The Platform Organization

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Intro/Abstract

The industry platform is a distinct organizational form that has grown into importance over the past 20 years. We focus on the digital platform, which, along with its associated ecosystem, is uniquely positioned to create and capture value in the digital economy. We clarify the key mechanisms by which platform organizations create and capture value. One type of digital platform, which we call innovation platforms, enables third-party firms such as software developers to build hundreds or even millions of applications that enhance the functionality of foundational products like Microsoft Windows or Google’s Android. The other type, which we call transaction platforms, includes companies such as Uber, Airbnb, Facebook, Alibaba or Amazon’s marketplace. These organizations link buyers and sellers and thereby reduce search and transaction costs for millions and billions of consumers and providers. Both types of platforms involve unique organizational forms that extend beyond traditional firm boundaries and supply chains governed by contracts to broader, less formal, and usually global “ecosystems” of innovators and suppliers of various products and services in the digital economy. This chapter suggests a framework that describes the principal strategic choices managers and entrepreneurs need to make if they want to build a successful platform business. It also outlines the social and regulatory challenges associated with the rising dominance of the most powerful platform companies.

The Rise of a New Organizational Form: The Platform Organization

The industrial revolution brought us the rise of the modern corporation. As Alfred Chandler explained in Scale and Scope: The Dynamics of Industrial Capitalism (1990), the modern managerial firm was born and evolved in order to take advantage of productive techniques made available by the
industrial revolution. The modern industrial firm, with its multi-divisional managerial hierarchies, was uniquely able to create value and generate competitive advantage by harnessing the new technological infrastructures of the time (such as electricity and railroads) to carry out modern production processes. It obtained, controlled and coordinated resources (such as high volumes of material inputs) to process them through increasingly automated manufacturing systems.

If the industrial revolution enabled massive economies of scale and scope, the digital revolution has dramatically lowered the costs to rapidly scale on a global basis. But unlike the revolution described by Chandler, where firms had to internalize all of the investments to grow, the emergence of the personal computer and the Internet, as well as mobile devices and “cloud” server infrastructures, allowed for this new organizational form -- the digital platform -- to arise and grow, sometimes exponentially. Companies no longer need to build everything in-house or do all their own innovation or own themselves all the assets they provide to consumers: Third-party software developers add value by my creating new functionality through applications that are widely distributed via the Internet through app stores; digital technologies allow individuals to connect with other individuals, organizations, and businesses, with minimal frictions. And with many digital technologies, the cost to service an additional customer can be close to zero. These “zero-marginal cost” economics allowed Facebook to grow from a few million users to 2.4 billion active users in slightly over a decade – a very difficult task in a Chandler-like world, before the emergence of digital technologies and markets linked globally and instantly through the Internet.

One of the most profound differences in the digital world has been the opportunity for companies to achieve both new types of scale and scope economies but also positive feedback loops called “network effects” (Parker and Van Alstyne, 2005; Armstrong, 2006). Network effects are also sometimes characterized as demand-side economies of scale (Katz and Shapiro, 1986: 824; Parker and Van Alstyne, 2005: 149).
A network effect exists when the value or utility that a user experiences with a particular product or service grows as more users consume the product or contribute “complements” to the network, such as new applications or services. For example, as more Uber drivers become available, they create more potential value for each Uber user (e.g., lower wait times); and as more passengers join the platform, drivers see greater value in potentially higher income. These positive feedback loops can extend across entire business ecosystems.

Today, included among the most valuable firms in the world, and the first to surpass the trillion-dollar mark in market value, are platform companies led by Apple, Microsoft, Amazon, Alphabet/Google, Alibaba, and Tencent. Moreover, platforms made up between 60 and 70% of all “unicorns” – non-public firms with valuations exceeding $1 billion, including Ant Financial (owned by Alibaba), Didi Chuxing, Byte Dance (TikTok) and Airbnb. All of these organizations take advantage of modern digital infrastructures such as the Internet, the cloud, and global mobile connectivity. They also take advantage of the recent behavioral habits of billions of users who, by connecting daily to these platforms through their digital devices to consume digital services, also continuously (and often unwittingly) generate data. This data-as-output, which is a generated through the use of digital services, then becomes an input and a key resource that digital platforms leverage to enhance further the digital services they offer, or to develop new services.

Key Insights from the Platforms Literature

Insights about platforms have come originally from two streams of literature: economics and engineering design. In recent years, other researchers in strategy, management of innovation, and related fields have advanced our understanding of platform organizations and how they function.

In the industrial economics view, platforms, variously referred to as “two-sided markets,” “multi-sided markets,” or “multi-sided platforms” (MSPs), have been seen as special kinds of firms that facilitate exchange by allowing direct transactions between different types of consumers who
could not otherwise transact (Armstrong, 2006; Evans and Schmalensee, 2008; Evans, 2003; Rochet and Tirole, 2003, 2006; Rysman, 2009). Network effects (also called network externalities) between the “two sides” of the market are seen as central in this tradition – so much so that Rysman (2009:127) states that “in a technical sense, the literature on two-sided markets could be seen as a subset of the literature on network effects.”

