Received: 28 February 2018 | Revised: 21 February 2020 | Accepted: 24 March 2020

DOI: 10.1002/smj.3163

SPECIAL ISSUE ARTICLE

STRATEGIC MANAGEMENT JOURNAL WILEY

Investigating the mix of strategic choices and performance of transaction platforms: Evidence from the crowdfunding setting

Gary Dushnitsky[1] | **Evila Piva**[2] | **Cristina Rossi-Lamastra**[2]

[1]Strategy and Entrepreneurship Area, London Business School, London, UK

[2]Department of Management, Economics, and Industrial Engineering, Politecnico di Milano School of Management, Milan, Italy

Correspondence
Gary Dushnitsky, Strategy and Entrepreneurship Area, London Business School, Regent's Park, London NW1 4SA, UK.
Email: gdushnitsky@london.edu

Abstract

Research Summary: The platform literature offers keen insights on the pricing and non-pricing strategies that transaction platforms undertake. We supplement this work by studying how platforms mix together their strategic choices and the association with platforms' performance. To that end, we focus on crowdfunding platforms; a prominent setting of transaction platforms. We present an inductive large-N study of the population of 788 crowdfunding platforms that operated in EU-15 countries up to 2018. Our contribution is threefold: (a) identifying common mixes of strategic choices; (b) tracking deviations from these mixes; and (c) associating these with platforms' survival and growth. We discuss our findings and how they advance knowledge at the intersection of the platform and strategic management literatures.

Managerial Summary: Notable transaction-platforms such as eBay, LinkedIn, and Tencent have an aggregate market-value in the hundreds of billions of dollars. We know that platforms' success is driven by the strategic choices they undertake. Yet, we know less about how they mix together these choices and the association with platforms' performance. Our study addresses this gap by focusing on a prominent setting: crowdfunding.

Using data on the population of 788 crowdfunding platforms in EU-15 countries, we show that these platforms cluster around three common mixes of strategic choices. Moreover, crowdfunding platforms do not strictly adhere to the strategy mix they are affiliated with. Interestingly, there is a positive association between the degree to which a platform's choices differentiate from its strategy mix and platform's subsequent performance.

KEYWORDS

crowdfunding platforms, non-pricing strategies, platform performance, pricing strategies, strategy mix, transaction platforms

1 | INTRODUCTION

Over the past decades, platform businesses have proliferated across different industries, from real-estate brokerages (e.g., Zillow, Zoopla) to online marketplaces for talent, retail, or financial services (e.g., Upwork, FarFetch, and LendingClub, respectively; Evans & Schmalensee, 2007; Cusumano, Gawer, & Yoffie, 2019a). One of the major types of platform businesses is transaction platforms (Cennamo, 2019; Evans & Gawer, 2016).[1] These platforms create value by facilitating the exchange of products and services between two or more groups of participants (Evans & Schmalensee, 2007; Gawer, 2014; Rochet & Tirole, 2003). Transaction platforms are present across the globe, and the total market value of publicly-listed platforms such as LinkedIn, Paypal and Tencent, surpasses $200 billion (Evans & Gawer, 2016).

A distinct feature of transaction platforms is the presence of network effects (Evans, 2003; Rochet & Tirole, 2003) which may give rise to winner-takes-all dynamics (Arthur, 1989; Katz & Shapiro, 1992). Scholars have shown that transaction platforms seek to unlock these dynamics through a number of different strategic choices (Eisenmann, Parker, & van Alstyne, 2011; Schilling, 2002). Extant work investigates the strategic choices that platforms undertake as a function of the environment they target; namely, the underlying characteristics of the participants and/or their offerings (i.e., the products or services exchanged through the platform; Boudreau & Hagiu, 2009; Eisenmann, Parker, & van Alstyne, 2006; Hagiu, 2014; Rochet & Tirole, 2003). The literature identifies a number of platforms' choices which broadly divide into "pricing strategies" (i.e., the set of decisions about the fees charged to platform participants) and "non-pricing strategies" (i.e., the set of decisions regarding platform design). Among the three key pricing strategies, a platform chooses whether and how much to charge participants as upfront subscription fees and per transaction fees, as well as to which group of participants it should allocate those fees. Non-pricing strategies include three major choices as well: A platform decides on the level of accessibility (i.e., participant pool), the degree of inclusivity

[1]There are a few platform typologies in the literature (e.g., Cennamo, 2019; Evans & Gawer, 2016; Gawer, 2014; Jacobides, Cennamo, & Gawer, 2018). In addition to transaction platforms, extant work also points to platforms for complementary innovation, or marketplaces for information.

