

Envelopment lessons to manage digital platforms: The cases of Google and Yahoo*

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1 | INTRODUCTION

In today's digital economy large platform companies frequently attempt to enter each other's market in order to grow and protect their revenues. An example is Apple's decision to build proprietary maps and a voice based search engine soon after Google moved into mobile operating systems by purchasing Android (Visnjic & Cennamo, 2013). Apple, Google, Amazon, and Facebook used to operate in separate markets (hardware, search, online stores, and social media, respectively) and now these individual markets have ceased to exist and these companies compete in what has been labeled a supra-platform digital market (Visnjic & Cennamo, 2013). But how do these companies assume a position in this supra-platform market?

Guidance on how platform companies can assume and sustain intra-platform leadership starts with work by Gawer and Cusumano (2002, 2008, 2013) who identify "coring" and "tipping" as two principal strategies to become a platform leader in your initial platform market (IPM). Coring represents a set of tactics that help to establish a new platform where one has not existed before by offering a technology, product, or service that solves a technical problem affecting larger parts of a market or ecosystem and hence offers functionality for a large group of users, for example, Google's coring in Internet search. Tipping is a corresponding set of tactics that help platform players compete against other platforms in the same market. While tipping

Abstract

Envelopment is a form of business model innovation where companies add new functionality to their platforms to outcompete rivals. The two large internet corporations analyzed in this study, Google and Yahoo, employed diverging envelopment strategies. Google added related functionality to their initial platform and then expanded into functionally distinct platforms. Yahoo, on the other hand, expanded directly into functionally distinct platforms.

covers a range of activities, from a business model perspective, "tipping across markets" aims to strengthen a firm's competitive position by integrating technical features from another market into its platform. An example of tipping is Google's entry in the browser market introducing Chrome.

The work of Eisenmann, Parker, and Van Alstyne (2006, 2011) takes our understanding of platform market strategies even further by considering how platform players compete beyond platform market boundaries. They introduce the concept of envelopment which represents a strategy whereby one platform provider combines the functionality of its platform with the functionality of another platform (e.g. newly created platform), to form a multiplatform bundle (Eisenmann, Parker, & Van Alstyne, 2011). While the notion of envelopment clarifies how and why digital platform companies enter each other's markets, it remains unclear how this process unfolds, when platform players start with envelopment, which markets they choose to envelop in and at what pace.

In this article, we intend to shed light on these questions by examining the process of envelopment of Google and Yahoo using new product introductions as a proxy for their envelopment moves. More specifically, relying on the content analysis of press releases related to new product introductions over the period from 2006 to 2011, as well as work from Rindova, Yeow, Martins, and Faraj (2012) covering the firms' growth trajectories before 2006, we learn that the two companies had strikingly diverging approaches to envelopment. We find that Google's initially focused approach to envelopment resulted in

* JEL classification codes: L10.

a strong advantage in their IPM, search, which then enabled a more dispersed envelopment strategy and entry into other platform markets that led to exponential yet sustainable growth. Yahoo's initially dispersed envelopment approach, entering many different platform markets without first building strong presence in its IPM (search) through focused envelopment, led to unsustainable growth and forced the company to back down from dispersed envelopment and pursue focused envelopment.

Focused envelopment followed by dispersed envelopment and then another round of focused and dispersed envelopment led to sustainable growth for Google, yet dispersed then focused envelopment led to unsustainable growth and eventual decline for Yahoo. Therefore, we conclude our analysis by arguing that starting with a focused envelopment approach which is, envelopment within the same market, leads a company to develop advantages in its IPM, which enables dispersed envelopment, that is, the development of new markets, and ultimately allowing for a good positioning in supra-platform markets.

2 | THEORETICAL BACKGROUND

In the following sections, we first introduce specificities of platforms and platform markets and then conceptually situate strategic activities used by platform players (coring, tipping, and envelopment) and derive research questions that govern our work.

2.1 | Platforms and digital platform markets

Whereas traditional markets are characterized by linear exchange paths as vendors buy and transform inputs before selling them, platform markets are said to have a triangular structure as users interact simultaneously while associating with a certain platform (Eisenmann et al., 2011). Ergo, platform firms can be defined as intermediaries between users in a market characterized by "network effects" (Gawer & Cusumano, 2002; Parker & Van Alstyne, 2005; Rochet & Tirole, 2003, 2006). Software-based or digital platforms have been described as "the extensible codebase of a software based system that provides core functionality shared by the modules that interoperate with it and the interfaces through which they interoperate" (e.g., Google's Android operating system, Android apps, and the related app store) (Tiwana, Konsynski, & Bush, 2010). In summary, digital platforms allow interaction between end-users, or demand and supply sides, based on varying degrees of extensible software systems that share functionality with add-on software.

The best way to illustrate the role of platforms is by explaining what platforms represent and where they could be found in the digital ecosystem. Fransman (2010) developed a layer based taxonomy for digital markets enabling scholars to analyze industry dynamics by allowing for more accurate classification of companies' market

operations. Fransman's taxonomy originally encompasses four hierarchical layers: (1) Network Elements, (2) Converged Communication and Content Distribution Networks, (3) Platforms, Content and Applications, and (4) End Customers. Layers (1) and (2) refer to mainly physically necessary foundations for the digital ecosystem, like end user devices and data networks respectively. Layer (3) contains Platforms and then Content and Applications on top of them. Moreover, as operating systems may be involved in, or affected by envelopment, for example, Microsoft's envelopment attack against RealNetworks (Real) by bundling its Windows Media Player with its operating system Windows, we added a specific layer for operating systems. Table 1 summarizes our layer model as adapted from Fransman (2010).