Network effects also come in two forms. Direct or “same-side” network effects exist when users within the same group benefit from connecting directly to other users. For example, this happens with communication technologies such as the telephone: The more people who have telephones, the more people users can connect with, and then more people want telephones, and so on. It also happens with social networks: Users join because they want to connect to other users; they bring in their friends, and friends of friends, and friends of friends of friends, etc. The most obvious and powerful examples are Facebook, Twitter, Instagram, Snap or TikTok. Indirect or “cross-side” network effects occur when users of one side of a platform benefit from connecting to users of the platform on another side of the market. For example, eBay sellers attract eBay buyers, and more buyers attract more sellers (and vice versa). More Airbnb hosts attract more potential guests. Or lots of users attract app developers or advertisers.

Strong network effects, along with certain other conditions, also can lead to “winner-take-all-or-most” dynamics, where one firm takes a very large share of the market. For this dominance to occur, there should be relatively few opportunities for competitors to exploit differentiated or niche positions and thereby split up the market. We also should see relatively high costs for users to engage in “multi-homing,” which refers to the ability of users to use more than one platform at the same time for the same purpose. As in conventional markets, there should also be relatively high barriers to entry, otherwise competitors will enter and make it increasingly difficult for one firm to dominate the market (Eisenmann, Van Alstyne, and Parker, 2006; Parker, Van Alstyne, and Chaudary, 2016; Cusumano, Gawer, and Yoffie, 2019).
Platform competition in economics models is driven by the adoption of the platform by multiple consumer constituencies, fueled by network effects. As the value of the platform stems principally from the access of “one side” to the “other side” of the platform, the question of platform adoption becomes “how to bring multiple sides on board” (Evans, 2003; Rochet and Tirole, 2006). However, platforms must figure out where to begin and solve the “chicken-or-egg problem” (Caillaud and Jullien, 2003). The chicken-or-egg problem is simple to understand: One side of the market (e.g., Uber drivers) may see little or no value in a platform without significant presence on the other side (e.g., Uber passengers). So, when launching a platform, which side should come first: drivers or riders? Buyers or sellers? Should a platform try to bring both sides on board at the same time? Parker and Van Alstyne (2005), Rochet and Tirole (2003, 2006) and most scholars who have written on this topic suggest that subsidizing the “one side” of the platform that is most needed to attract the “other side” can solve this coordination problem. Research in this stream has mostly focused on questions of pricing to overcome chicken-or-egg dynamics and how to obtain a “winner-takes-all” outcome (Eisenmann, Parker, and Van Alstyne, 2006). This literature has been vibrant, and the 2014 Nobel prize in Economics attributed to Jean Tirole for his life-long contributions, which made special mention of his work on platforms, attests to the exposure and importance of this stream of research.

Another significant insight from the economic view of platforms is that, in order to understand how platforms create value, we need to change the fundamental unit of analysis of market interactions. This means moving away from the traditional 2-agent dyadic interaction necessary for a transaction to occur (see Figure 1) into a 3-agent triangular set of transactions (see Figure 2). In Figure 1, sellers sell directly to buyers, and buyers are attracted primarily by features of the goods being sold, such as quality and price. In Figure 2, sellers do not sell directly to buyers; rather both are different “sides” of the platform, which brings the two market actors together. In addition to quality and price, which are features of the products, more sellers tend to attract more buyers, and more buyers tend to attract more sellers. This back and forth is a positive feedback loop that we refer to as platform-mediated network effects.
The economic theoretical perspective posits that platforms fundamentally create value by acting as conduits between two (or more) categories of market participants who would not have been able to connect or transact without the platform. Platforms create value by coordinating these groups of market participants and facilitate this coordination through pricing. A platform such as Upwork, for example, connects freelance labour with companies that need skilled workers. Upwork charges only the freelancer (roughly 10%), while companies get the service of finding the workers for free. In this case, the value that users as well as the platform owner can capture increases with a growing user base in a virtuous cycle of indirect network effects. These network effects, viewed as an essential feature of platforms, reflect exogenous interdependence of demand between consumer groups, and shape platform competition.
An intriguing issue with the economic view of platforms as markets is that the firms who own these platforms are mostly companies, and they operate a kind of private market. The role of the platform-based marketplace is principally to facilitate transactions among actors or with assets that are external to the platform firm. In other words, these actors are customers and providers of goods and services, but not traditional suppliers, and the platform firm may actually own very few assets. For example, Uber provides rides but owns no vehicles; Airbnb provides rooms to rent but owns and operates no rooms. Amazon also provides millions of products to its customers through its marketplace, which links buyers and sellers. Amazon also buys and resells goods through its online store – which uses the same digital infrastructure as the marketplace for purchasing and billing. Both the marketplace and the store may also use the same physical infrastructure for delivery of the goods.

