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### Platform Roles in a Multi-Platform Strategy: Insights from Google

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# Modeling a Multi-Platform Strategy: A Case Study of Google

Completed Research Paper

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## Abstract

*Single digital platform ecosystems have long been the focus of information systems (IS) research. However, corresponding theories do not explain how organizations operating multiple digital platforms function. We propose a conceptual model of a multi-platform strategy, which goes beyond the boundaries of single platforms and platform envelopment. We validate our model in a deductive single case study of Google. The findings confirm the existence of a core business underpinned by an integrated system of multiple digital platforms. Within a multi-platform strategy, platforms take different strategic roles to drive the core business: (1) Core platforms tend to have monopolistic market positions, generate a large share of the revenue, and are crucial for new market entries. (2) Support platforms have the primary task of defending the market positions of core platforms. (3) Growth platforms leverage the established positions of core and support platforms and extend the company's operation into new markets.*

**Keywords:** Digital platforms, multi-platform strategy, strategic platform roles, case study

## Introduction

The most valuable companies in the world have digital platform-based business models (Cusumano et al. 2019). By facilitating the interactions between multiple groups of platform participants, digital platforms have changed the way we shop (e.g. Amazon), communicate (e.g. Instagram), travel (e.g. Airbnb) or consume media (e.g. YouTube).

Research has primarily studied how *single* digital platform ecosystems function (e.g. Kretschmer et al. 2021; Hein et al. 2020) and how they compete against each other (e.g. Cennamo 2019). However, empirical evidence and initial research indicate a rise of companies operating *multiple* digital platforms such as Google, Amazon, Facebook, Apple, and Microsoft (GAFAM) (Bourreau and Streeb 2019; Cusumano et al. 2019; Lim 2020; Petit 2016). As a result, single-platform theories do not explain how organizations operating multiple platforms function. They omit important synergies that emerge from operating multiple digital platforms. Several theories that demonstrate the connections between (mainly two) platforms already exist, most notably the theory of platform envelopment (Condorelli and Padilla 2020; Eisenmann et al. 2011) and the discussion of hybrid platform companies (Cusumano et al. 2019). These theories demonstrate the rationale of platform operators to expand their portfolio of digital platforms, but they are not suitable to understand the benefits that companies derive from operating a system of interrelated digital platforms. More specifically, the lack of such a theory hampers the analysis

of digital platforms as a constituent part of a system of interrelated platforms as well as the analysis of the evolution of large organizations operating multiple platforms.

To fill this void, we theorize and empirically investigate the concept of a *multi-platform strategy*. We use this term to describe the integration of multiple digital platforms by the same company in order to drive a core business. The underlying research question is: *What are the characteristics of a multi-platform strategy?* The understanding of multi-platform strategies is important to (i) complement the perspective of platform ecosystems with a perspective of interconnections between platforms, (ii) explain the structure and functioning of large organizations operating multiple platforms (iii) guide the assessment of how these platform synergies impact competition. We follow a two-step process. First, we conceptualize a model of a multi-platform strategy based on platform envelopment. Second, we empirically test our theoretical model in a deductive approach by employing a single case study of the company Google.

The remainder of this paper is organized as follows. We first outline the theoretical background on platform envelopment and then develop our model of a multi-platform strategy. Subsequently, we explain the case study methodology and the results of the case study to empirically test our model. Finally, we discuss our results and conclude this paper.

## **Theoretical Background**

This section provides a brief theoretical background on digital platforms and platform envelopment.

### ***Digital Platforms***

Across disciplines, the majority of contributions focuses on single digital platforms. While different definitions of the term digital platforms exist across disciplines, a consensus is that digital platforms provide the basis for complementary products and services that can be developed and offered on the platform by third parties (Parker et al. 2016; Tiwana 2014). These third parties, also referred to as complementors, form an ecosystem orchestrated by the platform owner. The ecosystem of independent actors, intermediated by the platform to facilitate value creation with the help of network effects, constitutes a characterizing feature of a digital platform's structure and is a key difference to regular supply chains (Adner 2017). A digital platform typically creates a two or multi-sided market that brings together complementors and users that consume the complementary products and services offered on the platform (Evans 2003; Hagiu and Wright 2015). For example, Google's Android, Spotify Music and Sony PlayStation all form the basis for complementary products and services such as mobile apps, songs and video games. A two-sided market on each digital platform connects app developers, artists and game developers with consumers.