Zahavi and Lavie (2009) have developed a typology of software products that is complementary to Fransman's (2010) layer typology and helps to distinguish between market segments in a single layer. Their typology can be used to classify new product introductions in a structured way as, for example, a business productivity tool, game, or mapping service (see Table 2 for a related overview).

For example, Google has several products that span different markets and different layers; for example, Google's Android operating system is a System-Level Application (layer 2—OS), their Nexus devices (mobile phones; layer 1—device) or Google Docs a personal productivity tool (layer 4c—application). Notice that while these are separate products and services, they also have a certain level of interoperability as layers and different markets on a single layer are interoperable.

2.2 | Business model innovations of digital platform companies: Coring, tipping, and enveloping

Technological innovation that is not accompanied by a well-developed business model runs the risk of failure to deliver or capture value from such innovation as has been shown by the seminal work of Chesbrough and Rosenbloom (2002). This particularly affects Internet and digital platform companies who operate in a market in which many services are expected to be delivered free of charge (Teece, 2010). Technological development and market uncertainty in such environments demand organizations to reassess and continuously update the value proposition they have in place (Chesbrough & Rosenbloom, 2002; Demil & Lecocq, 2010; Vendrell-Herrero, Bustinza, Parry, & Georgantzis, 2017; Vendrell-Herrero, Parry, Bustinza, & O'Regan, 2014; Teece, 2010; Zott & Amit, 2008). Special characteristics of platforms, especially their quality of representing two-sided markets and being subject to network effects, warrant specific market strategies and business models.

Gawer and Cusumano (2002, 2008, 2013) derived two principal strategies for companies attempting to gain platform leadership—"coring" and "tipping" (Gawer & Cusumano, 2008). Activities related to the establishment of a new platform, such as Google's initial strong

TABLE 1 ICT layer model adapted from Fransman (2010)

Level	1	2	3	4A	4B	4C	5
Description	Device	OS	Network	Platform	Content	Application	Final Consumer

TABLE 2 Software Product Classification elements adapted from Zahavi and Lavie (2009)

Software Product Classification by Zahavi and Lavie (2009)	
1 Personal applications	
1.1	Educational/training
1.2	Reference
1.3	Games
1.4	Entertainment
1.5	Lifestyle
1.6	Personal productivity
1.7	Personal multimedia productivity
1.8	Personal productivity utilities
1.7	Personal multimedia productivity
1.8	Personal productivity utilities
1.9	Business productivity
1.10	Utilitysystems
2 System infrastructure	
2.1	Network management (logical)
2.2	Network management
2.3	Data structuring, acc. & manipulation
2.4	Integrated development environment
2.5	Software application design
2.6	Software application development
2.7	System-level application
2.8	Storage
2.9	Security
2.10	Distributed computing
2.11	Middleware
2.12	IT system management software
3 Vertical applications	
3.1	Banking
3.2	Government
3.3	Healthcare services and medicine
3.4	Insurance
3.5	Legal
3.6	Entertainment and media communications
3.7	Real estate
3.8	Aerospace and aviation
3.9	Agriculture and farming
3.10	Apparel and fashion
3.11	Automotive
3.12	E-learning/education
3.13	Food service and beverage
3.14	Hospitality/travel
3.15	Mapping
3.16	Not-for-profit
3.17	Telecommunications
3.18	Energy/utilities

(Continued)

TABLE 2 Software Product Classification elements adapted from Zahavi and Lavie (2009) (Continued)

3.19	Retail & wholesale
3.20	Science & engineering
4 Business applications	
4.1	Enterprise resource planning
4.2	Accounting
4.3	Factory/facility management
4.4	Financial analysis & management
4.5	Manufacturing
4.6	Sales & marketing
4.7	Product design & development
4.8	Logistics
4.9	Collaborative applications
4.10	Human resource management
4.11	Data analysis
4.12	Decision support systems (DSS)
5 Packages	
5.1	Integrated development environment
5.2	Enterprise resource planning
5.3	OfficeSuite
5.4	Integratedaccounting
5.5	Manufacturing resource planning
5.6	Customer relationship management
5.7	Supply chain management
5.8	Human resource management

focus on Internet search, can be regarded as coring. On the other hand, tipping relates to the building of new and unique features that can be bundled with a “core” drawing more users to the platform and thereby competing with rivals, for example, Google “tipped” by entering the browser market with its Chrome browser (Gawer & Cusumano, 2008).

While Cusumano and Gawer pay more attention to the establishment of the platform in its IPM, the work of Eisenmann et al. extends our understanding in this subject area by considering strategies that help platform companies transcend the boundaries of individual markets and establish themselves in another market. One of the strategies that Eisenmann et al. (2011) identify is labeled envelopment, whereby a platform player from one market enters a functionally related or unrelated platform market by offering a bundle of platform products from both markets, like Microsoft bundling its Media Player with its Windows operating system. A bundle of platform and modules can enhance the value of each component as more adopters are drawn towards the platform and its complements.

Having two platforms and their users “merged” strengthen network effects and therefore increases the value for any user due to (a) increase in functionality and (b) increase in overall number of users (Farrell & Saloner, 1985; Gawer & Cusumano, 2008; Katz & Shapiro, 1994). Harvesting synergies from bundling by entering another

platform market combining “its own platform’s functionality with that of the target’s so as to leverage shared user relationships and common components” is the quintessence of envelopment (Eisenmann et al., 2011). An example of the envelopment of complementary providers includes Google’s launch of Android, an operating system platform, to complement and secure access for its online search platform.

Whether to enter or expand into new markets with improved value propositions is a typical business model innovation choice (Teece, 2010; Zott & Amit, 2008). Essentially, coring, tipping across markets and envelopment can be regarded as specific types of business model innovation in the context of platform markets.

