Employees
2005	130	19.5	14.9	3 709
2006	203	2.7	1.3	3 430
2007	214	36.9	17.2	3 751
2008	250	(55.0)	(22.0)	4 874
2009	298	53.6	17.9	5 810
2010	346	35.0	10.0	7 119
2011	380	(1.1)	(0.3)	7 615
2012	400	21.1	5.2	9 311
2013	519	43.5	8.3	10 867
2014	599	71.1	11.8	11 723
2015	714	44.3	6.2	12 981
2016	782	38.0	4.8	14 134
2017	944	110.5	11.6	14 845

Competitive environment

Geographic reach

Rakuten serves customers in 29 countries (Rakuten, n.d.[287]) (putting aside Kobo and Viber, which are available in over 190 countries). In addition to offering all of its products and services in Japan (see Subsection "Business models" above), Rakuten offers online shopping services in Brazil, France, Germany, Chinese Taipei and the United States; credit card services in Europe and the United States; video-on-demand services in Spain and the United Kingdom; and travel services in China, Hong Kong (China), Korea and Chinese Taipei (Rakuten, n.d.[288]).

What are the platform's main competitors?

In Japan, Rakuten's main competitors are: Amazon Japan in the online shopping segment (Sun, 2018[289]), Recruit and Rurubu Travel in online travel, SBI Securities and Matsui Securities in online brokerage, Japan Net Bank and Sony Bank in online banking, JR East and Pasmo in e-money, and Yahoo and A8.net in affiliate online advertising.

On a global level, Rakuten has expanded aggressively since 2008, acquiring e-commerce sites in Brazil, France, Germany, Indonesia, Thailand and the United States for example. Rakuten competes with Amazon and eBay in those countries, and with certain other e-commerce sites that are more locally popular, such as Lazada.co.th in Thailand.

Publicly announced geographic and product/service expansion plans

In April 2018, Rakuten received governmental approval in Japan to launch its own wireless network. According to company estimates, it will need to invest around JPY 200 billion (USD 1.9 billion) to get the mobile network up and running next year, and approximately JPY 600 billion (USD 5.6 billion) by 2025 (Stewart, 2018[290]).

Rakuten's three largest platform-related mergers and acquisitions

- In 2014, Rakuten acquired the US company Ebates (which provides an online cashback shopping service that also provides access to coupons, discounts, promotions and special deals at various retailers) for a total of USD 1 billion. Rakuten has said the acquisition would help it to create the world's most attractive and innovative, membership-based, loyalty-driven marketplace for consumers (Business Wire, 2014[291]).
- In 2014, Rakuten acquired the Israeli messaging app company Viber Media for a total of USD 900 million. Viber has become a significant source of data for the Rakuten ecosystem and, according to Rakuten's plans, Viber will eventually be used to sell e-books, content and games, and will become a marketplace for smaller sellers (O'Neill, 2017[292]).
- In 2005, Rakuten acquired the US company LinkShare, a performance-based online advertising business, for a total of USD 425 million (The Wall Street Journal, 2015[293]). This acquisition enabled Rakuten to enter the affiliate-marketing market.

Major litigation

Perfetti Van Melle SpA v Rakuten Inc. In 2009, Perfetti Van Melle SpA, the owner of the Chupa Chups lollipop brand, sued Rakuten after several unauthorised vendors sold counterfeit products through Rakuten Ichiba. The Tokyo District Court dismissed the claim, holding that the defendant was neither a party nor a joint party to the sale of the products in question. On appeal, the Intellectual Property High Court affirmed the District Court decision but added that while it may be difficult for an online mall operator to detect a trademark violation immediately, it must check whether one of its online mall merchants is displaying items that infringe trademarks within a reasonable time after it receives a complaint. The decision is important because it signalled a response to the issue of online counterfeiters. Not only did *Perfetti v Rakuten* impose an actual notice requirement from brand owners to online mall operators, but online marketplaces will not escape liability, either, if there are reasonable grounds to believe infringements have occurred and the platform operator takes no action to stop them (Tessensohn, 2013[294]).

Rakuten's chief policy concerns

- **Regulatory Issues**. Rakuten is subject to many laws and regulations on a local and international level. Rakuten fears that if its business activities become subject to new restrictions due to new or amended laws and regulations, or regulatory agencies cancel approvals or permits, there could be a negative impact on Rakuten's financial performance and position. In particular, Rakuten believes that new restrictions may be imposed upon it as a result of the enforcement of competition laws.
- **Data breaches**. Although Rakuten claims it takes all reasonable efforts to protect the privacy and personal information of its users, the possibility of information leaks or abuse or other incidents arising from illegal access to information cannot be entirely dismissed. If any of those incidents occur, legal disputes or actions by domestic and international regulators may ensue, which in turn may have a negative impact on Rakuten's financial performance and position.

Tencent

Corporate history/evolution

Although it was originally incorporated in the British Virgin Islands, Tencent is a thoroughly Chinese company. It began when its founder, Chinese citizen Ma Huateng (known as "Pony Ma"), received start-up capital from the billionaire Li Ka-shing (Press Reader, 2017[295]). Tencent's first product, QQ – a PC-based IM service that imitated the Israeli app ICQ – launched in China in 1999. Over time, Tencent added many functionalities to QQ, such as online games, customisation options, voice and video chat, social networking and e-commerce, leading to widespread adoption within China and multiple ways to monetise the service. QQ gained 1 million users in its first year and had 50 million at the end of its second. By its tenth year, 2008, QQ had 856 million total users, a world record 45.3 million simultaneous online users at one point, and more quarterly income than either of the other major Chinese Internet companies (Alibaba and Baidu) (Press Reader, 2017[295]). In November 2017, Tencent's market valuation reached USD 530 billion, temporarily propelling it past Facebook and into the fifth spot among the largest corporations in the world (Rutherford, 2017[296]).

Tencent was incorporated in 1999 under the name Keyword Technology Limited. It subsequently changed its name several times, finally settling on Tencent Holdings Limited in 2004. Today, Tencent is registered in the Cayman Islands and has subsidiaries in China, Hong Kong (China) and the United States. Tencent held an IPO in 2004 and is listed on the Main Board of the Hong Kong Stock Exchange Limited.

Tencent has demonstrated formidable innovative talent as well as the ability to anticipate market trends. QQ started on the PC desktop and made its way onto feature phones in 2003 and smartphones in 2008. When Tencent later realised how game-changing the smartphone really was, it decided to redesign QQ from the ground up rather than ask the QQ team to try to improve the existing legacy smartphone app (Chan, 2015[297]). Thus, an entirely new group of Tencent employees designed a mobile messaging service without the weight of PC-era code. That led to the creation of WeChat, which launched in 2011. In only seven years, WeChat not only became a "superplatform", but an essential element of the Chinese online lifestyle, enabling users to carry out almost any daily activity they might wish to accomplish with their mobile devices without ever leaving the WeChat app. As of the first quarter of 2017, WeChat had more than 938 million MAU accounts (Tencent, n.d.[298]).

Platforms

Business model

Like certain other companies profiled in this report, Tencent is best understood as a large ecosystem. It offers many products and services (Tencent, n.d.[298]) that are distributed and promoted through, and integrated into, its two main products or superplatforms, QQ and WeChat. In fact, as will be shown, Tencent is even more of a world unto itself than other ecosystems.

QQ is an IM platform for PC and mobile. It was originally a stand-alone, PC-based IM service, but over time, Tencent added several functionalities that led to QQ's remarkable success. The current version of QQ allows users to communicate through text, video, pictures and stickers. Users can also decorate their

personalised avatars, chat bubbles and profile photo widgets, send and receive e-mails and large files, share Snapchat-style disappearing videos and animations, find a partner via QQ's dating service, and join online groups of like-minded individuals. In particular, users can access the following main services:

- **QQ Wallet** is a mobile payment product that supports multiple payment methods, such as bankcard payment, near-field communication (NFC) payment and QR code payment (Box A A.2). QQ Wallet has developed into an open platform that includes payment services, gourmet food delivery and sports betting services, financial services (for example, financial advice), public services (e.g. information on and payment for public bicycles), and more. It also supports online shopping and bank transfers.
- **QQ.com** is China's leading online portal, similar to Microsoft's MSN, for example. It offers real-time news (through Tencent News), weather reports, film and book reviews, health and beauty tips, and a broad range of other information.
- **Tencent Games** is an online game developer and operator. Its biggest title is Arena of Valor, which is China's highest grossing iOS and Android game. It is so popular and profitable that it accounted for more than half of Tencent's smartphone revenue as of December 2017 (Press Reader, 2017[295]). **QQ Games** is a casual games client, offering mostly free multiplayer games and a "game hall experience" that combines social elements, such as profiles, chat and a friends list.
- **QQ Reading** (China Literature) is a content aggregation and distribution service. As of December 2017, its content library comprised a proprietary catalogue of literature from 200 genres totalling 10.1 million works, including 9.7 million original literary works created by 6.9 million writers on the QQ platform. In addition, the company licenses the content to third-party partners, such as Baidu, Sogou, JD.com, and Xiaomi Duokan for distribution, and offers online paid reading and content adaptations in various entertainment formats (Bloomberg, 2019[299]).
- **Tencent Comics** is China's largest original and IP-compliant online animation distributor. It has partnerships with global industry partners, such as Animation Comic Game China Group, Walt Disney, Shueisha, Bandai, Kadokawa and Kodansha.
- **QQ Music** is an online music streaming service in China. It is operated by Tencent Music, which also operates the Chinese music streaming services Kugou and Kuwo. These three music streaming businesses had 254 million, 227 million and 111 million mobile users respectively in the first quarter of 2018 (Lee, 2018[300]). In comparison, Spotify has 180 million MAUs (Wang, 2018[301]).
- **Qzone** is the largest social networking platform in China, with over 563 million MAUs as of December 2017. It allows users to upload photos, post videos and live stream, write blogs, keep diaries, play games, and decorate their own space. In 2011, it became an open platform, supporting third-party applications and games. Websites use QQ connection (similar to Facebook Connect) to offer a single sign-on service, meaning users can access the websites simply by logging into Qzone. The websites then gain basic QQ information about the users and can add QQ share buttons on their websites.
- **Tencent Video** is an online video streaming sites in China, offering a wide range of licensed and original content. **Tencent Pictures** and **Penguin Pictures**, both created in 2015, are film and TV drama businesses that operate their own film studios and produce original content, as well as movies and TV dramas by third-party companies and directors (Xiang, 2016[302]).
- **Tencent Maps** offers digital map content, navigation and location-based services in China.
- **QQ Mail** is Tencent's e-mail service that provides real-time pop-up notifications, a blog reader, the option to send attachments up to 1 gigabyte, audio and video messages, and other features.
- **Tencent Cloud** provides file sharing and storage services and an array of data analytics and other computing services.
- **QQ Browser** is Tencent's web browser. It is based on Tencent's proprietary X5 core speed technology. It is exceptionally fast and saves on data usage.
- **Tencent My App** (YingYongBao) is Tencent's App Store. It integrates hundreds of millions of user accounts from Weixin (WeChat), QQ, Qzone and QQ Browser. The number of apps available in My App is unknown.
- **Tencent Microblog** is a communications network that aims to provide real-time information of a diverse nature.
- **NOW Live** is a mobile live streaming application. NOW Live allows users to capture moments in their lives and broadcast them live on mobile devices through any of Tencent's social network services (QQ, Weixin and Qzone).

A A.2. What are near-field communication and quick response payments?

NFC is a technology that allows two devices to communicate wirelessly when they are close together. NFC is what enables contactless payments, for example. That type of payment requires that payment details (i.e. credit/debit card or bank accounts) be available in the purchaser's device. We do not have much information on exactly how QQ Wallet's NFC payments work, but we do know how other such services work, and that may provide some idea of how QQ Wallet likely works. For example, if you want to use Apple's Apple Pay service, you take a picture of your credit card and load it onto your iPhone. Apple then sends the details to your card's issuing bank or network. The bank or network then replaces your bank details with a series of randomly generated numbers. That random number is sent back to Apple, which then programs it into your phone. This means the account details on your phone cannot be cloned into anything valuable to fraudsters, for which reason NFC mobile payments are one of the most secure ways to pay.[1]

QR code payment is a method that works through certain banking apps to which a user's payment card is already associated, as well as other apps (e.g. merchant apps) to which payment card details can be connected. Again, we do not know exactly how QQ Wallet's QR payments work, but other examples may be instructive. For example, Walmart customers can use the Walmart Pay app, to which their payment card information is connected, and pay simply by scanning a QR code at checkout through the app. It is a secure method because the customer's phone confirms that he or she is the owner of the card and there is no need to type unencrypted card details on a device screen.[2]

1. For more information, see *https://squareup.com/gb/guides/nfc*.

2. For more information, see *https://www.mobiletransaction.org/different-types-of-mobile-payments/*.

An interesting aspect of the QQ ecosystem is its membership hierarchy system. QQ users can create a Non-VIP account for free, but that type of account has limited functionality. There is no capacity for offline downloads, for example. To gain more functionality, users must buy monthly subscriptions and earn credits to "upgrade". Tencent has built seven QQ levels that come with progressively more privileges in terms of the number of friends allowed, offline download capacity, emoticons, chat group size, number of ringtones, mail capacity, and so forth (CIW Team, 2013[303]).

For example, if a user is level VIP1, 600 credits are required to upgrade to VIP2. If the daily credit is 5, then the user needs 120 days to upgrade to VIP2, which entails four months of membership fees. The top level is extremely difficult to attain, which makes it highly prestigious (CIW Team, 2013[303]).

Ads appear in different parts of the QQ ecosystem, including in QQ Group Chat, Qzone, QQ Music and QQ News. There are different types of available ads, including banner ads, pop-up ads, full-screen ads, app walls and feeder apps (QQ Marketing, 2017[304]).

Weixin (WeChat) launched in 2011 as a mobile-only messaging app with basic features, such as text messaging, voice clips and photo attachments. However, just as it did with QQ, Tencent added myriad functionalities to WeChat over time, which turned it into a superplatform. The current version, in addition to providing basic communication features, may be loosely described as a high functioning social network platform that also allows users in China to access a wide variety of other services. For example, WeChat's Moments is a user newsfeed similar to Facebook's newsfeed, on which users can see relevant content, the activities and posts of other users, and advertising. But WeChat also allows users to call taxis, order food for delivery, buy movie tickets, play games, check in for flights, send money to friends, access fitness tracker data, book medical appointments, book tables and order meals in advance at restaurants, pay for and review the meals, access banking statements, pay utility bills, find geo-targeted coupons, identify songs they hear, search for books at the local library, meet strangers nearby, follow celebrity news, read magazine articles, donate to charities and a great deal more – all within the WeChat environment (Chan, 2015[297]). In other words, WeChat is more like a user interface than a single app. It is important to note that none of the activities and services listed above can be performed or accessed outside of WeChat.

In this "apps within an app" system, lightweight apps on WeChat are called "official accounts". There are millions of official accounts on the platform (see Section "Other important statistics"), belonging to celebrities, banks, media outlets, fashion brands, hospitals, drug stores, car manufacturers, Internet start-ups, personal blogs and more. After approval by WeChat through a brief application process, official

accounts may access exclusive APIs for sending and receiving payments, providing location information, transmitting text and voice messages, capturing user ID information, and other functionalities (Chan, 2015[297]). Many institutions that might otherwise have proprietary apps or mobile sites have opted instead for official accounts on WeChat (Grover, 2014[305]).

For end users, adding an official account is as simple as adding a friend. Furthermore, once they opt-in to official accounts, end users essentially become permanently logged in to them. That is especially handy for lower-frequency but important services like managing credit card statements or utility bills. Such services are perfectly suited to the lightweight app model because users are spared the trouble of downloading separate, native, full-featured apps (yet can still choose to do so if the preview of what the app does seems compelling enough) and keeping track of passwords for them (Chan, 2015[297]). Users can send any kind of message (text, image, voice, etc.) and the account holder will reply, either in an automated fashion or by routing the message to a person. The interface is exactly the same as for chatting with friends, save for one difference: it has menus at the bottom with shortcuts to the main features of the relevant account (Grover, 2014[305]).

A key element of this ecosystem is **WeChat Wallet**, which is a menu of carefully curated, pre-selected service providers with which users can transact after entering their payment details. The Wallet is a portal that is separate from the official accounts part of WeChat.

WeChat Wallet is closely linked to WeChat Pay, an online payment solution launched in 2013 that has grown exponentially in China. To set up WeChat Pay, users must link a debit or credit card to their respective accounts, whereupon they gain the instant and frictionless ability to transact with WeChat Wallet's services, all official accounts that sell products or services, and any associated promotions or campaigns. WeChat offers users the ability to engage in seamless interactions with third-party providers without needing to ever leave the WeChat app. For example, it is possible to book a medical appointment through WeChat Wallet, which appears fully integrated within the app even though it is powered by the third-party reservation service Jiuyi160.com (Chan, 2015[297]).

WeChat Pay is ubiquitous in China. It currently processes payments offline via QR codes at brick-and-mortar stores, live events, vending machines, restaurants, hotels, taxis, and many other businesses and locations. In addition, WeChat has developed tools that enable official accounts to open e-commerce stores that accept WeChat Pay, thereby giving essentially every business, including corner shops without advanced tech or e-commerce resources, the opportunity to be a mobile store (a store that can be accessed only with mobile devices, as WeChat is mobile-only) (Chan, 2015[297]). As of May 2018, 53% of WeChat Official Accounts accept WeChat Pay (Dogtiev, 2018[306]). In addition, as of May 2016, over 300 000 offline stores accepted WeChat Pay (Tencent, 2016[307]) and as of April 2017, 92%of WeChat users relied on WeChat Pay for making offline purchases (Yu, 2017[308]). In December 2017, WeChat had 988.6 million MAUs (Tencent, 2017[309]: 8).