Recent literature distinguishes between three different types of digital platforms, giving some further idea about their characteristics. Transaction platforms connect sellers and buyers by reducing transaction costs, such as Amazon Marketplace and Uber (Cennamo 2019; Hagiu and Wright 2015); innovation platforms provide the technological architecture for the development of complementary products and services to stimulate innovation, such as iOS and Android (Cennamo 2019; McIntyre and Srinivasan 2017); and information platforms enable information search and sharing, such as Facebook and Google Search (Cennamo 2019).

### ***Platform Envelopment***

Platform envelopment is a strategy for entering markets even in the presence of a dominant platform whose position is protected by strong network effects and high switching costs, as an alternative to Schumpeterian innovation (Eisenmann et al. 2011; Parker 2016): "Envelopment entails entry by one platform provider into another's market by bundling its own platform's functionality with that of the target's so as to leverage shared user relationships and common components" (Eisenmann et al. 2011, p.1271). The two platforms can be complements, weak substitutes or functionally unrelated (Eisenmann et al. 2011). Such an envelopment took place, for example, on the mobile operating system (OS) market. Apple utilized iOS for its entry into the music streaming market by bundling iOS with Apple Music

(Hermes et al. 2020). Although it offers no revolutionary functionality, Apple Music gained a significant market share, especially on iOS, and is the second-largest music streaming service in terms of paid subscriptions in 2019 (Levy 2020; Stassen 2020).

The benefits of platform envelopment are based on economies of scope and market share gains (Eisenmann et al. 2011). Economies of scope can be particularly high for digital platforms due to the reusability of software and data (Condorelli and Padilla 2020). Market share gains mainly result from a bundling discount or simply from a highly overlapping user base for which the bundle is more attractive (Eisenmann et al. 2011). Condorelli and Padilla (2020) explain another way of how companies harness platform envelopment, even without economies of scope or user overlap, namely through privacy policy tying. In this case, the privacy policy includes permissions to combine data from the target market with data from other platforms. This data is then monetized, for example, by increasing the quality of other products and services or optimizing pricing and matching algorithms. Depending on the value of the data, the platform may even be available free of charge to all platform sides.

The platform envelopment theory is excellent to understand how one platform represents an entry point into new markets, and how two generally distinct platform ecosystems can be connected. The numerous examples in the literature of market entries through platform envelopment by the same companies, for example Google, underline the importance of this strategy for companies operating multiple digital platforms (Condorelli and Padilla 2020). However, the focus in this theory is on the two platforms directly involved in the market entry. Considering a series of platform envelopments, the question about an overall strategy arises which drives these envelopments and explains the resulting system of interrelated digital platforms. To advance this holistic point of view, we conceptualize a multi-platform strategy in the following section.

## Conceptualizing Multi-Platform Strategy

In this section, we present the theoretical model of a multi-platform strategy supported by related literature. The descriptive model synthesizes the components of such a strategy and analyses their relationship. Specifically, it explains the core business, building blocks, development and strategic platform roles of a multi-platform strategy.

### *Core Business*

A multi-platform strategy aims to establish a system of digital platforms within one organization with the overarching goal to drive a common *core business*. This core business is not a narrowly defined market (Petit 2016), but a certain revenue source which can originate from different products and services, as in the case of GAFAM, for instance (Bourreau and Streef 2019). However, overall, GAFAM generate a large part of their revenues from the same type of business, their respective core businesses: advertising for Google and Facebook, premium technology products for Apple, e-commerce for Amazon, and business products and services for Microsoft (Mozilla 2019; Petit 2016). The core business is what connects all platforms within the same multi-platform strategy – but not necessarily all platforms of the company. Within this strategy, each platform takes on a specific role concerning the success of the core business, although each platform may have very different characteristics and operate in completely different product markets. Therefore, in a retrospective view, we can identify the core business of a multi-platform strategy as the main revenue source of all platforms within this strategy.

### *Building Blocks*

There are three general building blocks of a multi-platform strategy. First, *core platform sides* are the platform groups that are essential to facilitate the interactions of the core business. This translates into the question of which actors are indispensable to generate revenue in the core business in the long term. Hence, the core platform sides include not all platform sides of platforms related to the strategy, but they are of particular interest with regard to the success of the core business. Second, *interfaces* connect the core platform sides to multiple platforms. This should not be confused with boundary resources such as APIs of single platform ecosystems (Hein et al. 2020). Interfaces are rather the entry doors for core platform sides to participate in various platforms (Gawer 2020). Therefore, we can identify them