Another important issue with digital platforms is the role of data. With these new organizations, data has become a kind of raw material and the basis for a new infrastructure used to generate revenue. In the digital economy, with billions of users connected through mobile online devices, and engaging with other users almost continuously, many platforms have added advertisers as one of their market sides. Such companies, such as Google, Facebook, and Amazon, record and analyze enormous amounts of user-generated data, tracked via cookies and other means. This data allows advertisers to target specific types of users and behaviors. Of course, this treatment of personal data has led to a host of privacy-related concerns and reactions from government regulators, which we will discuss later in the chapter.

Meanwhile, an earlier stream of literature, from engineering design, originally developed completely separately from economics, provides distinct and useful insights on platform organizations. The engineering-design view interprets platforms as foundation technologies with modular architectures that facilitate innovation through open interfaces. This view says that the design and use of platforms help firms achieve economies of scope in production and design – allowing for economies of scope in innovation.
For example, some early research described platforms as specific architectures (Ulrich, 1995) that enabled firms to more easily develop product families (Sanderson and Uzumeri, 1995) and innovate more quickly and systematically by re-using common assets (Krishnan and Gupta, 2001). These studies explored the innovation implications associated with the concept of “design hierarchies” (Clark, 1985) on methods of product development and production. This is common in the automobile industry, for example, where companies generally develop platforms (such as for small front-wheel drive vehicles) that form the basis for multiple models – for example, a sedan, hatchback, SUV, sports car, and luxury versions. Similarly, modern digital innovation platforms ranging from Windows, Android, and iOS to Amazon Web Service provide development tools for programmer as well as reusable components, subsystems, and whole products, such as those found in programming libraries and app stores.

Insights from the literature on modularity are essential to understanding the relationship between platforms and innovation. Baldwin and Woodard (2009:24) characterize platforms as a special kind of modular architecture (Ulrich, 1995; Langlois and Robertson, 1992; Baldwin and Clark, 2000; Schilling, 2000), one that is structured around a core and a periphery. Platform interfaces in particular play a crucial role in platform design and innovation. In any modular architecture, interfaces between modules indicate “how the various modules interact between each other and within with the larger system” (Baldwin and Clark, 2000). Baldwin (2008) develops further the notion of the interface between modules as embodiments of the division of labour between different teams. The interface is therefore a divider (of labour between distinct teams), but also a connector, and a conduit of selected information facilitating interconnection.

Modular architectures facilitate innovation by allowing and enforcing a specialization and division of innovative labour. They enable not only autonomous innovation within modules, but also mix-and-match innovation through innovative recombination of modules (Simon, 1962; Parnas, 1972; Langlois, 2002; Garud and Kumaraswamy, 1995). This facilitation of innovation can happen within the
firm, but also at the industry or ecosystem level, depending on how open the interfaces between modules are. In particular, if new platforms were designed as complete integral systems, rather than as modular systems, then there would be no room for ecosystem participants to add value through their own, independent innovations.

Moving beyond the traditional view of platforms as product designs within-firms used to facilitate innovation on product families, technological platforms have been increasingly found to operate within larger networks of firms sometimes referred to as “innovation ecosystems” (Adner and Kapoor, 2010) or “ecologies of complex innovation” (Dougherty and Dunne, 2011). Such industry platforms are defined as ‘...a building block, providing an essential function to a technological system – which acts as a foundation upon which other firms, loosely organized in innovation ecosystems, can develop complementary products, technologies or services’ (Gawer 2009:54). The organization that develops this industry platform has been termed a “platform leader” (Gawer and Cusumano, 2002), and was often found to play a central role, similar to “keystone firms” (Iansiti and Levien, 2004), in orchestrating innovation at the level of the ecosystem, and not only within the firm and its supply chain (Nambisan and Sawhney, 2011).

One fundamental distinction between internal firm-level product platforms (contained within one firm) and industry platforms (where the platform-owning organization orchestrates an entire ecosystem of external actors) is the vastly expanded pool of innovation sources that the industry platform can access and utilize. Therefore, the concept of open interfaces is crucial to facilitate external complementary innovation (Gawer, 2014; West, 2003). In platform ecosystems, the sources of innovation are not restricted to within the focal firm or within the focal firm’s pool of suppliers as it is the case in traditional supply-chains. Instead, innovators could be anyone, and may be found anywhere. The platform leader may not even know ex-ante who or where innovators may be.

Steve Jobs, for example, initially wanted the iPhone to be a firm-level platform, where Apple would build or buy and bundle 100% of the applications. Had he stuck to his original strategy, the
iPhone would have never delivered anything close to the more than 2 million apps on the platform in 2020. In fact, a feature of industry platforms is that the platform leader, contrary to a supply-chain integrator, does not need to know ex-ante who a complementary innovator might be in order to be able to capture ex-post value from the complementary innovation.

As in the case of Google’s Android operating system or Apple’s iPhone, potential innovators of complementary products “self-identify” to the platform leader and can utilize the codified information on platform connectors and associated programming tools that are disclosed by platform leaders to build compatible complements. Industry platforms therefore reduce the platform leader’s search cost for complementary innovators and extend the pool of accessible innovative capabilities that will indirectly create value for the platform (Gawer and Cusumano, 2014). Network effects also play an extremely important role in stimulating ecosystem-level innovation. For example, the more innovations there are associated with a particular platform (such as more and higher quality apps for the Apple iPhone or Google Android phones compared to, say, Blackberry, Windows, or Amazon Fire phones), then the more users we are likely to see. More users attract more innovations, which attract more users, and so on.