Other recently added and important features of WeChat are:

- **Mini Programs** are apps that do not have to be downloaded or installed (and therefore do not take up mobile space) and can be accessed only through WeChat. In the first year after its launch in 2017, there are already 580 000 Mini Programs in the WeChat store (Duberstein, 2018[310]). With so many features possible, the new Mini Programs pose a challenge to Apple's App Store as well as to the array of Android app stores that are popular in China (Millward, 2018[311]).
- **WeChat Search** appeared in May 2017. It allows users to navigate through WeChat Official Accounts, articles, music, news from media outlets via their official accounts, and other available content (Millward, 2018[311]).
- **Premium "Brand Zone"** introduced new types of pages that allow big-name brands (especially luxury brands) to create their own WeChat pages and gain access to WeChat users who are not already followers. Brands can customise their virtual storefronts, give offers, run contests, sell directly through WeChat or link to their external websites (Millward, 2018[311]).
- **Mini Games** launched in December 2017 follows the same concept as Mini Programs. They are lightweight but fully functional games developed by Tencent and others, which are instantly playable (though only on WeChat) without downloading.

Although advertising has not traditionally been WeChat's focus, it is slowly becoming more common in the WeChat ecosystem. Ads take the following forms:

- **WeChat Moments Ads** are similar to Facebook ads that appear in a user's news feed. They are composed of a brand name, a profile picture, an ad description of up to 40 characters, a link to a web page hosted on Tencent's servers and up to six pictures or videos that are 6-15 seconds long. Ads are targeted based on users' location, interests, age, gender, device and phone network.
- **WeChat Banner Ads** are classic banner ads shown at the bottom of a message written by a WeChat Official Account. The banner contains a logo, account name and headline. If clicked on, it takes the user to a page containing additional information about the brand/product. These ads nudge users to follow WeChat Official Accounts, download apps, claim a coupon code, buy products or visit a web page. Users are targeted on the basis of gender, location, age and type of account.
- **WeChat Key Opinion Leader Ads** entail paying a popular WeChat blogger (with a flat fee, a result-based fee or free products) in exchange for a promotional post on the blogger's WeChat account. The ad may take the form of a full article talking about a brand or a banner ad at the end of a content piece (Chan, 2015[297]).

WeChat users can also access QQ services, but with more location-based features, given WeChat's inherent mobile nature.

Who are the customers on each of the platform's sides?

Tencent's ecosystem serves five main groups of customers:

- QQ and WeChat **end users** who use the different functionalities and services embedded in those apps
- **app and game developers** who distribute their products via QQ and WeChat
- **content providers** (such as book publishers, film aggregators and music label companies) who want to make their offerings available to QQ and WeChat users
- **merchants/service providers** (such as brands, retailers and online booking providers) who use QQ and WeChat as distribution channels and gain online presence, and/or who accept payments via WeChat Pay or QQ Wallet
- **advertisers** who promote their content, brands or services in Tencent's ecosystem.

How does the platform make money?

Reasons for success

The main factors in Tencent's success are business acumen, innovation, network effects, economies of scope and government protection against non-Chinese platforms. Tencent's first product, QQ, was a simple IM application and an obvious copy of the then highly popular Israeli application ICQ. Tencent's founder did not have a concrete vision of how to monetise QQ but understood that gaining scale was essential. In the early 2000s, Tencent experimented with different business models, including selling monthly subscriptions to mobile QQ users, selling virtual goods, such as customisable avatars, and "freemium" models, such as the QQ membership hierarchy system explained above (CIW Team, 2014[313]). These models had varying degrees of success and Tencent continued to pursue growth, offering a portal site, online games and blogs in 2004.

At that stage, direct network effects proved to be decisive. The more users joined the QQ platform, the more its value to users increased because they had more people with whom to interact. At the same time, the growing user base made adoption of Tencent's new ventures faster and easier, especially with regard to online games, given QQ's user demographics. Today, games remain highly profitable for Tencent. However, a highly controversial dispute with Qihoo 360 that ended in mediation by China's Ministry of Industry and Information Technology (MIIT) damaged Tencent's reputation and decreased its user base (see Section "Major litigation").

The company understood it needed to stop losing customers. Anticipating the shift to the mobile Internet, Tencent launched WeChat in 2011, following a superplatform model from which multiple types of users, including other Chinese businesses, would benefit. Under that model, Chinese developers could use Tencent's cloud as a server, distribute apps via Qzone and other properties, and take advantage of QQ and Qzone to do social marketing. They could also use Tencent's advertising services to promote the apps, Tencent's payment services to make and receive payments, and Tencent's data analytics services

to analyse user behaviour and enhance app performance. The model increased QQ's popularity and proved profitable for Tencent, app developers and service providers alike. In turn, the launch of WeChat benefited from the valuable distribution channel provided by QQ and its large user base, as well as from the increasing adoption of smartphone devices in China. Thus, QQ and WeChat benefited from symbiosis.

With the increasing adoption of WeChat, indirect network effects came into play: given the impressively large user base of WeChat, more merchants wanted to have a WeChat Official Account and more service providers wanted to appear in WeChat Wallet to reach those users. That, in turn, made WeChat even more attractive to end users. Of course, direct network effects came into play, as well, just as they did with QQ. In addition, WeChat pioneered the "app within an app" model, which has the potential to disrupt the app store model that is the norm in OECD countries. One of the factors that undoubtedly helped WeChat Pay to grow and succeed was that when it launched in 2013 as an extension of WeChat, which at the time was mainly a social networking and IM tool, WeChat already had 355 million MAUs.

The most remarkable thing about WeChat, however, is that it focused on and succeeded in addressing virtually every aspect of its users' mobile online lives. In doing so, Tencent effectively promoted a "mobile lifestyle" (Chan, 2015[297]) in which users do just about everything they need or want to do with their smartphones without ever leaving the WeChat environment. Tencent achieved that by moving beyond the framework of a traditional social network to a system that prioritises functionality and practical utility in daily life. That prioritisation has significant consequences for brands. Whereas brands must rely on comparatively static, one-size-fits-all promotions on traditional social networks, with users limited to liking, reacting to, commenting on or sharing posts, WeChat illustrates what is possible when brands and consumers have more options for interacting with each other.

For example, whereas Starbucks could post an offer for all users on its Facebook Page, on WeChat it would also be able to allow users to inquire after their gift card balance, place drink orders, find the nearest Starbucks store or receive a tailored promotion based on the weather in their city. Whereas a celebrity like Taylor Swift can share 140 characters about her upcoming concert on Twitter, on WeChat she could send a concert discount code to users who purchased her album or charge a small fee for daily, pre-recorded morning greetings. None of these functionalities are especially remarkable on their own, as they can already exist in a stand-alone Starbucks or Taylor Swift app. The innovative factor here is that brands are able to achieve all of these types of personalisation and interaction, and many more, from within WeChat. Furthermore, because WeChat Official Accounts are not subject to the content-focused boundaries of a social network, they can deliver experiences that are more personalised, interactive and convenient, and ultimately have a higher chance of converting into a transaction.

Last but not necessarily least, the growth of Tencent's business was likely made easier by the ban imposed by the Chinese government on foreign platforms, such as Facebook, Twitter and YouTube. It is far easier to build a market presence and capitalise on network effects when one does not have to compete with a formidable incumbent.