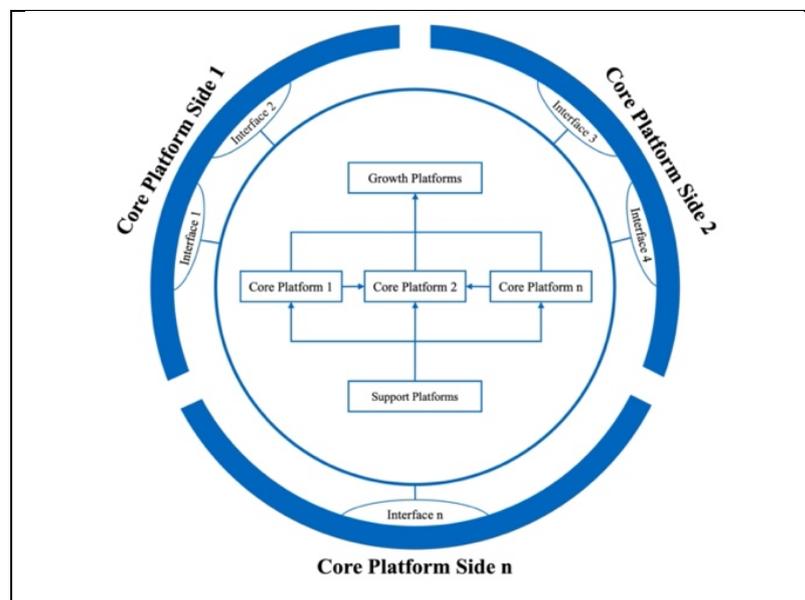
by asking how core platform sides get the possibility to interact on the different digital platforms. An example of an interface is an end-user account, which usually provides access to many platforms of the same company. Due to the relevance of each core platform side for the core business, it is important to make it as easy as possible to leverage the existing base of platform participants beyond the boundaries of a single platform. Third, there is the system of *multiple digital platforms*, each of which has specific roles and capabilities that complement each other as part of a particular multi-platform strategy.

### Strategy Development

The third aspect is about how a new platform is tied to one or more existing platforms as part of the envelopment and the development of a multi-platform strategy. In general, tying refers to the selling of one product under the condition that a buyer purchases a second, distinct product (Whinston 1989). Envelopment is crucial because it allows to establish connections between various ecosystems of different digital platforms. The result is not just a portfolio of related businesses, it is an intertwined set of ecosystems. Condorelli and Padilla (2020) distinguish between three main types of tying. First, *bundling* describes the selling of products or services jointly as a bundle rather than separately. Second, *virtual bundling* refers to the situation when two products or services are sold separately, but their complementary relationship achieves similar effects as explicit tying. This is because the seller can offer a complementary product or service at an attractive price or simply because consumers prefer to buy both items together. Third, *self-preferencing* can happen if the new platform in some form relies on or is associated with existing platforms. This allows promoting other platforms in competition with rivals.

### Strategic Roles

In a multi-platform strategy, there are three different strategic roles that a platform can have. The interplay of all platforms, each with its specific role, is what enables a company to sustain and extend its dominance in the core business of a multi-platform strategy. Figure 1 presents the three strategic roles and the other building blocks of a multi-platform strategy. The three roles are core platforms, support platforms and growth platforms.



**Figure 1. Multi-Platform Strategy Model**

First, *core platforms* are digital platforms that generate a large share of the strategy's revenue. They are the first major platforms from which the multi-platform strategy evolves. Their strong competitive position is accompanied by a lack of rival substitutes, resulting in a monopolistic market position (Petit 2016; Van Dijck 2020). The large base of platform participants of these platforms makes them critical for the launch of new platforms through platform envelopment. Second, *support platforms* are digital platforms that defend the position of core platforms. In view of potential industry shifts, support

platforms aim to establish a strong market position, which enables core platforms to function in changing industry environments. The shift towards desktop computers, smartphones, or voice assistants, are examples of such industry shifts. Because these shifts can be so fundamental, it is likely that companies with different core businesses and core platforms engage in an oligopolistic competition for these new markets (Petit 2016). They are the digital foundation on which core but also growth platforms in some degree depend on, thus strengthening the power of the core business (Van Dijck 2020). Through envelopment, they can also contribute to the development of new platforms. Third, *growth platforms* are digital platforms that exploit new market opportunities related to the core business. They extend and diversify the company's operation as well as user base by leveraging the core and support platforms. In contrast to support platforms, growth platforms create new revenue streams and can evolve over time into core platforms if they establish a strong market position and become more independent from other platforms. It is more likely to see an oligopolistic competition in these markets as well, as the new market opportunities can be leveraged in different ways for different core businesses (Petit 2016).