(i.e., the scope of offerings it accommodates) and bundling (i.e., the functions the platform provides).

There are hundreds of possible ways in which a transaction platform can combine these six choices.[2] However, we know less about the overall mixes of strategic choices that platforms undertake, or the impact of the mixes of choices on platforms' performance. The lacuna represents a fruitful avenue for research. Specifically, the strategy literature has long advocated studying the overall mix of strategic choices, building on the insight that the performance implications of any strategic decision crucially depends on other strategic choices (Porter, 1996; Porter & Siggelkow, 2008). A recent review of the platform literature embraced this insight and called for a comprehensive analysis of the mixes of platforms' strategic choices and their performance implications (McIntyre & Srinivasan, 2017).[3]

The purpose of our study is to address this gap by shedding light on transaction platforms' strategy mixes and their association with platforms' performance. To that end, we focus on a prominent transaction platform setting: crowdfunding. Crowdfunding platforms serve as a conduit to aggregate funds—across a crowd of multiple individuals—by those who seek capital to fund an innovative idea, a social cause, or life plans. Each crowdfunding platform undertakes strategic choices such as choosing what offerings to accommodate, which participants to support, and what fees to charge them. Our study is guided by the following research questions: How does a crowdfunding platform mix together the strategic choices it undertakes? What are the implications of these strategy mixes—and differentiation therefrom—to platforms' performance? Exploring these issues is of value not only to those who study platforms but also to strategy scholars who have a long tradition of investigating the overall mix of firm strategies (Porter, 1996; Porter & Siggelkow, 2008).

We address the above questions using a hand-collected dataset of the European crowdfunding sector. Specifically, we observe a population of 788 crowdfunding platforms that operated in EU-15 countries up to 2018. The study is an inductive large-N study (Lyngsie & Foss, 2017) which contributes to the literature through a data-driven rather than hypothesis-testing approach (e.g., Birhanu, Gambardella, & Valentini, 2016; Claussen, Essling, & Kretschmer, 2015). Our key results are threefold: (a) identifying common mixes of strategic choices, (b) tracking deviations from these mixes, and (c) associating these with platforms' survival and growth. We present the crowdfunding findings, in particular, and discuss generalizable insights for transaction platforms, in general.

The paper proceeds as follows. The next section reviews work on transaction platforms' strategic choices and makes the case for a comprehensive study of those choices. Then, we discuss the crowdfunding setting as a context for studying transaction platforms. The methodology section describes our data and the findings section presents the inductive analyses. The interpretation section discusses four key insights that go beyond crowdfunding and inform the platform literature. We conclude with the paper's main contributions and sketch managerial implications and directions for future research.

[2]Assume each of the six strategic choices can take three values (i.e., high, medium, or low). It follows a platform has to choose a strategy mix among hundreds of possibilities; 729 to be exact [$= 3^6$].

[3]"Strategic management scholars have attempted to address many issues related to firm-specific actions to leverage network effects, yet significant uncertainty remains about optimal strategies in platform development and management." (McIntyre & Srinivasan, 2017: 150).

2 | TRANSACTION PLATFORMS AND THEIR STRATEGIC CHOICES

Transaction platforms share two main features. The first is the presence of indirect network effects. Indirect network effects imply that an increase in participants and offerings in one group creates value to the other group (Hagiu, 2014). Second, transaction platforms create value by facilitating interactions between participants who seek to exchange certain offerings (Gawer, 2014; Rochet & Tirole, 2003). To that end, platforms undertake strategic choices to shape the interactions among participants with the goal of consummating transactions.

In this section, we draw on the platform literature to identify the key strategic choices that transaction platforms undertake. Then, we outline the rationale for a comprehensive study of the mix of these choices. Our discussion focuses on the platform as the unit of analysis.