Sources of revenue

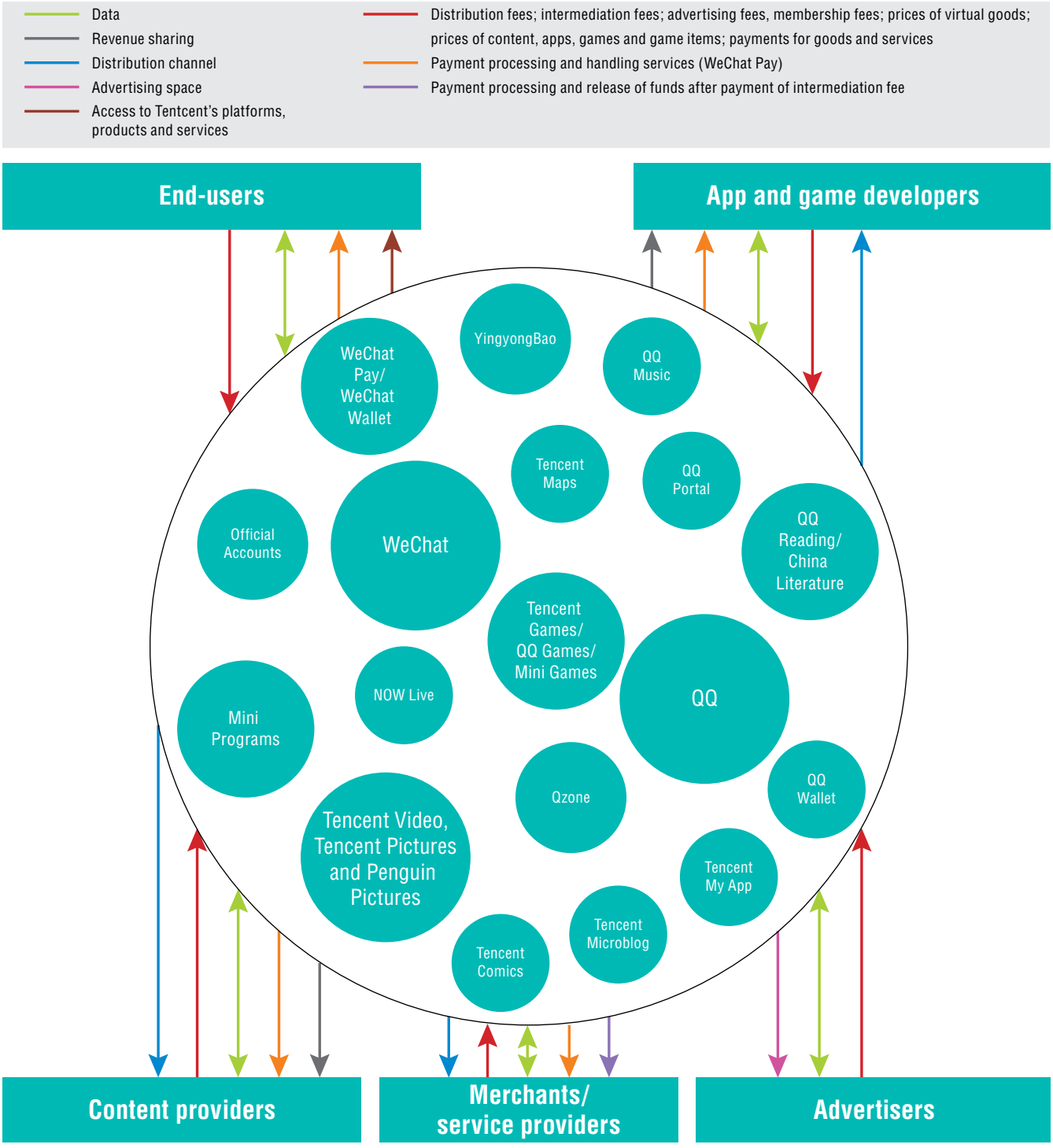
Tencent derives its revenues from three main segments:

- **VASs**, which include revenues from online games, such as Honour of Kings, and social network revenues including digital content services (such as live broadcast, subscription video streaming and subscription music streaming), memberships and virtual items sales
- **online advertising**
- **other services**, which include revenues from payment services (QQ Wallet and WeChat Pay), e-commerce transactions (Tencent charges a low percentage of the value of transactions completed on its platforms as an intermediation fee) and cloud services.

Also, Tencent derives revenues from sources that do not neatly fit within the segments above. For example, under co-operation agreements, third-party game and app developers pay Tencent a fee that is equivalent to a predefined percentage of the sums collected from users of Tencent's platforms for the apps, games and virtual products they buy. The amount of the fee depends on the terms of the agreements into which game and app developers enter with Tencent. The same applies to content providers. Licensing and distribution fees are agreed upon in private contracts between the content providers and Tencent.

Flow chart

A A.12. A simplified view of the Tencent ecosystem



Note: All of Tencent's products and services are integrated into QQ/WeChat, which share data between them. Furthermore, WeChat users can access QQ services, but the reverse is not necessarily true. (To access WeChat services, one must be on the WeChat app.)

Use of data

According to Tencent's privacy policy (Tencent, 2018[314]), Tencent collects, stores and uses personal information (such as information users make available when they open an account or use Tencent's services, including name, telephone number, e-mail address and credit card details; information that users make available to Tencent's services as they use them, including shared information that users make available to others through Tencent's services and information that users store using Tencent's services; shared information that others using Tencent's services make available about users, such as information contained in posts they make and communications they make to users and others using Tencent's services); location data (including the location and IP address of the device or Internet service used to access Tencent's services); and log data (such as browsing behaviour and metadata).

Tencent uses such information to provide its services; for customer service, security, fraud-detection, archival and backup purposes in connection with the provision of its services; to provide advertising; to better understand how users access and use its services and to improve those services; to develop new services; to assess the effectiveness of and improve advertising and other marketing and promotional activities; to verify software verification or administer software upgrades; and to allow users to participate in surveys and other activities about Tencent's products and services.

Tencent acknowledges that it may share users' personal information within its group of companies, joint venture partners and third-party service providers, contractors and agents (such as communication service providers who send e-mails or push notifications on users' behalf, mapping services providers who assist Tencent with location data, analytics partners, and advertising partners). In addition, Tencent may allow such third parties to collect users' personal information across its services. Such sharing and/or collection is expressly permitted for the purposes explained above, to provide Tencent's services, carry out its obligations and enforce its rights under its terms of service or Privacy Policy. In addition, Tencent notes that it may be required to retain, preserve or disclose personal information: 1) to comply with applicable laws or regulations; 2) to comply with a court order, subpoena or other legal process; 3) in response to a request by a government authority, law enforcement agency or similar body; or 4) where Tencent believes it is reasonably necessary to comply with applicable laws or regulations.

Tencent explains that some of its services have their own privacy policy, in which case its overarching privacy does not apply. One of those services is WeChat. WeChat's privacy policy (WeChat, n.d.[315]) is highly detailed, but in general terms, it allows for the collection and disclosure of personal information in terms similar to those described above.

Tencent's ecosystems are highly dependent on data. For example, through data mining, Tencent improves the performance of its online games and gains deeper insights into player behaviour (Tencent, 2016[316]). In addition, it invests in AI and applies AI technology to its products, such as performance advertising systems, content recommendations and financial services. In 2016, it established Tencent AI Lab with the aim of researching machine learning, computer vision, speech recognition and natural language processing. Tencent AI Lab focuses on content, social online games and cloud services for AI technology applications. Tencent notes that AI Lab's technology has been applied to many Tencent products, including WeChat, QQ and its news app (Tencent, n.d.[298]).

Missing from Tencent's description of how the data it collects is used is any acknowledgement that at least some of the user data is routinely handed over to the Chinese government for the purposes of monitoring citizens, tracking down criminals, and suppressing dissent. Yet it is widely believed that this occurs at Tencent, Baidu, and Alibaba, even though the companies sometimes dispute it (Lin and Chin, 2017[317]).

The ecosystem's importance to users

Registered/active users

Tencent does not disclose the size of the user base on each of its platforms. That is why Table A A.23 has no data for YingYongBao or WeChat Pay, for example. However, we can still make some interesting observations. For example, the Table shows WeChat is the only one of the four services on which we have user data that shows steady (and substantial) growth. QQ and Qzone, for instance, lost many members between 2016 and 2017. That may be due to the shift away from PCs and towards mobile devices, which favours WeChat but not QQ. As the Table also shows, WeChat's user base overtook QQ's for the first time in 2016.

A A.23. End-user bases for major Tencent services, by year

Year	QQ's MAUse (million)	WeChat's MAUs (million)	Qzone's MAUs (million)	Fee-based VAS registered subscriptions (million)
2012	798	161	603	105
2013	808	355	625	89
2014	815	500	654	84
2015	853	697	640	95
2016	869	889	638	110
2017	783	989	563	135

Note: MAUs = monthly average users.

How users on all sides of Tencent's platforms/ecosystem benefit

- **End users** of both QQ and WeChat benefit from many diverse services within one app. In particular, QQ users have access to social- and entertainment-oriented services with many functionalities, such as facial beautifying tools, painting-styled photos, and animated video stickers, as well as to literature, cartoons, games, videos and streaming services, all in one place. WeChat users benefit from greater convenience in their daily lives as they can access content, play games, communicate with contacts, consummate purchases and book diverse services, all within the app. Upon registration with WeChat Pay, their convenience is further enhanced, as it provides a seamless ability to complete transactions quickly with all WeChat Wallet services and all official accounts that offer products and services.
- **App and game developers** benefit from access to QQ's and WeChat's large user bases. In addition, developing official WeChat accounts has become so popular in China that new start-ups sometimes test their version 1.0 apps on WeChat's platform as an official account before dedicating resources to building and marketing a stand-alone native app. Another benefit for developers is getting core app functionality without having to support multiple mobile operating systems. Incidentally, Tencent does not force developers to adhere to the look and feel of the WeChat client. That is, they are not constrained to some subset of HTML5. Thus, when users interact with an official account, they can click to a full web application experience even though they never actually leave WeChat. This empowers developers to deliver distinctive, custom app-like experiences while WeChat enforces rules (such as messaging frequency and sensor permissions) that protect users (Chan, 2015[297]). As of September 2016, since opening QQ to third-party app developers in 2011, QQ had registered more than 6 million developers and paid out a total of RMB16 billion (about USD 240 million) in revenue to developers (Xiang, 2016[302]).
- **Content providers**, whether they offer TV drama series, movies, variety shows, animation, documentaries, music or books, benefit from access to Tencent's massive distribution channels.
- **Merchants/service providers** benefit from the ability to open free official accounts on WeChat, or to use the e-commerce functionalities of QQ, to access Tencent's end-user base. In addition, thanks to the tools Tencent provides that enable official accounts to accept WeChat payments, any business, regardless of its size or access to advanced e-commerce resources, is able to become an online store. Also, WeChat Mini Programs provide shops with new ways to sell products, such as group-buying deals offered through chat groups (Xiao, 2018[318]). Relatedly, WeChat Official Accounts and Mini Programs can serve as customer relationship management (CRM) systems for merchants. Moreover, because of the demand among traditional retailers to undergo digitalisation, Tencent's "smart retail strategy" launched in 2017 has empowered offline retailers with Tencent's technological capabilities including payment, cloud, data analytics and AI technologies.
- **Advertisers** benefit from the ability to promote their products and services to the large user base on various properties in Tencent's ecosystem. They also benefit from the ability to target users with great precision based on the data that Tencent has about its users, which improves advertisers' return on investment.