The concept of “open” interfaces can be fuzzy (West, 2007). However, the commonly understood meaning of an open interface, used in this chapter, is that the interface contains information that is accessible to external agents and usable by them to build complementary innovations that are compatible with this interface. The concept of open interface refers, therefore, not only to the information contained in technical specifications, but also to the rules around the technology that specify who can access this information and how. In the context of platforms, opening a system to complementary development affects innovation by drawing on a wider set of external capabilities and heterogeneous knowledge (Chesbrough, 2003), as well as independent experimentation (Langlois and Robertson, 1992).
Of special relevance are the interfaces for digital platforms because digital technologies appear to be particularly conducive to the emergence of industry platforms and ecosystem innovation.

“One of the most important traits of innovation processes and outcomes with pervasive digital technology is the emergence of a platform as the central focus of innovation” (Yoo et al., 2012:1400).

Baldwin and von Hippel (2011) concur with this perspective. They emphasize the growing phenomenon of distributed and collaborative innovation, which they describe as a “paradigm shift.” Innovation is not restricted anymore to producers, but users are increasingly able and willing to engage in distributed and collaborative innovation. To these authors, this global transition is happening thanks to increasingly digitized and modularized design and production practices, coupled with the availability of very low-cost, Internet-based communication. As digital technologies become pervasive, not only in ICT industries but also in the many physical products that increasingly embed digital capabilities, distributed innovation is on the rise and organized increasingly around platforms (Yoo et al., 2012). In this context, software “Application Programming Interfaces”, known as APIs, constitute an important category of connecting software interfaces, generally invisible to end-users, yet essential to external software developers aiming to develop applications that can interact with platforms and use the platform’s software resources, be it data or other reusable program elements. APIs are also increasingly used by complementors to other types of platforms, such as when Airbnb partners offer services like professional photography or cleaning to room providers, and other partners offer transportation or guide services to room renters.

More recently, scholars have begun to bridge these two streams by working toward a “unified view” (Baldwin and Woodard, 2009) or an “integrative framework” (Gawer, 2014) on platforms. Gawer (2014) argues that platforms can be usefully conceptualized as evolving organizations or meta-organizations that: (1) federate and coordinate constitutive agents who can innovate and compete; (2) create value by generating and harnessing economies of
scope in supply or demand; and (3) entail a modular technological architecture composed of a core and a periphery.

**Fig. 3: The Organizational Continuum of Platforms** (Source: Gawer, A. (2014), Bridging Different Perspectives on Technological Platforms: Toward an Integrative Framework, *Research Policy*).

Empirical studies (Anderson et al., 2014; Boudreau, 2010, 2012; Ceccagnoli et al., 2012; Eisenmann et al., 2011; Van Alstyne et al., 2017) use operationalizations of platforms that are consistent with both the economics and the engineering-design view, and all use heavily illustrative examples and empirical settings in ICT. For example, Eisenmann et al. (2009), in their essay on “opening platforms,” while placing themselves in the two-sided markets literature, begin to tweak the platform-as-double-sided-market concept in a way that starts to bridge the supply and the demand perspectives on platforms. These authors call platforms “two-sided networks” and refer to “demand-side users” and “supply-side users.”
Innovation Platforms and Transaction Platforms

The existing streams of literature attempt to capture and model particular characteristics of platform organizations. However, in our recent book *The Business of Platforms* (Cusumano, Gawer, and Yoffie, 2019), we divided the actual digital platforms organizations that have emerged with the personal computer, Internet, and smartphones into two basic types, depending on their primary function (see Figure 4).

The first type we call *innovation platforms*. These platforms usually consist of common technological building blocks that the owner and ecosystem partners can share in order to create new complementary products and services, such as smartphone apps or digital content providers such as Apple iTunes. By complementary, we mean that these innovations add functionality or access to assets that make the platform increasingly useful. The network effects come from the increasing number or utility of the complements: The more there are, or the higher quality they are, then the more attractive the platform becomes to users and complementors, as well as other potential market actors such as advertisers (as well as investors). Microsoft Windows was the classic innovation platform: Microsoft sold Windows to PC OEMs and built APIs, which allowed software developers to create applications. Billions of PCs were sold, which attracting an army of independent developers, who delivered millions of applications that ran on Windows. Note that these outside developers were not, in general, suppliers to Microsoft, writing applications under contract. They were ecosystem participants. With the emergence of smartphones in 2007, Google Android and Apple iOS became new high-volume innovation platforms. In the last ten years, Amazon Web Services and Microsoft Azure have become the leading innovation platforms for the cloud ecosystem, which became a new development environment, complete with tools and app stores (Cusumano, 2019).