2.1 | Transaction platforms' strategic choices: A brief literature review

We compile a list of platform strategic choices. To this end, we leverage a recent literature review by McIntyre and Srinivasan (2017).[4] For each relevant study in the literature review, we look for (a) the strategic choices it investigates and (b) the number and type of platforms included in the empirical analyses, where available.[5] This exercise highlights six key strategic choices which we review below. The choices, summarized in Table 1, include three that are known as "pricing strategies" and three others referred to as "non-pricing strategies."

2.1.1 | Pricing strategies

An important set of choices every transaction platform undertakes has to do with the fees it charges to its participants. These are known as "pricing strategies". Extant work on the topic identifies three major strategic choices: Subscription fees, transaction fees, and fee-allocation. The first two determine how much participants pay, while the last strategy has to do with who pays the fees (i.e., participants on which side of the platform).

We first consider *subscription fees*. Simply put, a subscription fee is the price participants pay to participate in the platform (Caillaud & Jullien, 2003; Evans, 2003). The decision to set subscription fees carries implications for platform performance. For example, setting subscription fees at zero can lead to fast growth in the number of participants. But it may come at a cost; it is possible that many participants with low-quality offerings will join the platform which can reduce total transactions on the platform. Some platforms, such as credit card operators, apply subscription fees to their participants (Stango, 2002), while others allow free access (Bryant & Sheldon, 2017).

Pricing strategies also include the strategic choices regarding the *transaction fees* charged to participants. A transaction fee is incurred by participants whenever they transact through the platform (Parker & van Alstyne, 2005; Rochet & Tirole, 2003; Rochet & Tirole, 2006). The fee

[4]McIntyre and Srinivasan (2017) review studies of transaction platforms as well as studies of other platform types (e.g., innovation platforms). Here, we review the studies that cover strategic choices by transaction platforms.

[5]To facilitate comparison across the studies, we label the strategic choices using names listed later in this Section.

TABLE 1 Review of the six key strategic choices appearing in seminal platform studies (based on McIntyre & Srinivasan, 2017:145–147)

Authors, year	Journal	Strategic choices examined	Study type	Number and type of platforms
Caillaud & Jullien, 2003	RAND Journal of Economics	• Subscription fees (pricing strategy) • Transaction fees (pricing strategy) • Fee-allocation (pricing strategy) • Accessibility (non-pricing strategy)	Theoretical	
Evans, 2003	Review of Network Economics	• Subscription fees (pricing strategy) • Inclusivity (non-pricing strategy)	Theoretical	
Rochet & Tirole, 2003	Journal of the European Economic Association	• Subscription fees (pricing strategy) • Transaction fees (pricing strategy) • Fee-allocation (pricing strategy)	Theoretical	
West, 2003	Research Policy	• Accessibility (non-pricing strategy)	Empirical qualitative	Three computer platforms
Sheremata, 2004	Academy of Management Review	• Accessibility (non-pricing strategy)	Theoretical	
Venkatraman & Lee, 2004	The Academy of Management Journal	[Focus on platforms' attributes rather than strategic choices]	Empirical quantitative	Eight video game consoles
Clements & Ohashi, 2005	Journal of Industrial Economics	• Subscription fees (pricing strategy) • Transaction fees (pricing strategy) • Fee-allocation (pricing strategy) • Inclusivity (non-pricing strategy)	Empirical quantitative	Eight video game consoles
Parker & van Alstyne, 2005	Management Science	• Subscription fees (pricing strategy) • Transaction fees (pricing strategy) • Fee-allocation (pricing strategy)	Theoretical	

TABLE 1 (Continued)