2.3 | *Focused and dispersed envelopment strategies*

It is important to note that the line between coring, tipping and envelopment is blurred. According to Gawer and Cusumano (2008) the idea of tipping across markets, that is, the bundling of features from adjacent markets with a core platform, equals envelopment. To conceptually resolve this we decided to refer to all product related improvements, such as a functionally related platform extension (e.g. Google extending search to pictures) or bundling of two platforms in the same platform market, as “focused envelopment.” This is because platform company focuses on the same market, while referring to the bundling of a platform in one market with a platform in another market as “dispersed envelopment,” and then the platform company disperses its activity and user base across two markets (e.g. Google docs).

While the extant literature helps us understand different market strategies, how they function and why they emerge, we still lack understanding of how these strategies are used together and over time. More specifically, the question of how envelopment processes unfold, what types of envelopment moves are utilized when, and how this leads to growth remains unanswered and we used this question to guide our research endeavors in order to get a better understanding of how digital platform companies innovate their business model, and more specifically their value proposition, over time.

3 | METHODOLOGY

We conducted two case studies to uncover how platform companies envelop in a highly dynamic market. More specifically, we performed a structured content analysis of press releases related to new product introductions by Google Inc. and Yahoo Inc. from 2006 to 2011. We chose to perform an analysis on Google and Yahoo because they came from the same IPM (Internet search) and yet had stark differences in their growth and profit performance. We expected that these performance differences may be attributable to differences in their envelopment strategies and hence we set out to better understand these. We focused on the 2006–2011 period because (a) performance started to diverge vastly around that time and (b) press articles suggested that this is when the supra-platform market started to form, which would imply that envelopments became more important in

general (Fast Company, 2012). Finally, founding years and differences between Google and Yahoo prior to that period were well covered by colleagues and we could build on their work (Rindova et al., 2012). We used new product introductions as proxies for envelopment and utilized information in press releases to discern what type of market a company is moving to and therefore infer the type of envelopment.

We used product introductions into an existing market as a proxy for strengthening an existing market. We defined a new product introduction as focused envelopment when the new product introduction could be classified in the same product market category of Zahavi and Lavie’s Software Product Classification (2009) as earlier product introductions (see also Table 2). New product introductions were regarded as dispersed envelopment when they were classified within a different product market category, one where the company was not present before. Consequently we were able to count a number of focused and dispersed envelopments for each year. Further, we introduced the concept of “core markets,” which we define as markets in which a company has performed five focused envelopments.

We started by identifying all the press releases and blog posts that were related to new product introductions by the two companies between 2006 and 2011. These were extracted from the company’s investor relations websites as well as from Factiva, an international news database produced by Dow Jones. By searching for keywords including launch*, introduc*, and announc* in each of these articles, we identified 1,791 blog posts and 96 press releases related to new product introductions from Google and 685 blog posts as well as 920 press releases from Yahoo. From the press releases, we were able to derive that Google and Yahoo introduced a total of 100 and 56 new products (e.g. Google Nexus Phone), respectively.

Once we defined the new product introductions, we moved on to identifying the functions they perform and from there identifying the markets they serve. Basic information with no need for further analysis was directly extracted from the press releases and blog posts such as Launch Date, Company Name, Product Name, and Product Version. Additionally, we distinguished between new products and new versions. To infer whether there was a new market entry, we analyzed new product introductions by using two coding schemes defined by prior literature. Product introductions were analyzed according to the adapted ICT-Layer model from Fransman (2010) (Table 1) to examine the extent to which Google and Yahoo form digital ecosystems beyond their layers of origin, layer 4 (Content, Platform, Application), by offering new products in other layers like Devices (e.g. Google Nexus Phone) or Operating Systems (e.g. Google’s Android operating system). Besides, Zahavi and Lavie’s (2009) software product classification enabled us to identify and retrace the corporations’ envelopment into different markets like Internet Communications (e.g. Yahoo! Messenger) or Personal Productivity (e.g. Google Translator Toolkit) from their core search market.

To make sure that we applied coding schemes correctly, two independent researchers have tested the extraction and coding of relevant articles from press releases and blog posts on a subset of articles. A sample size of 300 Google articles (15.9% of a total of 1.887) were used to determine Cohen’s κ for the number of articles identified

as relevant for the purpose of this study, that is, as containing new product releases in the period from 2006 to 2011. We calculated Cohen's κ as opposed to simple percentage agreement to account for inter-rater agreement by chance (Cohen, 1968; Weber, 1990). After an initial round of coding followed by a refinement of the definition for new products both coders detected 42 relevant articles. We then calculated Cohen's κ for all coding categories. The sample size for the coding categories is 42 and represents 30.43% of the 138 in total detected, relevant articles (Table 3).

Once we had identified envelopments (focused and dispersed) from the new product introductions, we calculated the number of envelopments per year as well as the number of core markets (markets with five or more focused envelopments). In addition, we compared the envelopment processes with the growth and ROIC performance of each company and we inferred about the performance effects of each of the two processes.

4 | GOOGLE'S AND YAHOO'S ENVELOPMENT PROCESSES

Before we present our data, in the next section, we summarize the development of Google and Yahoo before entering the supra-platform market stage (1995–2005). We rely on data from the study performed by Rindova et al. (2012) for this analysis. While Rindova et al. analyze partnering portfolios in order to determine how the sourcing of external resources is linked to the firms' growth trajectories across markets we focus on envelopment as a distinct form of business model innovation to distil patterns or strategies that lead to long-term growth. This study aims to deduct how firm decisions to invest resources and bundle across platforms is used to create growth. The work by Rindova et al. is valuable in understanding the companies' past trajectories when looking through our theoretical lens complementing our own data.