Innovation platforms are what was previously referred to as “industry platforms” in the literature (for example, in Gawer and Cusumano, 2002, and 2014). They are similar to what Evans, Hagiu, and Schmalensee (2006) called “software platforms.” The notion of a platform predates digital
technologies, and was prevalent in manufacturing, as we described earlier with the engineering-design literature. Firms designed their innovation process to develop families of products based on core technologies or subsystems, which they would re-use over time and over multiple products. This process created economies of scope as well as scale (Gawer, 2014).

Figure 4: Two Basic Platform Types (source: Cusumano, Gawer, and Yoffie (2019), The Business of Platforms).

The second type we call transaction platforms. These organizations are largely intermediaries or online marketplaces that, as described in other sources, make it possible for people and companies to share information or to buy, sell, or access a variety of goods and services (see also Stabell and Fjeldstad, 1998; and Supreme Court of the United States, 2018). The more participants, functions, and digital content available through a transaction platform, the more useful it becomes. Again, it is mostly the digital technology and scale that make these platforms unique and powerful in today’s world. Google Search, Amazon Marketplace, the Facebook Social Network, Twitter, and Tencent’s WeChat are examples of transaction platforms used by billions of people every day. Credit cards such as
MasterCard, Visa, and American Express, as well as the Yellow Pages combined with the telephone, are transaction platforms that originated before the digital era. Today’s sprawling transaction platforms are privatized global markets.

There are important strategic differences between the two platform types. Innovation platforms usually create value by facilitating the development of new complementary products and services, sometimes built by the platform owner but mostly by third-party firms – usually without supplier contracts. They often capture and deliver value (monetize the platform) by directly selling or renting a product. In a few cases where the platform is free (e.g., Google Android), they usually monetize the platform by selling advertising or other services. By contrast, transaction platforms usually create and deliver value by facilitating the buying and selling of goods and services or facilitating other interactions, such as enabling users to create and share content. They are what Evans and Schmalensee (2018) call “matchmakers.” They primarily capture value by collecting transaction fees, charging for advertising, or both.

Some firms begin with one type of platform and then add the second type, or mix and link the two. We refer to companies that support both types of platforms as hybrids. In the 1980s and 1990s, innovation and transaction platforms were distinct businesses. Stimulating outside firms to create complementary innovations in the form of their own products and services that make the platforms increasingly valuable appeared to be fundamentally different from connecting buyers and sellers, advertisers and consumers, or users of the different social networks. But, in the last decade, a growing number of successful innovation platforms have integrated transaction platforms into their business models, and transaction platforms have sought to open APIs and encourage third parties to create their own complementary products or services. Rather than lose control over distribution, innovation platforms want to manage the customer experience (as Apple has done with its App Store). And owners of transaction platforms recognize that not all innovation can or should be internal (as when Facebook opened its Facebook platform to external developers of games and other applications).
Other prominent examples include Google’s decision to buy and push Android, Amazon’s decision to create multiple innovation platforms around AWS and the Alexa “smart” speaker, and the decisions of Uber and Airbnb to allow developers to build services on top of their transaction platforms. We expect that digital competition will turn more and more platform firms into hybrids, although we need more research to explore how hybrids emerge and what specific organizational challenges they face.

**Strategic Choices for Companies that Want to Build a Platform Business**

Cusumano, Gawer, and Yoffie (2019) have proposed a simple framework of strategic choices that all firms must go through when they try to create and sustain a successful platform business. To select the right platform strategy and business model, managers and entrepreneurs should start with the value proposition they envision. If the value will come mainly from enabling third parties to build their own products or services that utilize and enhance the platform, then they should develop an innovation platform. If the value will come mainly from allowing different sides of a market to interact, rather than building or delivering a product or service directly, then they should develop a transaction platform. Successful companies also have a natural tendency to grow and expand, which often leads platform businesses to adopt a hybrid strategy. For example, firms that start with a successful innovation platform tend to add a transaction side or a separate transaction platform (usually a marketplace). Firms that start with a successful transaction platform tend to add an innovation side or a separate innovation platform. Hybrids also differ to the extent that they integrate the two different types of platforms or keep them largely separate, much like a “digital conglomerate.”

Once the value proposition is clear, then managers and entrepreneurs need to go through four decision-making steps. We now summarize those decisions, which build on research from other scholars such as Hagiu (2014).
The first step is to identify the various market sides managers or entrepreneurs want for their platform, and how to create value through them: the role different actors play (buyers, sellers, or complementors) and who specifically will take on these roles. It sounds obvious, but identifying sides can be complex: LinkedIn, for example, has users, application developers, advertisers, and recruiters. Over the years, they have debated about adding new sides, such as consultants and experts, and company intranets. The problem for all platforms is that more sides potentially generate new revenue opportunities, but also potential conflicts among the sides. Second is to launch the platform, which requires solving the chicken-or-egg problem of how to get started and then how to attract increasing numbers of users or complementors in order to generate strong and ongoing network effects. Some platforms, such as Apple’s iOS, start with the platform leaders building their own complements; others, like the Huffington Post, hired writers to attract readers, hoping that once readers started to come, freelance writers would start to contribute.