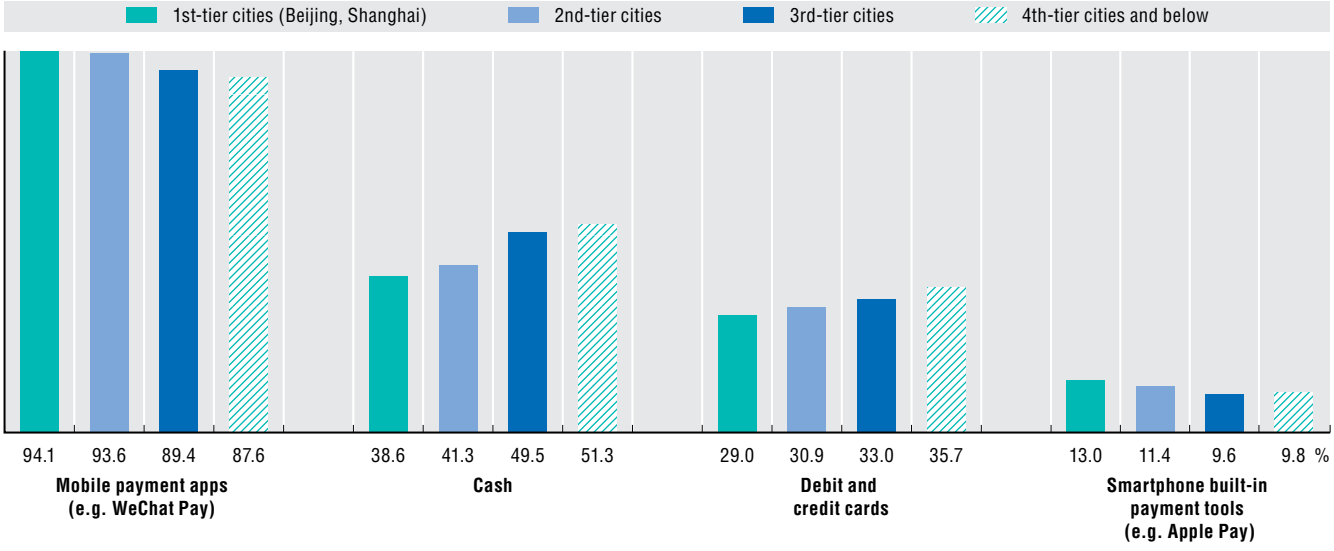
Other important statistics

- As of March 2018, there were over 800 million WeChat Pay users. This corresponds to an extremely high penetration of mobile payments in China and a concomitant shift in consumer habits (Figure A A.13). According to a 2017 study by Tencent's research division, 74% of WeChat users surveyed in China said (thanks to the availability of non-cash payment methods) they can live for more than a month with only RMB 100 (about USD 14.50) in cash, while 84% said they could accept a totally cashless life (Lee,

2018[319]). In addition, Tencent reported that nearly half (44.5%) of the mobile payments users surveyed said they do not carry cash at all anymore (Brennan, 2017[320]).

- The mobile payment app adoption rate is more than 90% among WeChat users in China's major urban areas. There is a comparatively low adoption rate of payment tools built into and compatible only with particular brands of smartphones. Hardware-neutral apps like WeChat and Alipay are faring far better with Chinese consumers.
- WeChat Pay is used for a wide variety of transactions. A 2017 report released by Tencent stated that 28.9% of WeChat Pay transactions took place in supermarkets and convenience stores, 26% were for online shopping purchases, 21.6% in restaurants and for other food purchases, 20% in physical shopping malls, 14.2% for utility fees (e.g. electricity), 13.2% for transportation and travel, 8% for entertainment and leisure, 4.3% in public departments, 4.2% in beauty and fitness salons, and 2.8% in hospitals (Brennan, 2017[320]).
- 83% of WeChat users surveyed in 2017 use WeChat for work (Brennan, 2017[320]).
- As of January 2018, there were over 580 000 Mini Programs on WeChat (CGTN, 2018[321]).
- As of the end of 2012 (more recent data is unavailable), more than 540 000 websites had used QQ connection, which resembles Facebook connection, to log on to Qzone, gain basic QQ user information and add QQ share buttons on their websites. Qzone had more than 350 000 registered apps and more than 80 000 registered developers, 90% of whom had earned revenue (China Internet Watch, 2013[322]).
- On average, Tencent Map's location-based navigation is used 350 million times a day (Tencent, n.d.[298]).
- As of July 2014, the total number of WeChat Official Accounts reached 5.8 million, growing at a daily average number of 15 000 accounts; the total number of apps connected to WeChat reached 67 000, growing at a daily average number of 400 apps; there were over 10 000 advertisers and 1 000 publishers on WeChat; and over 100 000 developers were active on WeChat (CIW Team, 2014[323]). By January 2015, there were over 8.5 million official accounts on WeChat, with 25 000 being added daily (Xiang, 2015[324]).
- QQ holds a Guinness record for having the greatest number of simultaneous online users on an IM platform on 3 July 2014 (210 million simultaneous users) (CIW Team, 2014[325]).

A A.13. The transition to a cashless economy: WeChat users' primary payment methods for offline purchases in China



Sources: Brennan (2017[320]), *2017 WeChat User Report is Out*, *https://chinachannel.co/1017-wechat-report-users/*; Tencent Penguin Intelligence Survey Platform (2017[352]), *WeChat User Behavior Report*.

Social and economic benefits at the national level

One of Tencent's main contributions at the national level has been to create an ecosystem that integrates many features and serves different sets of customers, thereby enabling more social interactions, facilitating access to content, information and entertainment, and assisting in the consummation of

transactions that would have not materialised were it not for its intermediary role. As a result, Tencent reduced transaction and search costs, making users' lives more convenient and increasing efficiency.

Moreover, given its large user base and the assortment of products and services it offers, Tencent is able to collect and process large troves of data, which it uses among other purposes to optimise its offering, enhance user experience and develop new products and services. That drives innovation and technological progress (most notably, venturing into AI and IoT devices). Opening its platforms to support third-party applications and games and providing tools, such as SDKs and APIs that facilitate the developers' endeavours, also drives innovation.

In addition, Tencent helps SMEs to gain an online presence and reach the right consumers at accessible prices. For example, creating an official account costs about USD 523 (RMB 3 500) (WeChat, 2017[326]). WeChat also allows official account developers to precisely target and segment users so they can deliver tailored messages to users at the right time and place. These CRM and marketing automation tools are free. While other platforms may also offer granular user targeting, those targeting capabilities apply only when purchasing ads. In WeChat's case, official account holders can freely use these tools in all their interactions with users as they like (Chan, 2015[297]). In this way, Tencent encourages entrepreneurship.

Furthermore, through the "smart living" style Tencent has promoted in QQ and WeChat, it has enabled digital connectivity between people and public services, which in effect facilitates developments in transport, healthcare, environmental protection, public safety and other social arenas. This is important for optimising the distribution of societal resources, driving innovation in public services, improving service quality, breaking down communication barriers and ultimately benefiting the wider community.

Additionally, Tencent has leveraged its technological capabilities and financial resources to get involved in charity. For example, Tencent donates a portion of its profits every year to the Tencent Charity Foundation, which supports charitable works. As of 31 December 2017, Tencent and its employees had donated over RMB 2.72 billion (approximately USD 393 million) and RMB 67 million (approximately USD 9.6 million) in total to the Tencent Charity Foundation, respectively, since its establishment. In June 2007, the Tencent Charity Foundation used Tencent's technical capabilities and online platforms to build China's first online public fundraising platform. The platform is open for eligible charitable organisations free of charge. As of 31 December 2017, the platform had hosted approximately 5 300 active charitable organisations and over 15 000 charity projects. The Foundation has also applied technology to various charitable initiatives, such as WeCountry for rural development and Tencent Three-dimensional Disaster Relief Programme in response to recent natural disasters in China.