4.1 | Google and Yahoo before entering the supra-platform market stage (1995–2005)

After entering the online search market in 1995, Yahoo, supported by an extensive set of 70 partnerships, quickly enveloped into six new markets during its first 3 years of existence. The company embarked on swift and large scale growth earning revenues of \$3.6 billion owed

to its fast and dispersed envelopment operating 29 different markets after 10 years including games, job listings, Internet storage, video streaming, e-commerce, personal productivity tools, and travel in 2004 (Rindova et al., 2012).

In contrast, Google solely operated the Internet search market building up its IPM through focused envelopment strengthening its innovative search algorithm. No dispersed envelopment took place on the part of Google for the first 2 years after its launch in 1998. After 4 years, the firm enveloped into only four markets. In 10 years, the company had entered 14 market domains, most of them related to its core competencies in search (like mobile search and blog search) or incorporating search as a differentiating feature (e.g. Gmail and Google Maps) (Rindova et al., 2012) indicating an emphasis on focused envelopment.

The data provided by Rindova et al. (2012) suggests that in this initial period, Yahoo performed more of a dispersed envelopment strategy by entering quickly into a variety of markets, while Google performed more of a focused envelopment strategy by focusing on its IPM and only gradually "dispersing" its activities over multiple markets. In the next section, we discuss Google's and Yahoo's envelopment strategy during the supra-platform market stage (2006–2011).

4.2 | Creating Market Presence for Supra Platforms (2006–2011)

A digital supra-platform started to get formed in late 2000s accentuating the importance of envelopment (Fast Company, 2012). We begin our observation in 2006 to have reference data and start a deeper analysis from 2007 onwards. At the same time, Google's and Yahoo's financial performance started to diverge vastly. In this section, we will discuss Yahoo's and Google's envelopments during the 2006–2011 period to shed light on why the two companies adapted differently to this period.

4.2.1 | Yahoo

In the period from 2006 to 2011, Yahoo introduced a total of 56 new products across 11 markets. Relative to the market presence achieved in 2006, the period 2007–2011 was marked with 41 focused and four dispersed envelopment moves of platforms, content, and applications. Below we outline these market moves year by year.

TABLE 3 Inter-rater reliability scores; Cohen's κ

	Round 1	Round 2	Round 2	Round 2
Round 1	κ	κ	95% CI	N
Article selection	0.95	1.00	1.0 to 1.0	300
New Product vs. New Version	0.85	0.85	0.64 to 1.05	42
Bundling/no bundling	0.64	0.66	–0.01 to 1.32	42
Platform/no platform	0.63	0.90	0.77 to 1.03	42
ICT Layer	0.72	0.87	0.73 to 1.01	42
Software classification	0.79	0.84	0.72 to 0.96	42

In 2006, Yahoo launched 11 new products across seven markets within layer four (Platform, Content, Application) of Fransman's adapted ICT layer model. Most product introductions fall into the Entertainment market with for example, "Yahoo TV" (Platform), "Yahoo Sports for TV" (Content), and the web series "In The Dressing Room" (Content). We consider these product introductions in the same market as focused envelopment arguing that they complement—Yahoo TV and Yahoo Sports for TV—or substitute—Yahoo Sports for TV and In the Dressing Room—each other. Hence they share largely overlapping user bases and functionality.

In 2007 Yahoo launched eight new software products across six markets. This represents seven focused and one dispersed envelopment. Most product introductions are related to Entertainment and Media Communications like "Yahoo Mobile Publisher Service" (Application) and "OMG," a celebrity news site (Content) as well as Sales and Marketing with "Yahoo Smart Ads" (Platform) and "Ads for Adobe PDF" (Application).

In the next year Yahoo introduced nine products in six markets. Examples include "Search BOSS" (Platform), "Yahoo Buzz" (Content), and "Yahoo Circular" (Application). Seven focused and two dispersed envelopments can be observed.

In 2009 Yahoo introduced five new software products in four different markets which translate into four focused and one dispersed envelopment move.

In 2010 Yahoo introduced 14 new products in three markets. Examples include the "Yahoo Entertainment" and "Yahoo Search" applications as well as its "Contributor Network," a freelance content writer platform. Yahoo pursued 14 focused envelopment moves and no dispersed ones.

In the last year of our observation, 2011, the company launched nine products in three existing markets. These include "Yahoo Sports Radio" (Content), "Yahoo Search Direct" (Application), and "Livestand," a tablet magazine (Platform). Yahoo did not engage in dispersed envelopment as all nine product launches constitute focused envelopments.

Figure 1 summarizes Yahoo's reduction in value variety showing its most important focused envelopment moves, that is, core markets (markets with five or more envelopments) and dispersed envelopment moves. Throughout our observation period (2006–2011), Yahoo increasingly pursued focused envelopment while reducing and eventually even refraining from dispersed envelopment altogether. This led to the build-up of four core markets: (1) Entertainment and Media

Communications, (2) Data Structuring, Access, and Manipulation, (3) Sales and Marketing, and (4) Entertainment. When compared to the pre-2006 period as described earlier, it seems that Yahoo gradually decreased the number of markets served, aiming for a narrower platform portfolio. We consider this evidence of a shift towards a focused envelopment strategy.