The third step is to design a business model that will monetize those network effects without depressing them. This monetization challenge involves identifying where the cash flow and profits will come from, and choosing which sides, if any, will benefit most from subsidies. Uber, for example, has yet to create a business model with positive cash flow: it built its business by subsidizing drivers, with
aggressive bonuses, and lowering prices significantly below the price of a taxi for consumer/passengers. As the company tries to appease its public market investors, it has been working to revise the business model by lowering subsidies to both sides. The verdict is still out on whether and how this might work. Fourth is to establish and enforce rules of conduct for ecosystem governance: In other words, managers and entrepreneurs need to decide what behaviours to encourage or discourage on the platform, and how to enforce the rules. Governance was largely ignored in platform organizations during the U.S. elections in 2016, when it became obvious that bad actors were taking advantage of open platforms. The challenges of platform governance such as at Facebook, Twitter, and YouTube have become one of the most difficult problems managers face for this new type of organization.

**Guidelines for Managers and Entrepreneurs: Managing Platform Power**

In a global economy where many resources can be digitized, and where such resources can be utilized even if geographically dispersed, platforms (be they focused on enabling innovations or transactions or both) are uniquely positioned to facilitate the exchange of these resources, as well as to combine these resources in innovative ways (Yoo, Henfridsson, & Lyytinen, 2010). A platform is by design a central agent at the nexus of a network of value creators. This centrally located platform or keystone firm can capture a significant proportion of the value being created in the distributed network, and resources can be monitored, controlled, and used without the platform owning them.

However, one ongoing challenge for transaction and innovation platforms as well as hybrid companies is the potential centralization of power for those platforms that become highly successful. The Internet once promised to deliver a fairer world, bringing down old power structures, where distributed computing and communication networks provided equal access for all to digital information and economic opportunities (Benkler, 2006). While this is partly true, the opposite trend has also emerged. Platform dynamics has led to more centralization of economic and social activity in a relatively small number of companies that seem to be getting increasingly large and powerful with
each passing day. In response, we see growing demands from both users and governments to regulate or break up some of the biggest platforms. This movement reminds us of calls at the turn of the 20th century for the dissolution of Standard Oil and other monopolies in the non-digital world.

In fact, the biggest platforms – Apple, Amazon, Alphabet-Google, Microsoft, and Facebook – have become so large that they appear to be more influential, and wealthier, than many governments. As a group, these top platform firms have garnered so much power that one New York Times columnist labelled them the “frightful five” (Manjoo, 2017). These tech giants may have become too big to control. Google and Facebook dominated two-thirds of digital advertising, with Google controlling about 90% of Internet search in most markets (except China) and about 80% of smartphone operating systems with the free Android OS. Apple has captured 90% of the world’s profits in smartphones and a large percentage of digital content sales with iTunes. Amazon presides over more than 40% of e-commerce in the United States and dominates e-books. Microsoft owned 90% of the world’s PC operating systems. Intel still provided some 80% of the microprocessors for personal computers and more than 90% of the microprocessors for Internet servers. Facebook accounted for perhaps two-thirds of social media activity. The most powerful platform companies have started to look a bit like the big banks in the 2008-2009 financial crisis: too big to fail? Consider as well how platforms recently enabled the dissemination of fake news, Russian manipulation of social media, and electoral tampering, and, clearly, we have reached an inflection point. We now must view the most powerful platform companies as doubled-edged swords, capable of both good and evil.

A significant platform concern is with who controls personal data and the disrespect of privacy that major social networks such as Facebook have exemplified. A series of scandals, including that of Facebook and Cambridge Analytica, demonstrate how easy it can be for malevolent actors to take control of user data and to influence individuals through the data they see on social networks, possibly influencing important elections and raising concerns for democracy. The centrality of data extraction in platform business models (Srnicek, 2017) and convergence of user monitoring and profit-making
also have raised the possibility that a kind of “surveillance capitalism” (Zuboff, 2016) is happening. For example, Uber collects data on all of its rides, as well as data on drivers, even when they are not receiving a fare. Facebook and Google are capturing data on users (and of their friends) even when they are not on the website.

Managers and entrepreneurs need to understand what is an abuse of market power and what is not, and what conditions may lead to potentially illegal market actions. Sometimes the conditions for winner-take-all-or-most outcomes are met (that is, strong network effects, minimal multi-homing, relatively little differentiation and niche competition, and relatively high entry barriers), and network effects drive industry concentration around a small number of dominant players. In these cases, platform companies have many opportunities to exercise market power, harm consumer welfare, hurt local or global competitors, and extract monopoly or quasi-monopoly rents. Antitrust cases are costly and lengthy affairs that usually take many years to resolve. Platform companies would do themselves and society a considerable favour if they learned how not to violate the law and user trust, or misuse their market positions to harm competitors or achieve excessive profits.

For example, Alphabet-Google has been a primary focus of anti-trust actions, particularly in the European Union. In fact, the EU had three cases against the company. The first considered Google’s behaviour with its search engine, launched in 2010. The EU accused Google of promoting its own “vertical search” results over general content search results. The second focused on how the company prevented websites that used its search bar and ads from showing competing ads. The third concentrated on Google’s management of Android. The Google Android example highlighted how a dominant innovation platform could be vulnerable to antitrust complaints even if it was free (unlike the Microsoft Windows operating system). Amazon and Facebook are also increasingly accused of abusing their market power.