Furthermore, by providing services, such as Tencent Maps and the QQ portal, which give users access to travel time estimates, directions, route planning, reviews and information about businesses and entertainment, Tencent improves living standards and well-being. Relatedly, by integrating many services into a single app (as is the case of the QQ and WeChat apps), Tencent increases convenience and enhances user experience, thereby promoting consumer welfare. In particular, Tencent has entered into co-operation agreements with certain Chinese cities to improve urban life for over 700 million citizens who live in metropolitan areas. For example, under a 2015 agreement with Shanghai, WeChat users can access real-time government data about traffic, weather and current pollution levels. The application also enables access to municipal services, traffic records, and medical services registrations. Shanghai gained access to an integrated cloud system where it can link and combine datasets to inform public decision-making. For instance, it can access real-time data about the movement of shared bicycles, cars and taxis. That data, combined with publicly collected data about public transport and traffic, enables active management and optimisation of traffic flows.

Lastly, by enabling easy access to information (through how-to videos on Tencent Video, WeChat, China Literature and other properties), Tencent encourages education, research and, more generally, access to knowledge and artistic content.

Basic financial information

Tencent does not disaggregate its financial information on a platform-by-platform basis. The information presented below is company-wide.

A A.24. Key financial data for Tencent

Year	Revenue (RMB million)	Net income (RMB million)	Net profit margin (%)	Employees
2004	1 144	441	38.5	1 108
2005	1 426	485	34.0	2 274
2006	2 800	1 064	37.9	3 017
2007	3 821	1 568	41.0	4 344
2008	7 155	2 816	39.3	6 194
2009	12 440	5 222	41.9	7 515
2010	19 646	8 115	41.3	10 692
2011	28 496	10 225	35.8	17 446
2012	43 840	12 785	29.1	24 160
2013	60 437	15 563	25.7	27 492
2014	78 932	23 888	30.2	27 690
2015	102 863	29 108	28.2	30 641
2016	151 938	41 447	27.2	38 775
2017	237 760	72 471	30.4	44 796

However, a certain amount of data is available for three clusters of business activity within Tencent: VASs, online advertising, and other services.

A A.25. Annual revenues by segment

	2014		2015		2016		2017	
	Amount (RMB million)	% of total revenues	Amount (RMB million)	% of total revenues	Amount (RMB million)	% of total revenues	Amount (RMB million)	% of total revenues
VASs	11 932	70	80 669	78	107 810	71	153 983	65
Online advertising	1 497	9	17 468	17	26 970	18	40 439	17
Other services	3 541	21	4 726	5	17 158	11	43 338	18

Note: VAS = value-added service.

Table A A.25 shows that, recently, "Other services" has been responsible for a growing proportion of Tencent's overall revenue. This is due to the revenue growth from Tencent's payment solutions and cloud services (Tencent, 2017[309]: 13).

Competitive environment

Geographic reach

WeChat has a worldwide presence in the sense that the app can be downloaded anywhere there is Internet connection. However, it is mostly used in China. As of Q1 2018, WeChat had over 1 billion active monthly users, but only about 100 million of them were located outside China (Dogtiev, 2018[306]). Accordingly, Tencent's expansion beyond China has been limited so far. In the past, Tencent attempted to expand internationally but experienced disappointing results. Its previous main effort was in 2013, when it hired football star Lionel Messi to appear in ads promoting WeChat. In no country or region among the 15 in which the Messi ads appeared – Argentina, Brazil, China, Hong Kong (China), India, Indonesia, Italy, Malaysia, Mexico, Nigeria, the Philippines, Singapore, South Africa, Spain, Thailand and Turkey – did WeChat manage to surpass WhatsApp or Facebook (Millward, 2016[327]).

However, WeChat Pay may be a game-changer for Tencent. As of 2016, WeChat Pay was available in 15 countries outside China, including Japan and Singapore (Chandler, 2017[328]). That number had grown to 25 as of 2018 (Lee[319]). Tencent's plans for expanding WeChat Pay are discussed below.

In 2009, QQ began to expand its services internationally with its QQ International client for Windows distributed through a dedicated English-language portal (QQ International, n.d.[329]). However, most of QQ's foreign users are Chinese citizens living abroad and its overall user base remains overwhelmingly located in China.

Main competitors

In e-commerce, Tencent competes with Alibaba. In particular, brands, stores and platforms have increasingly set up Mini Programs on WeChat, as they can benefit from WeChat's large user base and social sharing functions. Tencent-backed Pinduoduo, for instance, has embedded its entire e-commerce platform within WeChat. The start-up takes advantage of each user's social network by offering discounts for group purchases. A box of diapers might cost USD 6 if you buy it alone, but the price drops to about USD 4 if your friends buy, too (Xiao, 2018[318]). However, the scale of e-commerce on Tencent is nowhere near that which takes place on Alibaba. Nonetheless, Tencent's approach to retail is starkly different, as it is neither selling any products itself nor charging brands to set up a shop inside WeChat. Rather, Tencent profits by charging commission fees – underpinning every transaction on WeChat is WeChat Pay. While Alibaba started with e-commerce before launching a payments service, Tencent is working in the opposite direction (Xiao, 2018[318]).

Thus, Alibaba also competes with Tencent in the mobile payments market. In the past two years, WeChat's share of the mobile payments market in China has more than quadrupled to 37%, while that of Alibaba Group's Alipay has tumbled from 79 to 54%. Together, the two companies were involved in nine out of every ten Yuan renminbi that Chinese consumers spent using their phones in 2016. That was a lot of Yuan renminbi: In 2016, the value of China's third-party mobile payments surged to USD 5.5 trillion. To put that figure into perspective, it is 50 times the size of the US mobile payments market (which Forrester Research estimates at USD 112 billion) (Chandler, 2017[328]). The battle between WeChat Pay and Alipay is spilling beyond China's borders. For example, in May 2017 Tencent announced a partnership between WeChat and Silicon Valley start-up Citcon to roll out a cashless payment service for Chinese travellers in the United States (Chandler, 2017[328]).

In search advertising, Tencent has begun to compete with Baidu. Since May 2017, WeChat users have been able to tap on a search bar in the app and search mini-apps, official accounts, articles and Moments (a semi-private feed of updates shared between a user and his or her contacts). WeChat also rolled out a search feature called "WeChat Index", which is similar to Google Trends, allowing users to track the dynamic change of keywords in seven days, 30 days and 90 days (Millward, 2018[311]).

In social networking, QQ is the leader in China, followed by Momo and Tantan. In IM, WeChat and QQ control almost the entirety of the Chinese market, followed at a great distance by WhatsApp and Yixin. In turn, in online videos, Tencent Video is the Chinese market leader, followed by Aiqiyi, Youku, LeTV and Hunan TV (Shen, 2017[330]).

Publicly announced geographic and product/service expansion plans

In 2016, Tencent partnered with an Italian start-up called Digital Retex that helps brands integrate their services onto WeChat's platform, offering a new digital shopfront, so Western companies can avoid some of the bureaucracy of setting up their own retail operations in China. Typically, foreign companies require a Chinese business license to operate an e-commerce business, but Tencent has launched a programme to bypass the license if brands operate only on WeChat. This is useful for SMEs offering Western-made goods as they can have a direct gate to China without an intermediary distributor. It is also handy for Tencent, which collects a WeChat Pay transaction fee on every purchase made on WeChat. In 2015, Tencent welcomed 60 Italian companies to WeChat, with products ranging from furniture design to food and manufacturing. All of them avoided having to obtain a Chinese business license. In 2018, Tencent began to offer this service to all European companies (Market Me China, 2018[331]).

In addition to bringing foreign businesses into China, Tencent is also expanding its own operations beyond Chinese shores. It is doing this with the strength of the scale, efficiency, know-how and capital that it gained domestically, together with the growing power of Chinese outbound tourists. WeChat Pay is leading this geographic expansion. Its Director for Overseas Operations recently commented, "As mobile payment is increasingly welcomed by mainland Chinese outbound tourists, WeChat Pay plans to constantly invest in its cross-border business, with the aim of duplicating the domestic WeChat lifestyle overseas" (Lee, 2018[319]). As WeChat Pay expands, Chinese tourists will be able to pay in Yuan renminbi in more and more countries, while the overseas merchants from whom they buy receive payments in their local currencies. This has

already started to happen, as Tencent has begun to establish partnerships with foreign merchants and is currently able to process transactions in 13 different currencies and 25 countries and regions (Lee, 2018[319]).

But this may merely be the beginning, as merchants could also accept WeChat payments from non-Chinese customers, should the service become popular with them, too. In fact, once they fully understand the possibilities for customer engagement that WeChat offers, non-Chinese merchants may actively encourage their local customers to pay with WeChat Pay. Tencent believes that is exactly what will happen: foreign merchants will see that accepting WeChat payments is in their interest. The reason is not that the merchants lack adequate payment tools. It is that WeChat Pay offers merchants a way to build a lasting social interaction channel with their customers, which facilitates ongoing promotions and communications (Lee, 2018[319]; 2017[332]). On the customer side, if merchants outside China widely adopt mobile payments, non-Chinese consumers may find they enjoy the convenience of not having to carry cash – a benefit that hundreds of millions of Chinese consumers already appreciate.