We argue that Yahoo was pursuing a dispersed envelopment strategy prior to 2006 and changed its strategy in response to unsustainable revenue growth. As a result of its focused envelopment efforts the company established core markets in 2008 and 2009. Yet, from 2009 onwards the core market base for Yahoo stagnates and no dispersed envelopment can be observed for 2010 and 2011 to grow its ecosystem. In this period, the company's revenue peaked in 2008 before declining from \$7.2 Billion to \$5.0 Billion in 2011. We conclude that this redesign of Yahoo's envelopment strategy accounts for the decrease in revenue and that failure to further grow core markets inhibited Yahoo's ability to disperse its portfolio and grow and protect revenues.

4.2.2 | Google

For the time covered by our dataset, from 2006 to 2011, Google introduced 100 products in 22 markets. Relative to the market presence achieved in 2006, the period 2007–2011 was marked with 70 focused and 15 dispersed envelopment moves of platforms, content and applications.

In 2006, Google launched 14 products in nine markets. These include "Google Custom Search Engine" (Application), "Google Book Search" (Platform), and "Google Trends" (Application) and are all related to its core technology search and treated as focused envelopment.

In 2007, Google introduced 10 new products across six markets. An example for a dispersed envelopment in this year is Google's first move into mapping with "My Maps." In the same year, the company also introduced two related services: "My Location" and "Map My Photos." With the introduction of these other two map-related products Google directly employed focused envelopment and strengthened its market presence immediately.

In the following year the company launched 18 products in six markets. Google is constantly strengthening its IPM related to search technology (Data Structuring, Access, and Manipulation) with for example, "Google Suggest," an auto complete application for its search

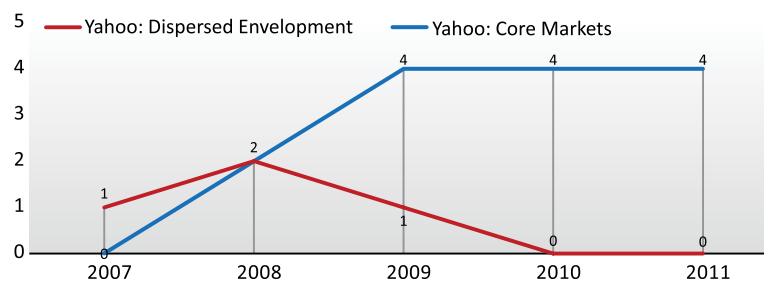


FIGURE 1 Number of dispersed envelopments and number of core markets for Yahoo (2007–2011). [Color figure can be viewed at wileyonlinelibrary.com]

engine. Moreover, 2008 marks a novelty in our data as Google enveloped not only within layer 4 (Platform, Content, Application) but also into the deeper layer “Operating System” by introducing Android for mobile devices. Albeit the fact that Android can be categorized as System-Level Application we treat envelopment across layers as idiosyncratic events and analyze them on an individual basis. We argue that Android is complementing various software products of Google and for example, secures the company’s access to the lucrative search market for mobile devices. In total, we observe 13 focused and four dispersed envelopments in 2008.

In 2009 Google offered 26 new products in eleven markets. Google again envelops across ICT layers launching “Google Public DNS” and “Google Chrome OS.” We consider both, Google Chrome OS and Google Public DNS, as focused envelopment as they are complementing Google Chrome and Google Search respectively. We observe 24 focused and two dispersed envelopments in total.

In 2010 Google launched 19 products across 13 markets. The company pursued further envelopment across layers introducing The Nexus Phone (hardware) to complement its move into mobile operating systems with Android OS. Hence, we consider the introduction of The Nexus Phone as focused envelopment and observe 16 focused and four dispersed envelopment moves.

In 2011 the company introduced 13 products in 10 markets. While again strengthening its IPM (Data Structuring, Access, and Manipulation)—as in all previous years analyzed—Google introduced its Chromebooks (hardware) complementing its Chrome OS and Chrome software products. These translate into 11 and 2 focused and dispersed envelopments, respectively.

Figure 2 shows Google’s core markets (markets with five or more envelopments) as well as its dispersed envelopment moves which help gradually expanding Google’s core market base through a mixture of focused and dispersed envelopment resulting in accelerated revenue growth. This strategy led to an increasingly broad envelopment scope over time. Backed by its core markets Google is able to engage in dispersed envelopment successfully as it can leverage its large user-base and sufficient value for bundling when enveloping in such unrelated terrain.

Google pursued focused and dispersed envelopment continually and kept entering new markets while also growing its core market base which became sufficiently strong to envelop into deeper ICT layers like

operating systems and devices to create Supra-Platforms. Key to this development appears to be increasing the number of focused envelopment moves to support a steady stream of dispersed envelopments which help growing the digital ecosystem. This steady expansion of core markets and the company’s ecosystem is reflected in revenue growth from approximately 11 to 38 Billion USD from 2006 to 2011.

In the period 2006–2011, Google and Yahoo began to diverge considerably in terms of performance (see also Figure 3). Yahoo displays a revenue decline of 22.44% while Google has a revenue growth of 257.43%. For the same period, Google’s return on capital ranged from a minimum of 15.49% in 2008 to a maximum of 20.87% in 2006 which indicates competitive strength (Greenwald & Kahn, 2005; Greenwald, Kann, & Sonkin, 2004). Yahoo’s return on capital ranged from 3.40% in 2008 to 9.60% in 2010, indicating weaker performance. Divergence in performance, particularly in terms of growth, signals differences in demand for their products and services. We also see this reflected in the share price development: between 2006 and 2011 Google’s share price went up 34% whereas Yahoo’s price went down 55%.

5 | THE ENVELOPMENT MATRIX

Comparing the process of envelopment of the two companies, we see marked differences (Figure 4).