## Methodology

To empirically test our model of a multi-platform strategy, we conducted a case study based on Yin (2014). We designed a single case study of the company Google and chose a holistic design where the entire company is the unit of analysis and not each digital platform within the case. The focus is therefore on the overall structure of Google's system of interrelated digital platforms. It is important to underline that our approach is deductive in the way that we test our descriptive model by using it as the perspective to structure and analyze the empirical evidence. Though the aim is not to test or derive a process theory, the temporal aspect is important to trace events over time, evaluate their context and because platform architectures, and therefore their ties to other platforms, can change over time (Cennamo 2019). We chose to study Google since it fulfills many of the characteristics of a suitable case for a single case study (Eisenhardt 1989; Yin 2014). Its prominence is likely to ensure good access to data about the case throughout the company's history. The extraordinary economic influence of Google indicates that the case is of general public interest and international importance. Moreover, the case is critical to related theories as Google operates many digital platforms and is, for instance, a common example for platform envelopments (Eisenmann et al. 2011).

There are two general phases of the research process which both include iterative data collection and analysis steps. The first phase consists of the collection of factual evidence about events to understand the evolution of Google in the context of our theoretical model. Key data sources for this step are blogs and press releases published by Google. Although documents published by Google seek to transfer a certain company image, the aspect of public accountability makes them still a reliable source of factual evidence (Alaimo et al. 2019). First, we analyzed all available company press releases as well as general company announcements published on the Google blog. Second, we analyzed blogs that contain communications about specific platforms, including Google Search, Google Assistant, Android, Google Play, Google Maps, Google Chrome, and YouTube. The blogs cover the company history from 1999 until May 2020. We manually scanned all articles in each selected blog, which likely added up to several thousand articles (the exact number of articles is not available on the blog websites). Third, we scanned 6636 New York Times business articles containing the keyword "Google" for relevance to collect external information from the time of the respective events and validate the blog information. The New York Times is a suitable source because it is a respected newspaper with broad coverage over the entire relevant period and provides sufficient online search functionality. Overall, we focused on the connections between platforms based on our model and not on isolated topics of individual platforms. We stored each document that contained information about the platform launch, functionalities or ties related to other platforms, major changes of the platform architecture, acquisitions, and competitive contexts in our case study database with key evidence highlighted. During this data collection, we identified the following numbers of relevant documents: 113 general press releases and announcements, 144 platform-specific blog articles, and 54 New York Times Articles. Subsequently, we first organized the data in chronological order and tracked related platform activities over time.

During the second phase, we first validated and extended the information identified in the previous phase by supplementing the data on relevant events and platforms. The sources range from scientific publications to grey reports, market data, news articles, and documents from public authorities. Through targeted keyword searches in general and scientific search engines, we additionally collected 19 scientific articles and books as well as 59 other publicly available documents. The goal of this targeted search was to extend the information base about events where there was uncertainty about specific tying practices, effects of certain practices, or market environments. In addition to the original chain of events abstracted from the documents in the first step, the new information enabled us to validate our theoretical model of a multi-platform strategy. We conducted a deductive content coding approach for qualitative data analysis based on Miles and Huberman (1994), utilizing the key terms of our theoretical model as coding scheme: core business, core platform side, interface, tying, core platform, support platform, growth platform.

## **Results**

In this section, we present the results of our empirical case study based on the theoretical model of a multi-platform strategy. Analogue to the third chapter, we cover the core business, the building blocks, the different tying practices as part of the strategy development, and the strategic platform roles for the specific case of Google's multi-platform strategy. Finally, we also discuss some insights on a possible evolution of a multi-platform strategy.

### ***Core Business***

Google, since 2015 as part of its parent company Alphabet, is a multi-national technology firm offering a wide range of products and services ranging from online search to mobile OS, internet browser, electronic devices, video sharing, music streaming and cloud gaming, among many others. The majority of digital platforms that Google operates are part of the same multi-platform strategy. This strategy aims to drive Google's advertising business. Despite various types of platforms, Google's financial data reflects their common goal well. In 2019, the advertising business accounted for 83.9 percent of Google's total revenue (Alphabet 2020). This figure indicates the strategic importance of this business and in the following, we explain how various platforms contribute to it.

### ***Building Blocks***

The core platform sides for Google's multi-platform strategy are end-users, publishers and advertisers. This includes not all platform sides. Android, for example, also connects manufacturers. However, the core platform sides are essential to facilitate the delivery of targeted ads.