Tencent's three largest platform-related mergers and acquisitions

- In July 2016, Tencent acquired an 84.3% stake in the Finnish mobile game company Supercell Oy, for USD 8.6 billion (Soo, 2017[333]).
- In July 2016, Tencent acquired a 60% stake in China Music Corporation, the operator of the Kugou and Kuwu music platforms, for approximately USD 2.7 billion, with the aim of strengthening QQ Music (Frater, 2016[334]).
- In December 2017, Tencent and JD.com agreed to buy a minority stake in Vishop Holdings, the largest online discount retailer in China by transaction value, for approximately USD 863 million, in a move to reinforce JD.com's competitive position versus Alibaba (Ap, 2017[335]).

Major litigation

Qihoo 360 v Tencent. Conflicts between Qihoo 360 and Tencent emerged in 2010 when Qihoo 360 introduced its 360 Bodyguard software, allowing users to control the number of ads that QQ's IM software could display. Tencent responded by making its QQ IM software incompatible with all Qihoo software, with users being forced to choose between having QQ IM or Qihoo's antivirus software on their computer (the "choose one from two" event). Within 48 hours, Qihoo 360 lost around 10% of its users. The subsequent public outcry resulted in the's MIIT intervening to broker an agreement. Qihoo 360 agreed to discontinue its 360 Bodyguard software and Tencent agreed to reinstate compatibility with Qihoo software. Qihoo 360 then filed a legal complaint against Tencent in 2011, alleging Tencent had a dominant position in the provision of IM services in mainland China and the "choose one from two" event was an abuse of that position designed to eliminate and hinder competition. The High Court ruled in favour of Tencent and on appeal, the Chinese Supreme Court upheld the decision (Evans and Zhang, 2014[336]).

Tencent's chief policy concerns

- **Regulatory risk**. Tencent perceives that regulatory authorities in different jurisdictions are passing more comprehensive and stringent regulations to regulate Internet businesses. Because Tencent strives to expand its businesses overseas, it must comply with the new laws and regulations that apply to its businesses in different jurisdictions, such as laws relating to data protection, intellectual property and finance. Tencent has set up several professional teams to monitor and identify changes in relevant laws and regulations, so that appropriate actions can be taken to ensure the company's compliance.
- **Reputational risk**. As one of China's largest technology companies with a diverse portfolio of businesses, products and investments, Tencent attracts scrutiny from the public and the media. Tencent believes that if it does not pay sufficient attention to public opinion, then public relations in times of crisis will not be addressed in a timely manner. Moreover, if it fails to disclose information to the public in an adequate manner, Tencent's reputation, brand and image could suffer, which might adversely affect its businesses. Tencent has therefore set up a public relations department and crisis management teams. The teams gather public opinions and analyse and identify relevant information so that Tencent can respond quickly and appropriately to public concerns.

Notes

Israel
The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

1. This profile has benefited from information kindly supplied by Airbnb in response to an OECD questionnaire (see Annex B).
2. "Social Impact" Experiences are an exception, as Airbnb charges no fees for those transactions and thus the non-profit hosts receive 100% of the transaction price.
3. Unless a specific citation is shown, all information in this profile comes from either the Annual Reports (Forms 20-F) required by the SEC that the Alibaba Group filed for the fiscal years ending on 31 March from 2015 to 2017, available at *https://www.alibabagroup.com/en/ir/secfilings*, or the information kindly supplied by Alibaba in response to an OECD questionnaire (see Annex B) (information that, in turn, derives from the Alibaba Group's annual and quarterly SEC filings).
4. "Alibaba finance is using Big Data based on clients' transaction activities. It analyses the clients' behaviours and characteristics, and offers responsive financial services. This operation model is overturning the traditional banks completely" (see Guo [2013[348]]).
5. At the time just prior to Alibaba's IPO, there was minimal offline retail presence in non-urban cities in China, at least by one measure: 0.6 square metres (m^2) per capita versus 2.6 m^2 in the United States (see *https://mvp.vc/researched-company/alibaba-pre-ipo-research-report/*).
6. When measured in Yuan renminbi; the growth when measured in US dollars would be even higher due to appreciation of the Yuan renminbi against the US dollar.
7. The statements in this subsection and in this report generally are not legal conclusions about competitors or market definition as those terms are used in competition law and policy.
8. This is because some merchants in China questioned whether the results from the Singles Day promotion were as high as reported by Alibaba (see Reuters [2016[349]]).
9. Unless a specific citation is shown, all information in this profile comes from the Annual Reports (Forms 10-K) required by the SEC that Amazon filed for the fiscal years ending on 31 December from 1997 to 2017, available at *https://www.sec.gov/cgi-bin/browse-edgar?CIK=AMZN&Find=Search&owner=exclude&action=getcompany*. This profile has benefited from information kindly supplied by Amazon in response to an OECD questionnaire (see Annex B).
10. To get a sense of automation in an Amazon distribution Centre, view https://www.youtube.com/watch?v=cLVCGEmkJs0.
11. Unless a specific citation is shown, all information in this profile comes from the Annual Reports (Forms 10-K), required by the SEC that Apple filed for the fiscal years ending on 31 December from 2001 to 2017, available at *https://www.sec.gov/cgi-bin/browse-edgar?action=getcompany&CIK=0000320193&type=&dateb=&owner=exclude&start=0&count=40*, or from information kindly supplied by Apple in response to an OECD questionnaire (see Annex B).
12. Apple does not have full control over the apps distributed on the App Store, although it does exert significant control through its review processes and the enforcement of its policies.
13. See Subsection "Sources of revenue".
14. This subsection draws on (Apple, n.d.[345]) and Apple's App Store & Privacy document, which is available on iOS devices by navigating to "Settings > iTunes & App Store > See how your data is managed".
15. Unfortunately, publicly available data for the years between 2008 and 2015 is very sparse.
16. The statements in this subsection and in this report generally are not legal or factual conclusions about competitors or market definition as those terms are used in competition law and policy.
17. Apple's response to an OECD questionnaire (see Annex B).
18. There are no publicly available figures for the Apple TV Store's revenues and their percentage of Apple's total yearly revenues. However, there is indirect data. In 2017, Apple made USD 12 863 million in net sales of "Other Products" – that is, Apple TV devices, Apple Watch, Beats products, iPod touch and other devices. This figure is fairly low when compared to the USD 141 319 million in net sales of iPhones and USD 19 222 million in net sales of iPads in 2017.

Based on the substantial difference between the sales of iPhones and iPads, which are integrated with the App Store, and the sales of "Other Products", among which only Apple TV is integrated with the Apple TV App Store, it can be safely presumed that a significantly higher number of Apple users have iPhones/iPads and therefore use the App Store, as compared to Apple TV users. It can also be assumed that the revenue stream stemming from both stores is probably proportional to the number of the respective users of iPhone/iPads and Apple TV devices.

19. Some important and highly successful lines of business of Apple have been excluded from this section ("Other platforms owned by Apple"), such as iTunes and Apple Music, since they do not fall within our definition of an online platform. There is only one set of iTunes users: iOS device users. Digital content providers are not Apple's downstream users; they are Apple's upstream *suppliers*. Apple licenses their products (and thus pays a fee, unless the content is free). Then, Apple – not the content providers – sets the price that iTunes users must pay to access that content. The same applies to Apple Music. Apple acts as a distributor, not a platform, because Apple licenses the music content and sets the pricing structure for its distribution to end-users (monthly subscriptions). The App Store is different. It *is* a platform, because the third-party app developers retain ownership of their product rather than selling or licensing it to Apple. Apple does not take ownership of or buy a license for the product (apps). Furthermore, the developers, not Apple, set the price to end-users.
20. Unless a specific citation is shown, all information in this profile comes from the Annual Reports (Forms 20-F) required by the SEC, Baidu filed for the fiscal years ending on 31 December from 2005 to 2017, available at EDGAR Search Results (n.d.[346]).
21. Baidu, Form 20-F filed with the SEC (15 March 2018) (US Securities and Exchange Commission, n.d.[150]).
22. The information presented here on Baidu's use of data draws on the Baidu USA Privacy Policy, (Baidu, 2016[338]). Baidu's privacy policies in China may be different.
23. This profile has benefited from information kindly supplied by BlaBlaCar in response to an OECD questionnaire (see Annex B).
24. Sources for the material in this subsection, unless otherwise noted, are BlaBlaCar (n.d.[151]) and Tufts Fletcher School of Business (n.d.[339]).
25. BlaBlaCar's questionnaire response describes BlablaLines as a continuation of a B2B project started over ten years ago, in which a ride-sharing service was organised for public authorities and companies.
26. Unless a specific citation is shown, all information in this profile comes from the Annual Reports (Forms 10-K) required by the SEC that Facebook filed for the fiscal years ending on 31 December from 2012 to 2017, available at (EDGAR, 2018[342]). The profile has benefited from information kindly supplied by Facebook in response to an OECD questionnaire (see Annex B).
27. This subsection draws heavily from Facebook's Data Policy (Facebook, 2018[175]).
28. Facebook's privacy policy outlines the circumstances in which data may be shared - for instance, in response to legal requests, or with research partners and academics on topics of general social welfare, technological advancement, public interest, health and well-being.
29. Alexa's ranking is calculated using a combination of average daily visitors to a site and page views on the same site over the past three months. The site with the highest combination of visitors and page views is ranked first.
30. While of great importance for Facebook's business model, WhatsApp does not currently meet the criteria to be considered an online platform, as it does not serve two or more groups of users (i.e. it is a one-sided service).
31. This profile has benefited from information kindly supplied by Freelancer in response to an OECD questionnaire (see Annex B).
32. This subsection draws on the Freelancer's Privacy Policy (Freelancer, 2018[337]).
33. Unless a specific citation is shown, all information in this profile comes from the Annual Reports (Forms 10-K) required by the SEC that Google filed for the fiscal years ending on 31 December from 2004 to 2015, available at (EDGAR, 2018[341]), and that Alphabet Inc. filed for the fiscal years ending on 31 December 2016 and 2017, available at (EDGAR, 2018[344]). The profile has benefited from information kindly supplied by Google in response to an OECD questionnaire (see Annex B).
34. A conversion rate is the percentage of visitors to a website that complete a desired goal (a conversion) out of the total number of visitors (WordStream, n.d.[340]).
35. Alexa's ranking is calculated using a combination of average daily visitors to a site and page views on the same site over the past three months. The site with the highest combination of visitors and page views is ranked first.
36. Services are "personalised" when they are provided based on a user's interests, preferences and traits. For example, search results are personalised when they are rendered in the user's preferred language, based on his/her city of residence and/or on his/her prior browsing behaviour and revealed preferences. When this degree of personalisation