While Yahoo pursued much dispersed envelopment from the beginning, Google initially pursued none, and only after 2 years some dispersed envelopment. Yahoo showed little focused envelopment whereas Google used focused envelopment to strengthen its market presence. We observe that Google’s envelopment mix remains fairly stable emphasizing a steady increase in focused envelopment moves which help build up core markets and keep market presence proportionate to its steady number of dispersed envelopments. Yahoo, in contrast, changes its envelopment strategy from dispersed to focused dropping dispersed envelopment altogether in the end of our study period.

Yahoo’s dispersed envelopment approach yielded unsustainable growth in the absence of strong market presence and core markets. When Yahoo changed its envelopment strategy its performance peaked. However, focusing solely on focused envelopment and in

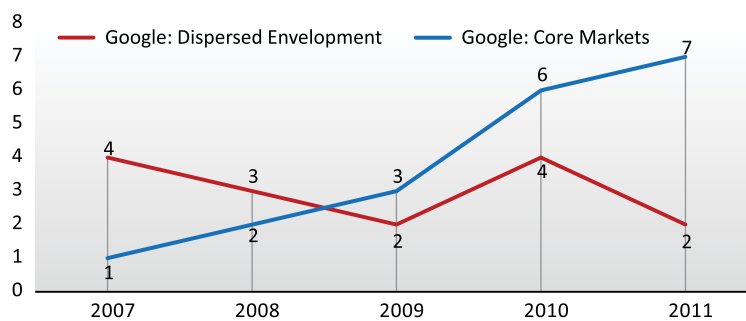


FIGURE 2 Number of dispersed envelopments and number of core markets for Google (2007–2011). [Color figure can be viewed at wileyonlinelibrary.com]

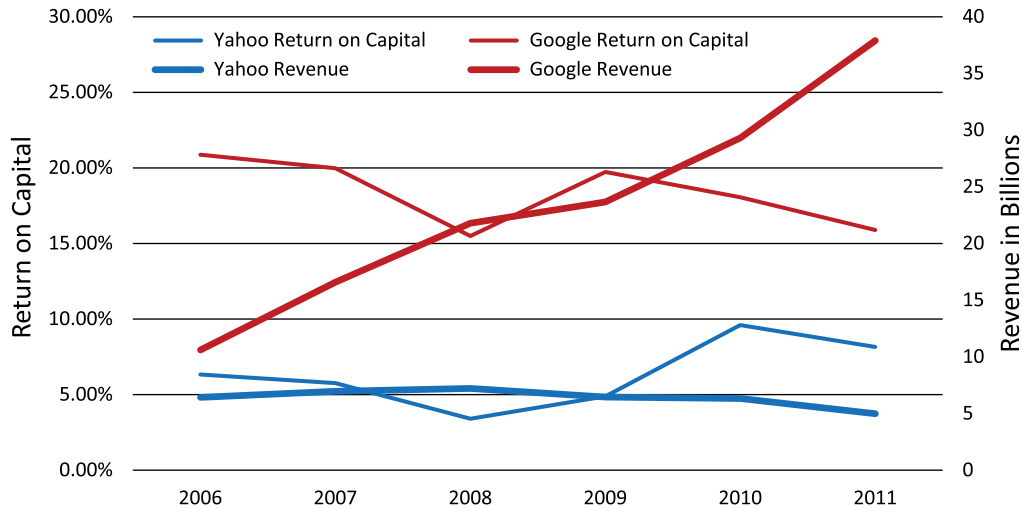


FIGURE 3 Google's and Yahoo's revenue collection and return on capital (ROIC) from 2006 to 2011. [Color figure can be viewed at wileyonlinelibrary.com]

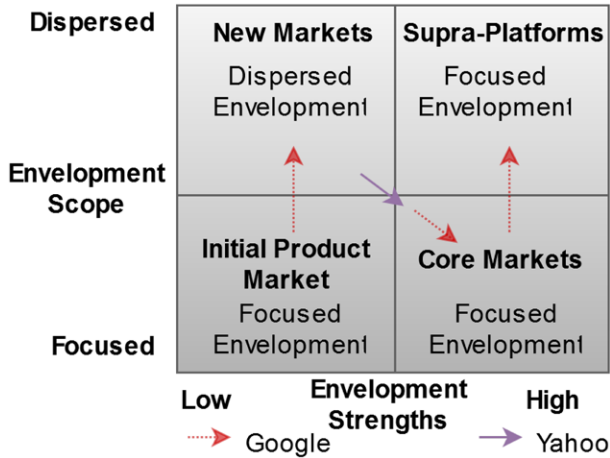


FIGURE 4 Envelopment process of Google and Yahoo. [Color figure can be viewed at wileyonlinelibrary.com]

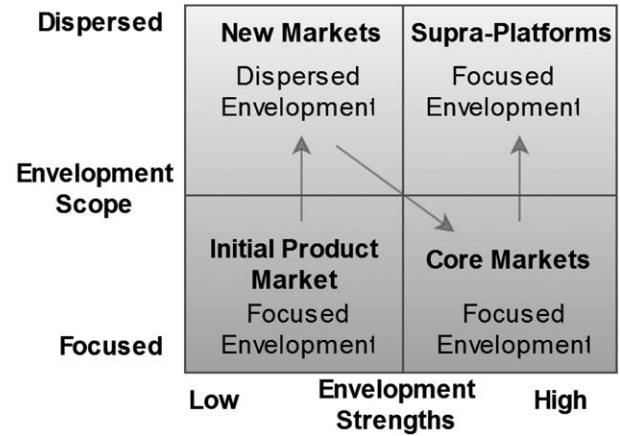


FIGURE 5 Envelopment matrix.

fact continuously reducing its value portfolio led to decline eventually. Google, employing an envelopment mix in which focused moves support dispersed envelopments led to continuous revenue growth as market presence—user bases and functionality—could be leveraged into new markets.