There are several services that Google utilizes to connect each of the three core platform sides to multiple platforms. First, the Google account makes it easy for end-users to access and use new Google platforms without a sign-up process. The account already stores relevant personal information and Google provides a seamless login experience across different platforms (Callahan 2013). YouTube provides a good example of how users rather sign up for Google than for one certain platform. From 2009, signing up for YouTube meant to sign up for a Google account (Phillips 2009). Eventually, users were required to have a Google account and connect it to an existing YouTube account (Hobbs 2010). Second, publishers (of websites, apps or other digital content) use services like AdSense, AdMob or AdManager to monetize their content. What these tools have in common is that they turn publishers into Google Network Members. This means that they increase the pool of digital content that Google can offer its advertiser network to show targeted ads to users whose interests Google derives from numerous sources. Third, Google Ads and Google Marketing Platform are the two main interfaces that give advertisers access to the Google Network. If advertisers want to reach their audience on Google Search, Google Maps or YouTube, they depend on these tools.

In Google's multi-platform strategy, there are several support platforms: Android, Chrome OS, Google Play, Chrome, and Google Assistant. From today's perspective, there are three core platforms, namely Google Search, YouTube and Google Maps. The group of growth platforms includes, for example, vertical search platforms such as Google Shopping and News or platforms bundled with YouTube such

as YouTube Music and Stadia (cloud gaming). Nevertheless, this list is not exhaustive and over the past 20 years there are several other growth platforms that Google launched through platform envelopment. The detailed explanation of all of them is, however, not the point of this section.

### **Strategy Development**

For this paper we discuss some examples of the numerous tying practices between Google's various platforms in terms of their implications for this multi-platform strategy.

A well-known case of **bundling** was when Google required smartphone manufacturers to pre-install a range of other Google apps if they wanted to pre-install the Google Play store, the largest Android app store. This was one of the practices that led to a fine of 4.34 billion EUR by the European Commission in 2018 (European Commission 2018). Although Android is open source, the proprietary software Google Play allowed Google to exercise control over mobile apps through this bundling practice.

Generally, it can take a long time until a competitor overtakes a platform market, even if its new platform offers superior quality (Cusumano et al. 2019). During the introduction of Google's vertical search platforms (news, shopping, etc.), Google leveraged the strong position of its general search engine to promote own search results. Over time almost all of these theoretically distinct platforms moved as links to the Google homepage, and their search results appeared on Google Search (Smith 2005). This led to a major change of the platform with the introduction of Universal Search in 2007. From there on, Google started to return a single set of relevant search results through its general search engine containing websites, images, videos, maps, or books, among others, without requiring the user to switch between platforms (Google 2007). This made it impossible for users to consume Google Search results without also receiving, for example, results from Google Shopping or Google News.

Due to the decision of the European Commission in the Android bundling case, Google changed the Android licensing model in the European Economic Area by creating separate licensing agreements for Google Play, Chrome and Google Search (Walker 2019) – a good example for **virtual bundling**. Google now charges a fee of 2.5 to 40 USD per phone depending on phone size and country if manufacturers in the European Economic Area want to pre-install a bundle of apps including Google Play alongside other apps like YouTube, Gmail or Google Maps. Manufacturers can optionally pre-install Google Search and Chrome to offset the fee by receiving a share of the generated advertising revenue (Kastrenakes and Brandom 2018). Although installing Google Search and Chrome is not required, the financial incentive is likely to achieve a similar tying effect.

On the user side, YouTube offers some examples of virtual bundling as well. Because music and gaming contents were popular on YouTube, Google introduced and integrated the music streaming platform YouTube Music in 2014 (Sisario 2014) and the game streaming platform YouTube Gaming in 2015 (Joyce 2015). Nobody is required to also use YouTube Gaming and YouTube Music. However, the fact that both platforms are integrated into the general YouTube website and address similar interests makes it beneficial for many users to use them both, which may explain the significant user adoption of both platforms. YouTube Music usage increased from 8 to 77 million active users between 2017 and 2019 (Levy 2020). YouTube Gaming has a market share of about 28 percent of the game streaming market and is thus the largest competitor to Amazon's Twitch, which lost market shares from 67 percent in 2018 to 61 percent in 2019 (Valentine 2020).