We think that Google, Facebook, Amazon, and other powerful platform companies should study the Microsoft antitrust case from 20 years ago, which Microsoft lost. The case centered around
the browser wars and Microsoft’s largely unnecessary but effective attempts to thwart competition from Netscape (Cusumano and Yoffie, 1998). All platform companies today need to be more attuned to local or regional antitrust rules and use less aggressive contracts in their relationships with users, partners, and competitors. Competitors may also be partners (for example, Netscape Navigator was actually a Windows application that made Microsoft’s platform more valuable, although it was also a competitor in the sense that web-based applications accessed through browsers could also substitute for PC applications).

Google provides another illustrative case. In the early days, when Android was just getting started, it made sense for Google to push the limits of its market power. It was a new entrant into the smartphone platform business. Fragmentation, with multiple versions of Android, multiple browsers, and multiple app stores, unquestionably caused confusion among consumers and reduced incentives for application developers to absorb the expense of supporting incompatible Android versions. But, similar to the Microsoft example, once Android “won” the mobile OS wars, the vast majority of smartphone manufacturers were likely to bundle Google Chrome and Google Search anyway, regardless of the contract conditions, just as most PC users used Windows and were likely to use Microsoft’s Internet Explorer browser. (Remember, Apple does not license its platform technology to anyone, for any price.) Google might have lost some smartphone sales to another app store or browser, but they would have been unlikely to stem the tide behind Android, which was free and evolving quickly. Given its dominant position, and the consumer benefits of having access to the Google Play Store, Google Search, and Chrome, being a bully was unnecessary for Google by 2015, just as it was unnecessary for Microsoft to bully Netscape and pressure PC manufacturers and other companies not to load a competing browser (Cusumano, Gawer, and Yoffie, 2019).

Managers and entrepreneurs also need to be careful with how their new organizations impact labour and labour regulations. One of the most attractive features of platforms for financial investors is that they can be asset-light. Uber does not own taxis or employ drivers directly. Airbnb does not
own apartments or houses or employ the people that manage properties listed on its site. OpenTable does not own or manage restaurants. Microsoft, Google, Apple, and Facebook do not employ the millions of engineers that independently choose to write software applications for Windows, Android, iOS, and the Facebook APIs. Instead, industry platforms connect people or organizations with valuable assets and skills to other people and organizations who want access to those assets and skills. While asset-light platforms potentially provide highly leveraged returns to investors, they create another challenge for human capital: How should platform owners manage a workforce largely composed of “independent contractors?” Unlike employees, independent contractors are due no benefits, a guarantee of hours, or minimum wage, enabling the enterprises that employ them to keep labour costs low. There were 57 million freelancers in the U.S. in 2017; for one-third of these people, freelance activity was their main source of income (Pofeldt, 2017). Stephane Kasriel, former CEO of Upwork, claimed that this class of workers was growing three times faster than the traditional workforce. One estimate suggested that, if the current trend were to continue, freelancers could represent 50 per cent of all U.S. workers by 2027 (Pofeldt, 2017).

Platforms such as Uber, GrubHub, TaskRabbit, Upwork, Handy, and Deliveroo, classify much of their workforce as independent contractors. The companies justify this practice because the workers tend to perform their jobs as a side activity, with significant flexibility in their hours. In reality, this classification is mostly about saving costs: Industry executives have estimated that classifying workers as employees tends to cost 20 to 30 percent more than classifying them as contractors (Scheiber, 2018). The classification is therefore critical because many transaction platform start-ups rely on it to avoid high labour costs. Some analyst even argue that the whole “gig economy” would collapse if start-ups were obliged by law to classify all their associated workers as employees (Kessler, 2015). But this widespread practice is becoming increasingly controversial.

Not surprisingly, opposition is growing toward the classification of many platform workers as contractors. For example, California lawyer Shannon Liss-Riordan became notorious for leading
worker class-action suits against transaction platforms, having spearheaded lawsuits against Uber, Lyft, and nine other firms that provided on-demand services. In the United States, the situation is particularly complex because laws that determine independent contractor and employee status vary from state to state, and even city by city. Many regulations focus on how much control workers have over their work. Researchers are beginning to study the concept of “algorithmic labour” and the role that information asymmetries embedded in the algorithmic management of labourers’ tasks structure control and shape power relations (Rosenblat and Stark, 2016; Rosenblat 2018). In Europe, regulators are also starting to pay great attention to labour practices of platform firms.