These observations, based on evidence from Rindova et al. as well as our own data, enabled the creation of a generic envelopment matrix that can be utilized to develop recommendations for platform companies (see Figure 5). Our recommendation for a successful envelopment journey is as follows:

5.1 | Coring phase: Focused envelopment in the core market

In the coring phase of a digital platform company, which corresponds to the 1995–2005 period for Google and Yahoo, the key objective should be strengthening the market presence in a core market via

focused envelopment. Conversely, an early dispersed envelopment may result in early growth success, but seems to be detrimental in the long term as we explain.

5.2 | Towards supra-platform—Starting gradually with dispersed envelopment

Once focused envelopment sufficiently strengthens market presence in the IPM, dispersed envelopment is necessary to grow a digital ecosystem and enlarge the Envelopment Scope to create opportunities in “nearby” platform markets and thus enabling the creation of milestones for supra-platforms.

5.3 | Towards supra-platform—Keep strengthening your new markets with focused envelopments

Once new markets are opened through dispersed envelopment, it is important to “strengthen” presence in the most important of these

new markets through another round of focused envelopment in those markets. Focused envelopment is crucial to (1) leverage user-bases and functionality into new markets again and (2) exploit emerging opportunities for supra platforms. It is not enough to establish superficial presence through dispersed envelopment—it is necessary to strengthen the presence through focused envelopment turning these markets into core markets; hence we refer to this as Envelopment Strength.

5.4 | Supra platforms

Growing the Envelopment Scope will eventually allow a company to seize opportunities to envelop Supra-Platforms and create customer value that is hard to replicate by rivals. This significantly enhances a firm's competitive position. Nevertheless, as the scope increases through dispersed envelopment, it is important to continue to foster Envelopment Strength through focused envelopment.

6 | CONCLUSION

This article set out to study business model innovation in digital platform markets, by exploring how the process of platform envelopment unfolds, through focused and dispersed envelopments. More precisely, we observed new products introduced by Google and Yahoo over the course from 2006 to 2011, which helped us to uncover their envelopment strategies. Further to that we plotted their respective envelopment patterns against their growth trajectories to uncover the effectiveness of those strategies.

The results of our analysis can be summarized as follows. Initially, Yahoo sought revenue growth via a dispersed envelopment strategy. In contrast, Google initially employed a focused envelopment approach. In response to unsustainable growth Yahoo adopted a focused envelopment strategy whereas Google started to pursue an envelopment mix of dispersed and then again focused envelopment moves. Comparing firm performance by accounting for return on capital invested and revenue growth over time it becomes clear that Google had employed the “winning” strategy which enabled the company to successfully create supra-platforms, positively influencing its competitive position in the face of rivals with less ICT-layer presence. In contrast, Yahoo first failed to build an initial core market to generate a sustainable revenue stream and later withdrew from dispersed envelopment adding little functionality to its new market presence. These results suggest that a clear envelopment strategy is needed to accomplish growth in the digital platform market. In order to devise such a strategy, companies should perform first focused and then dispersed envelopment and repeat this sequence as they expand.

6.1 | Theoretical Contribution

Our study adds a dynamic perspective to existing business model literature which is mostly static in nature (Cavalcante, Kesting, & Ulhøj, 2011; Demil & Lecocq, 2010). Concepts like coring, tipping, and envelopment have been used to capture snapshots rather than

development patterns over time. Therefore, our longitudinal perspective on envelopment moves, as a specific form of business model innovation, sets our work apart from most of the business model and platform literature. This resulted in the identification of platform related business model innovation “strategies” or patterns in consequence of accumulated envelopment decisions. While we knew why envelopment takes place studying network effects and the work of Eisenmann et al. (2011) we lacked understanding of how envelopment processes unfold over time. Further, to distill such a dynamic perspective we offer the concepts of focuses and dispersed envelopment which can be of conceptual value in light of the blurred lines between coring and envelopment as well as tipping and envelopment.

Our research shows that the “get big fast” rationale often observed in platform markets does not necessarily result in success (Eisenmann, 2002). It appears to be of greater importance “how to get big.” Lastly, we add to the understanding of how business model innovation relates to a firm's competitive positioning (Zott, Amit, & Massa, 2011) by analyzing how supra-platforms are created and shedding light on the role they play in strengthening the competitive position of digital platform companies.

6.2 | Managerial Implications

Practitioners who seek to pursue a successful envelopment strategy need to be wary of examples such as Yahoo's where dispersed envelopment is used in isolation without relying on focused envelopment to strengthen its initial core market first. Conversely, the success of Google also suggests that digital platform companies can grow their revenue base and protect their business by enveloping through focused envelopment and then careful use of both dispersed and focused envelopments. Such a business model evolution holds potential for platform companies and the awareness of it may help these companies to sustainably grow and innovate their business model and related value propositions.

6.3 | Limitations & Further Research

Traditional, linear business models are also increasingly transitioning to platforms and as their share of the economy rises, so does the importance to understand envelopment strategies (Parker, Val Alstyne, & Choudary, 2016). Our work offers advice on how to manage digital platforms, to create digital ecosystems and supra-platforms.

Choosing a comparative case study as a research design suits the explorative nature of this article. Issues of reliability and internal validity have been dealt with. Selecting two case companies with similar founding conditions, markets of origin, revenue models (advertising based), access to partnering, and capital make for a strong internal validity as contrasting developments are likely to be caused by differences in business model innovation. However, having many similarities may decrease the external validity of our work. As path-dependency suggests, historical and past contingencies shape future developments of companies. Here one may encounter a trade-off between internal and external validity. Because of the exploratory nature of this article it is argued that

for our study internal validity is more important to accurately extract the essence of the underlying phenomena of envelopment. The generalizability of our findings may then be tested in further studies.