Google's vertical search platforms are a classic example of **self-preferencing**. The introduction of Universal Search in 2007 did not remain without effects for competitors. Consider, for example, the case of Google Maps. Despite being technically more advanced, it struggled to attract traffic from established competitors until Google began to prioritize it on Google Search (Edelman 2015). Users searching for addresses only received links to Google Maps instead of links to competitors like MapQuest. Based on data from ten million internet users, the percentage of Google searches that resulted in Google Maps visits tripled in 2007. Searches for MapQuest were still ten times as frequent as those for Google Maps, yet MapQuest received only half as much traffic (Mindlin 2008). In 2009, Google Maps overtook MapQuest as the most visited mapping website (Sterling 2009).

Furthermore, with the help of the Chrome browser, Google can self-preference its search engine. In general, every user is free to switch between different search engines and browsers offer the functionality to do so. However, the effect of defaults is well known. When Microsoft released a new Internet Explorer version with MSN as the default search engine, Google demanded to give users the choice about which search engine to use (Lohr 2006). In response, Google introduced the Chrome browser with Google Search as the default search engine and the aim to provide a platform for web pages and applications (Pichai 2008). The search engine in Chrome was even more present due to the combined search and address bar, named Omnibox (Google 2008).

### ***Strategic Roles***

It is evident that Google launches and ties platforms in various ways. In the resulting system of digital platforms, each platform fulfills a certain role that goes beyond the concept of platform envelopment, reflecting a crucial part of the multi-platform strategy.

### ***Core Platforms***

We consider three platforms as Google's core platforms, namely Google Search, Google Maps and YouTube. All three platforms have a strong market position, are important for the launch of new platforms through platform envelopment, and have large bases of users, advertisers and publishers. Google Search accounts for a share of 76 percent of desktop search traffic and 86 percent of mobile search traffic worldwide (99firms 2020). YouTube is the second most visited website in the world after google.com and has about 2 billion monthly active users who upload 500 hours of videos per minute (Omnicores 2020). According to a report from 2018, Google Maps had a 67 percent share of the market for navigation apps. Waze, which Google acquired in response to the development of Apple Maps, ranks second with a market share of 12 percent (Panko 2018). Currently, more than five million websites regularly use the technology and data of Google Maps (Reid 2020).

Google Search is the platform from which this multi-platform strategy originated. Its superior search technology and the successful strategy of connecting advertisers to the platform led to the establishment of this online advertising business at the beginning of the century (Cusumano et al. 2019). The strong position that YouTube and Google Maps have developed over time is partly owed to the success of Google Search. Google systematically places its search results in prominent positions as well as in eye-catching formats, as demonstrated by the example of Google Maps (Edelman 2015).

### ***Support Platforms***

The importance of the core platforms in this multi-platform strategy gets even clearer when we consider the second group of platforms: support platforms. The group consists of Android, Google Play, Chrome, Chrome OS and Google Assistant.

Google understood early on that mobile phones would change the way users browse the web and developed Google Search for mobile phones (Google 2000). After Apple contested the Nokia-dominated market in 2007, there were rumors about the development of a Gphone, Google's own smartphone (Pfanner 2007). Instead, Google worked on a mobile OS based on Android, a company acquired in 2005. The open source project aimed to secure Google's advertising dominance and to weaken the control of manufacturers and network operators over the software available on mobile phones (Helft 2007). In 2007, Google publicly announced Android as "the first truly open and comprehensive platform for mobile devices" (Horowitz 2007, n.p.). The fact that Google licensed Android free of charge to device manufacturers so that they could compete with Apple while Google retained control of the OS was critical to the success of Android (Cennamo 2019; Cusumano et al. 2019). Later, when Google required manufacturers to pre-install a range of other Google, the practice resulted in Google Search being pre-installed on almost every Android device, hence securing Google's (desktop) search dominance on mobile devices (European Commission 2018). The introductions of Android Auto, Android TV and Android Wear represent similar approaches to gain control over the OS in cars, televisions and wearables, leveraging the existing Android ecosystem (Pichai 2014a; Pichai 2014b).

The competition for commercial traffic with Amazon also extended to the mobile OS market. By following an opportunistic platform strategy, Amazon developed the Android-based platform Fire OS in 2011, which includes Amazon's browser Silk and Bing as the default search engine (Karhu et al. 2018; Karhu and Ritala 2020). In response to this and other so-called Android forks, Google made some fundamental changes to Android by introducing the Google Play store in 2012. Google moved several developer APIs from the open-source Android to Google Play (Cusumano et al. 2019). Google can modify the corresponding Google Play Services library more flexibly, and developers using the library become dependent on Google's proprietary software, which is only available on Google's Android versions (Karhu et al. 2018).