is achieved under a Google account, these preferences, past behaviour and any other insights about the relevant user may be used, for example, to recommend videos on YouTube or to recommend content or apps on Google Play.

37. See 10-K form filed by Alphabet Inc. with the SEC for the fiscal year ending on 31 December 2017 (EDGAR, 2018[344]: 11).
38. Unless a specific citation is shown, all information in this profile comes from the Annual Reports (Forms 10-K) required by the SEC that MercadoLibre filed for the fiscal years ending on 31 December from 2007 to 2017, available at *https://www.sec.gov/cgi-bin/browse-edgar?company=mercadolibre&owner=exclude&action=getcompany*. The profile has benefited from information kindly supplied by MercadoLibre in response to an OECD questionnaire (see Annex B).
39. Payments are secure because they are processed and verified by MercadoPago. MercadoPago is compliant with secure socket layer and Payment Card Industry Data Security Standard, thereby ensuring that all transactional and credit card data is protected under the strictest security standards followed in the credit cards industry (see Increase [2014[281]]).
40. Information from interviews of MercadoLibre executives conducted by the OECD.
41. This subsection is based largely on MercadoLibre (n.d.[351]).
42. Unless a specific citation is shown, all information in this profile comes from Rakuten's annual reports for the fiscal years ending on 31 December from 2005 to 2017, available at *https://global.rakuten.com/corp/investors/documents/annual.html*.
43. In this case, only buyers are considered users, as merchants comprise a different group.
44. This subsection draws on Rakuken (n.d.[353]).
45. Unless a specific citation is shown, all information in this profile comes from Tencent's Annual Reports for the fiscal years ending on 31 December from 2004 to 2017, available at *https://www.tencent.com/en-us/achievement_timeline.html*.
46. Not all these services are platforms under the definition used in this report. However, they are included here because they are tied together in one large ecosystem that does meet the definition of an online platform.
47. There are three main types of accounts on WeChat: Subscription, Service and Corporate Accounts. They differ mainly in terms of available functionalities, such as access to APIs, e-commerce or geolocation services. For more information, see Rakuten (n.d.[353]).
48. Tencent licenses films and TV shows for a price negotiated between Tencent and the content owners; then Tencent offers the content to consumers through its distribution channels for a fee that Tencent chooses. Accordingly, when Tencent licenses content, the transactions involving content that end-users pay for do not take place on a platform under the definition used in this report.

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Annex B

QUESTIONNAIRE SENT TO PROFILED COMPANIES

OECD report on online platforms: A practical approach to their economic and social impacts

Questions for profiled companies

Your responses to these questions will help the OECD to collect accurate information for use in company profiles that will be part of an upcoming report about online platforms. We are not seeking any information that is not publicly available.

The questions account for the fact that some companies operate multiple platforms. We have begun to identify (separately) the individual platforms that we believe are most important or interesting for this report, but if respondents wish to include additional ones in their responses we invite them to do so. It may save us from having to ask about them later.

For reference, this is the definition of "online platform" that we plan to use: **a digital service that facilitates interactions between two or more distinct but interdependent sets of users who interact through the service via the Internet**.

1. **Corporate history/evolution** (this question is for the whole company, not platform by platform) – Please specify where and when the company was founded, the date that it went public (if applicable), provide a short overview of the company's evolution from its beginning to what it is today, identify the country where corporate headquarters are located, countries where subsidiaries (if any) are located and whether the subsidiaries have some degree of independence. This need not be more than a few paragraphs altogether.

2. **Platform 1**

   a. *Business model*
   - Who are the users on each of the platform's sides?
   - How does the platform make money? In other words, what are the sources of the platform's revenue and what does the platform do to earn it?
   - If practical, please provide a flow chart showing who the users on each side of the market are, how they interact through the platform, what they are exchanging, and what the platform is receiving and providing.
   - To what uses does the company put the data collected by the platform? Are third parties ever given access to the data? For what purpose(s)? Must they pay for it?

   b. *The platform's importance to users* (this should take into account advantages that stem from interoperating with any other platforms and/or ecosystems owned by the company)
   - How do the users on each of the platform's sides, including SMEs where applicable, benefit from using it?
   - How many registered/active users are there on each side of the platform (e.g. buyers/sellers, users/advertisers, requesters/providers), and how have those numbers changed over time (going back as far as data exists)?
   - Where applicable, how much business is transacted annually between the platform's sides (going back as far as data exists)? This could take place directly through the platform, such as on Amazon Marketplace, or indirectly, such as transactions that occur between users and advertisers following click-throughs of ads on social media (recognising that data on indirect business volumes may be estimates).
   - For "marketplace" or e-commerce platforms, how many listings – whether for products, apps, or jobs – are on your platform (currently and, if possible, annual averages from previous years)?
   - What is the user retention rate and how has it changed over time?
   - Are there other measures of how important the platform is to users, such as how many of them visit it every day, where it ranks among the world's most visited sites, etc.?

c. *Social and economic benefits to countries*

- What does the company consider to be the platform's main social and economic benefits to countries?
- Are there other significant benefits to economies or societies that are directly generated or made possible by the platform?

d. *Basic financial information* – [This section requests platform-specific information. We recognise that some companies may not break this information out by platform in documents that are available to the public. If that is the case, please make that clear and provide company-wide information.]

- Annual revenue over time (ideally, per platform)
- Annual profit over time (same)
- The number of employees who support each platform, over time

Platform 1	Annual revenue	Annual profile	Employees	(anything else?)
Year 1				
Year 2				
Year 3				
Etc., through latest year available				

e. *Competitive environment*

- What is the geographic reach of the platform's operations?
- Who are the platform's main competitors (past, present, and near future i.e. within one or two years) and how has competition in the platform's market evolved over time?
- Are there any publicly announced geographic and product/service expansion plans?
- What were the company's three largest (in terms of transaction price) platform-related mergers and acquisitions, including the transaction price and the year of consummation?

f. [If the company has more than one online platform, please return to the beginning of question 2. and start the next platform; when done with the last platform, please go to 3.]

3. **Company's policy concerns** (this question is for the whole company, not platform by platform) – In the company's view, what are the one or two most significant platform-related policy issues it faces with respect to governments? What worries the company most about what governments are doing, or not doing, and why?

Name and e-mail address of person whom OECD can contact:

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An Introduction to Online Platforms and their Role in the Digital Transformation

Online platforms support so many of our daily activities that we have become dependent on them in our personal and professional lives. We rely on them to buy and sell goods and services, to find information online and to keep in touch with each other. We use them for entertainment, news, transportation, accommodation, finding jobs and employees, finding apps and for many other purposes. Online platforms have also raised new and important policy questions, but the businesses themselves can be more complex than they appear so they are not always well understood. This report contains detailed profiles of twelve of the world's leading platform companies and derives insights from those profiles about what platforms actually do, how they do it, and why they succeed financially. For example, the report finds that although platforms tend to have a number of economic characteristics in common, they also vary so greatly that they cannot be compartmentalised into just a few categories, let alone a single sector. Moreover, they do not all succeed for the same reasons. In addition, although the major Chinese platforms still have a low profile within the OECD, they are in the process of expanding globally and deserve more attention.

This publication is a contribution to the OECD Going Digital project, which aims to provide policy makers with the tools they need to help their economies and societies prosper in an increasingly digital and data-driven world.

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