To test the generalizability of the results derived in this article this study could well be conducted choosing case companies from different IPM or core markets such as Facebook, Amazon, Microsoft or Samsung, and Apple, the latter being of particular interest being principally known for their devices, products in layer 1 according to the adapted ICT-layer model, as opposed to software in layer 2 or 4. Furthermore, when multiple parties envelop into each other's markets creating supra-platforms, market boundaries will cease to exist. How will competition and business model innovation look in the future, that is, how can growth be perpetuated in such a situation? Lastly, it may be worthwhile to explore how identified envelopment patterns and strategies impact competition.

REFERENCES

- Cavalcante, S., Kesting, P., & Ulhøi, J. (2011). Business model dynamics and innovation: (Re)establishing the missing links. *Management Decision*, 49(8), 1327–1342.
- Chesbrough, H., & Rosenbloom, R. S. (2002). The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. *Industrial and Corporate Change*, 11, 529–555.
- Cohen, J. (1968). Weighted Kappa: Nominal scale agreement with provision for scaled disagreement or partial credit. *Psychological Bulletin*, 70, 213–220.
- Demil, B., & Lecocq, X. (2010). Business model evolution: In search of dynamic consistency. *Long Range Planning*, 43(2–3), 227–246.
- Eisenmann, T. (Ed.). (2002). *Internet business models: Text and cases*. New York, NY: McGraw-Hill/Irwin.
- Eisenmann, T., Parker, G., & Van Alstyne, M. W. (2006). Strategies for two-sided markets. *Harvard Business Review*, 84(10), 92–101.
- Eisenmann, T., Parker, G., & Van Alstyne, M. W. (2011). Platform envelopment. *Strategic Management Journal*, 32(12), 1270–1285.
- Farrell, J., & Saloner, G. (1985). Standardization, compatibility, and innovation. *The RAND Journal of Economics*, 16(1), 70–83.
- Fast Company. (2012). *The 2012 world's most innovative companies*.
- Fransman, M. (2010). *The new ICT ecosystem: Implications for policy and regulation*. Cambridge, UK: Cambridge University Press.
- Gawer, A., & Cusumano, M. A. (2002). *Platform leadership: How Intel, Microsoft, and Cisco drive industry innovation*. Boston, MA: Harvard Business School Press.
- Gawer, A., & Cusumano, M. A. (2008). How companies become platform leaders. *MIT Sloan Management Review*, 49(2), 28–35.
- Gawer, A., & Cusumano, M. A. (2013). Industry, platforms and ecosystem innovation. *Journal of Product Innovation Management*, 31(3), 417–433.
- Greenwald, B. C. N., Kann, J., & Sonkin, P. D. (2004). *Value investing: From Graham to Buffett and beyond*. New York, NY: John Wiley & Sons.
- Greenwald, B. C. N., & Kahn, J. (2005). *Competition demystified: A radically simplified approach to business strategy*. New York, NY: Penguin Group.
- Katz, M. L., & Shapiro, C. (1994). Systems competition and network effects. *The Journal of Economic Perspectives*, 8(2), 93–115.
- Parker, G. G., Van Alstyne, M. W., & Choudary, S. P. (2016). *Platform revolution: How networked markets are transforming the economy – and how to make them work for you*. New York, NY: W.W. Norton & Company.
- Parker, G. G., & Van Alstyne, M. W. (2005). Two-sided network effects: A theory of information product design. *Management Science*, 51(10), 1494–1504.
- Rindova, V. P., Yeow, A., Martins, L. L., & Faraj, S. (2012). Partnering portfolios, value! creation logics, and growth trajectories: A comparison of Yahoo and Google (1995 to 2007). *Strategic Entrepreneurship Journal*, 6(2), 133–151.
- Rochet, J. C., & Tirole, J. (2003). Platform competition in two-sided markets. *Journal of the European Economic Association*, 1(4), 990–1029.
- Rochet, J. C., & Tirole, J. (2006). Two-sided markets: A progress report. *The RAND Journal of Economics*, 37(3), 645–667.
- Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43(2), 172–194.
- Tiwana, A., Konsynski, B., & Bush, A. A. (2010). Research commentary- Platform evolution: Coevolution of platform architecture, governance, and environmental dynamics. *Information Systems Research*, 21(4), 675–687.
- Vendrell-Herrero, F., Bustinza, O. F., Parry, G., & Georgantzis, N. (2017). Servitization, digitization and supply chain interdependency. *Industrial Marketing Management*, 60, 69–81.
- Vendrell-Herrero, F., Parry, G., Bustinza, O. F., & O'Regan, N. (2014). Servitization as a driver for organizational change. *Strategic Change*, 23(5–6), 279–285. Available at SSRN: <https://ssrn.com/abstract=2264869> or <http://dx.doi.org/10.2139/ssrn.2264869>
- Visnjic, I., & Cennamo, C. (2013). The gang of four: Acquaintances, friends or foes? Towards an integrated perspective on platform competition. *ESADE Business School Research Paper*, 245.
- Weber, R. P. (1990). *Basic content analysis* (no. 49). Thousand Oaks: Sage Publications.
- Zahavi, T., & Lavie, D. (2009). *Software product classification*. University of Texas at Austin, TX: Red McCombs School of Business.
- Zott, C., & Amit, R. (2008). The fit between product market strategy and business model: Implications for firm performance. *Strategic Management Journal*, 29(1), 1–26.
- Zott, C., Amit, R., & Massa, L. (2011). The business model: Recent developments and future research. *Journal of Management*, 37, 1019–1042.

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