The announcement of Chrome OS in 2009 is another step to secure the position of Google's various platforms and make them more independent. The open-source OS targeted at netbooks is essentially the Chrome browser running on a Linux kernel. All applications are web-based and accessed in a browser-like format (Pichai 2009). In 2016, Google added the Google Play store to Chrome OS, enabling Android apps to run on Chrome OS, thus harnessing innovations from the established ecosystem (Wood 2016). Despite the market share remaining small, Google created a product that benefits from Android as well as Chrome innovations and has attracted, for example, many U.S. schools as customers, which bought more Chromebooks in 2016 than all other devices combined (Taylor and Reid 2016).

Similar to Android, Google introduced the Google Assistant software in 2016 to establish a platform for voice applications and making its search technology available via speech (Pichai 2016). The Google Assistant is, for example, available on Android televisions, wearables and smartphones (Hafsteinsson 2017). Furthermore, Google integrated the Google Assistant into Google Maps in 2019 (Chang 2019).

### *Growth Platforms*

The year 2002 marked the beginning of the intensified competition with other multi-purpose web portals, in particular Yahoo and MSN. From this year on, Google launched several additional search platforms that matched competitors' offerings. The company introduced Google News in 2002 (Bharat 2006). Although some assume that it was technically possible for publishers to exclude articles from Google News but remain visible in general search results, there was so much confusion about this possibility, even among experts, that Google News was de facto tied to Google Search (Condorelli and Padilla 2020; Edelman 2015). In the same year, Google launched the ad-based platform Froogle (renamed to Google Shopping). In 2004, Google introduced Google Print (renamed to Google Books) and Google Scholar to search books and scientific publications, respectively, and to direct buyers to publishers' websites (Smith 2005). Google Finance followed in 2006 with an integration of Google News (Loiwal 2006). The development of these search platforms reflects that Google recognized the competition with non-general search platforms early on and tried to prevent users from multihoming, i.e. bypassing Google for specialized searches (Manne and Wright 2010; Stigler Center 2019).

Similarly, Google leveraged YouTube to launch platforms like YouTube Music and YouTube Gaming. The focus on YouTube (Music), for instance, led to the decision to pre-install YouTube Music instead of Google Play Music on Android 10 onward (Bilinski 2019). In addition, Google introduced YouTube TV in 2017, a platform that provides access to popular U.S. cable and sports networks (Oestlien 2017). Shortly after, Google extended its advertising capabilities for TV screens by adding functions to Google Ads which allow tailoring advertisements to TV screens and specifically target light TV viewers. For selected cable networks, Google enabled advertisers to distribute a single campaign across YouTube and TV channels through YouTube TV, as well as to target different audiences instead of showing the same TV ad for everyone (Weinstein 2018).

Related to YouTube Gaming, Google has made another move into the gaming industry by introducing Stadia in 2019. Stadia is a cloud gaming platform that enables users to play video games on multiple devices using a game controller but without the need for a game console (Harrison 2019). It is another example of how Google leverages existing platforms and products. The platform is available on TV screens through Google's Chromecast streaming device, on selected smartphones including Google's Pixel series, and through Chrome. A key aspect in this context is that Google plans a tight integration of several features with YouTube. Users will be able to live-stream games on YouTube Gaming and

share links to specific game moments so that followers can try or join the game. In addition, it will be possible to directly lead users to games on Stadia via YouTube ads (Hollister 2019).

### ***Insights on Multi-Platform Strategy Evolution***

Beyond our initial model, the Google case provides some insights about a possible evolution of a multi-platform strategy. First, after establishing the core platform Google Search, Google extended its operation with new growth platforms, more precisely vertical search platforms, which includes the launch of Google News, Video, Maps, and YouTube, among others. This phase finally led to the introduction of Universal Search. Second, in the following phase from 2007, Google protected its core business primarily by introducing the support platforms Android, Google Play and Chrome. Hence, following the first wave of expansions, Google aimed to secure its market position. Third, once the support platforms secured the core business and YouTube as well as Google Maps dominated their markets, a new phase of expansion started from about 2014. Google leveraged the market position of the new core platforms to enter several markets. For YouTube, this includes YouTube Music, YouTube Gaming, YouTube TV, and Stadia. Regarding Google Maps, Google did not establish independent platforms but integrated several new services into the platform. For instance, ride-sharing options with selected partners such as Uber began to appear within directions on Google Maps in 2016 (Flier 2016). From 2018, Google integrated the booking of e-scooters (Dutta 2018) and started to display bike-sharing information (Hyatt 2019). In addition, Google introduced a new button to order food deliveries directly through Google Maps as well as Google Search and Google Assistant (Singh 2019).