Until recently, the dominant mood in the business press (and in many business books on platform companies) was unbridled enthusiasm for the efficiency of platforms and awe at the speed at which they introduced both innovation and disruption. Parker, Van Alstyne, and Choudary (2016); Evans and Schmalensee (2016); and Cusumano, Gawer, and Yoffie (2019), among other publications, all have shown that platforms can create enormous value for users and investors: They can reduce search and transaction costs, and fundamentally restructure entire industries within a few short years. We have seen this dynamic in computers, online marketplaces, taxis, hotels, financial services, and many other fields. Nonetheless, managers and entrepreneurs need to understand that the tide of public perception seems to have turned: Media coverage of platforms has become increasingly negative. Calls to break up Alphabet-Google have appeared in major newspapers. The movement to “Delete Facebook” from smartphone apps gained substantial traction among the public. Uber nearly collapsed from internal chaos, failure to properly vet drivers, misuse of digital technology (e.g., “Greyball” software that helped drivers evade law enforcement in markets where Uber was prohibited), and opposition from local governments and taxi industry representatives. While often claiming to be neutral spaces that simply facilitate users’ free interactions, in reality, platforms regulate their ecosystem through rules governing marketplace interaction, rules of access and enforcement of regulations which platform owners design. In their position as intermediaries,
platforms gain access to personal data and also establish the rules by which this data is extracted and used.

As platforms have gained so much power over their ecosystems, one concern among government regulations is that it has become too easy for platform owners to erect long-lived barriers to entry. How platforms treat members of their ecosystems is also increasingly scrutinized, and in some regions of the world, regulated. A number of government agencies and think tanks have been working on whether and how to regulate competition in digital markets (see, for example, Furman et al., 2019). Calls for updating antitrust have been stronger (see for example Lina Khan’s 2017 influential article Amazon’s Antitrust Paradox), and, on the left of the political spectrum, U.S. presidential candidates such as Elizabeth Warren are making of “breaking up big tech” a central part of their political platform. Meanwhile, in Europe, the European Commission issued in June 2019 new regulations for platform-to-business trading practices, aiming to create a fair, transparent and predictable business environment for smaller businesses and traders when using online platforms (European Commission, 2019).

Around the same time, the U.K. launched a market study on online platforms and digital advertising (U.K. Competition and Market Authority, 2019). In addition, the U.S. Federal Trade Commission held in late 2018 a series of hearings examining the role that data play in competition and innovation and also considered the antitrust analysis of mergers and firm conduct where data is a key asset or product. A 2019 report for the European Commission titled “Competition Policy for the Digital Era” (Crémer et al., 2019), which is likely to be influential in shaping the European legislative and enforcement agenda in the longer term, finds that digital markets require vigorous competition policy enforcement, arguing that large incumbent digital players are very difficult to dislodge and may have strong incentives to engage in anti-competitive behaviour, in particular because of the combined role of extreme returns to scale, network effects and data in the digital economy. It concludes that these factors require adjustments to the way in which competition law is applied. A key area of concern in
the report is the hotly-debated topic of “killer acquisitions,” whereby dominant firms acquire small start-ups with quickly growing user bases that might otherwise have developed into important rivals.

The acquisition of companies who could have been platform rivals (such as the acquisition of Instagram by Facebook) is therefore likely to become more scrutinized in the future. As far as labour protection is concerned, as platforms move from cleaners and taxi drivers to highly paid white-collar contractors, workers in the gig economy will become more highly educated, with greater bargaining power. In order to be sustainable enterprises, and to be accepted as beneficial contributors to society, platform companies need to adopt values that are congruent with those of the societies in which they function. With growing sensitivity to issues of fairness, powerful platforms who ignore it risk destroying their reputations. How platforms treat the people and organisations who contribute to their success will become an increasingly important part of building and maintaining their reputations. In short, with all the growing calls to reign in platform businesses, entrepreneurs, managers, and boards of directors at the leading platform companies must take more responsibility for their social, political, and economic impact.

**Looking to the Future**

Given the growth of platforms in the global economy and increasing concerns with their market influence, researchers also need to play a greater role. They need to expand their focus from describing the innovation process or growth mechanisms used by these organizations to how they may better function and contribute positively to society, lest digital platforms become overly regulated by concerned governments. Of course, we need to better understand the evolution of ecosystems: how they emerge, how they substitute for traditional supply chains, and how they can develop further to bring new capabilities to platform companies and users. But researchers, as well as managers and entrepreneurs, also need to pay more attention to how competition within and across platform ecosystems can dislodge existing platforms. For example, some types of innovation help sustain certain platform ecosystems, while other types of innovation threaten their stability. In
addition, as many platforms strive for global reach across various geographies, they encounter different institutional and market environments. In this context, the intersection of international strategy and platform ecosystems is becoming increasingly relevant and has begun to attract some new research but not enough (Nambisan, Zahra, and Luo, 2019).

Finally, managers and entrepreneurs at platform companies may need to place much more emphasis on non-market strategies to maintain their legitimacy. We see a lot of company activity around non-market strategies (such as in huge lobbying budgets) but very little academic research that provides concrete advice for how to integrate these new digital juggernauts into the regulation process in an effective way. Companies and academic researchers need to work together to better understand what constitutes good ecosystem performance as well as a competitor market, and to start articulating principles for sustainable platform and ecosystem governance. In what is becoming an increasingly politically charged debate, researchers have an important role to play to illuminate how platforms oversee their partnerships, what the consequences are for various types of governance structures, and to help identify what factors may drive (or undermine) a positive external perception of platforms as a new organizational form.

References