### **Discussion**

The model of a multi-platform strategy as the main contribution of this study demonstrates the relevance of extending the research on single platform ecosystems and platform envelopments. Our findings do not contradict these theories, but they highlight another dimension that scholars need to consider in order to capture the nature of large platform businesses. By analyzing an organization operating multiple digital platforms, we show that different platforms are part of an overarching strategy. The core aspect of our model explains three different strategic roles that a platform can fulfill in a multi-platform strategy. These roles help to understand why certain platforms are launched and tied to existing platforms. Moreover, our case study gives first insights into the process of launching new platforms with respect to their strategic role and thus into the development of a multi-platform strategy. The study of this evolution provides a starting point to understand the dynamics of large platform businesses. These contributions are especially relevant with regard to the discussion of today's tech conglomerates (Bourreau and Streel 2019; Lim 2020). The consideration of multi-platform strategies could also prove to be relevant for the study of innovation dynamics and platform architectures which are currently primarily examined in the frame of individual digital platform ecosystems (Reuver et al. 2018).

Our findings yield relevant practical implications for competitors. Our study supports the development of a strategy to prepare for the market entry of Google (Hagiu and Yoffie 2009) or other large companies following a multi-platform strategy. A key question for managers is how their platforms or products are related to the multi-platform strategy of (potential) competitors. For example, by taking into account the core business, competitors can identify differentiation potentials in view of market entry threats. The development of privacy features is an example of functionalities that companies like Google and Facebook can match only in a limited way if they obstruct their advertising businesses. Moreover, when facing competition with the same company in multiple markets (Lim 2020), it is useful to analyze their multi-platform strategy, particularly the core platforms. The success of many platforms depends to a certain degree on core platforms, which these companies leverage to enter new platform markets. Hence, if a rival can challenge one of the core platforms, either directly or indirectly by focusing on support platforms, this can have significant effects. Similarly, our model can support managers by developing a new multi-platform strategy. It offers guidance through the definition and planning of the key aspects to consider, namely, core business, core platform sides, interfaces and platform roles.

A limitation of the case study is that we tested our model in a single case only. The consideration of other studies for a cross-case analysis is limited, as most research does not take a holistic perspective

on these systems of digital platforms. Furthermore, the case study focuses on the evolution of successful platforms to understand the establishment of a multi-platform strategy. The investigation of failed strategies and platforms would provide additional insights for research and practice.

There are several opportunities for future research that can extend and complement our findings. First, we suggest employing case studies of other companies to compare the results to this study. Possible cases include Amazon, Apple, Microsoft and Facebook, but also Chinese companies such as Tencent and Alibaba. In addition to providing further empirical evidence for our theoretical model, multiple cases would allow deriving best practices and pitfalls of multi-platform strategies. This might also yield insights about differences in platform strategies between eastern and western companies. Second, we have provided some initial insights into the evolution of a multi-platform strategy, which opens up some related possibilities to study the patterns of multi-platform strategies. This includes when specific platforms are launched, how they are tied to other platforms, and how they are developed (build vs. buy), in each case with respect to the strategic role of the platform. The differentiation between platforms that are either unrelated (conglomerate), substitutes or complements of enveloped platforms may enable systematic comparisons as well. Third, this case study focuses on digital platforms, but the different roles of complementary products and services within the multi-platform strategy is another interesting aspect. Fourth, this study covers the perspective of the company employing the multi-platform strategy, but the analysis of how other companies competed with multi-platform businesses and the outcome of particular defensive strategies would be equally relevant.

## Conclusion

In this paper, we propose a model of a multi-platform strategy. The model goes beyond the boundaries of single platform ecosystems (Kretschmer et al. 2021) and platform envelopment (Eisenmann et al. 2011) by considering the strategic roles that each platform fulfills. We validated all aspects of our model in a single case study of Google. The findings confirm the existence of a core business underpinned by multiple digital platforms. Core platform sides, which are essential to facilitate interactions in the core business, are connected through interfaces to multiple platforms in order to leverage a base of platform participants beyond a single platform ecosystem. While the different platforms are tied to each other in various ways, they also take on different strategic roles. Core platforms tend to have monopolistic market positions, generate a large revenue share in the core business, and are crucial for new market entries through platform envelopment. Support platforms have the primary task of defending the market positions of core platforms in view of industry shifts. Growth platforms leverage the established positions of core and support platforms and extend the company's operations into new markets.

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