Authors, year	Journal	Strategic choices examined	Study type	Number and type of platforms
		• Bundling (non-pricing strategy)		
Suarez, 2005	Academy of Management Journal	[Focus on platforms' attributes rather than strategic choices]	Empirical quantitative	177 cellular operators
Lee, Lee, & Lee, 2006	Management Science	[Focus on platforms' attributes rather than strategic choices]	Theoretical	
Rochet & Tirole, 2006	RAND Journal of Economics	• Subscription fees (pricing strategy) • Transaction fees (pricing strategy) • Fee-allocation (pricing strategy)	Theoretical	
Evans & Schmalensee, 2008	Issues in Competition Law and Policy	• Subscription fees (pricing strategy) • Transaction fees (pricing strategy) • Fee-allocation (pricing strategy) • Accessibility (non-pricing strategy)	Theoretical	
Gawer & Cusumano, 2008	Sloan Management Review	• Fee-allocation (pricing strategy) • Bundling (non-pricing strategy)	Theoretical	
Baldwin & Woodard, 2009	Platforms, Markets and Innovation	[Focus on platforms' attributes rather than strategic choices]	Theoretical	
Rysman, 2009	Journal of Economics Perspectives	• Subscription fees (pricing strategy) • Transaction fees (pricing strategy) • Fee-allocation (pricing strategy) • Accessibility (non-pricing strategy)	Theoretical	
Tee & Gawer, 2009	European Management Review	[Focus on innovation platforms]	Empirical qualitative	One mobile internet service platform
Boudreau, 2010	Management Science		Empirical quantitative	

TABLE 1 (Continued)

Authors, year	Journal	Strategic choices examined	Study type	Number and type of platforms
		• Accessibility (non-pricing strategy)		21 handheld computing systems
Tiwana, Konsynski, & Bush, 2010	Information Systems Research	[Focus on innovation platforms]	Theoretical	
Eisenmann et al., 2011	Strategic Management Journal	• Subscription fees (pricing strategy) • Transaction fees (pricing strategy) • Bundling (non-pricing strategy)	Theoretical	
Zhu & Iansiti, 2012	Strategic Management Journal	• Accessibility (non-pricing strategy)	Empirical quantitative	Two video game consoles
Afuah, 2013	Strategic Management Journal	[Focus on platforms' attributes rather than strategic choices]	Theoretical	
Cennamo & Santalo, 2013	Strategic Management Journal	• Inclusivity (non-pricing strategy) • Accessibility (non-pricing strategy)	Empirical quantitative	14 video game consoles
Kapoor & Lee, 2013	Strategic Management Journal	[Focus on innovation platforms]	Empirical quantitative	5,367 hospitals
Kay, 2013	Research Policy	[Focus on platforms' attributes rather than strategic choices]	Empirical qualitative	One case: Qwerty vs. Dvorak
Fuentelsaz, Garrido, & Maicas, 2015	Journal of Management	• Accessibility (non-pricing strategy)	Empirical quantitative	65 mobile communication companies
Boudreau & Jeppesen, 2015	Strategic Management Journal	[Focus on platforms' attributes rather than strategic choices]	Empirical quantitative	85 online multiplayer game platforms

Note: The table does not report a few excellent review papers: Gawer (2009, 2014), Eisenmann, Parker, and van Alstyne (2009) and McIntyre and Subramaniam (2009).

can be set as a fraction of the value of the transaction or as a nominal amount. A fee may take the form of a usage fee; namely, participants are charged for the right to interact with others (e.g., LinkedIn charges a fee for those who wish to send a message to other participants). Alternatively, a platform may set a success fee, charging only participants who have successfully consummated a transaction (e.g., Kickstarter levies a fee on successfully crowd-funded projects, but if funding is not successful no fees accrue).

Finally, pricing strategies involve *fee-allocation*, which is aimed at solving the "chicken-and-egg-problem" that is common for platforms (Parker & van Alstyne, 2005; Rochet & Tirole, 2006). The optimal strategic choice for a platform may be to allocate different fees to different groups of participants (Caillaud & Jullien, 2003); namely, the group that is more price-sensitive should be allocated lower fees to attract participants. In turn, this will induce participants on the "other side" to join, and the platform can recover its loss by allocating fees to these "other-side" participants. It is common to observe platforms that allocate subscription fees solely to the less price-sensitive group; Uber, for example, allocates subscription fees only to drivers. Similarly, eBay charges only sellers (Lerner & Tirole, 2002; Li, Liu, & Bandyopadhyay, 2010; Wan, Cenamor, Parker, & van Alstyne, 2017). The same can be said of transaction fees: Airbnb charges fees to both hosts and guests, whereas many videogame platforms charge a fee only to game-developers (Hagiu, 2009).

2.1.2 | Non-pricing strategies

Transaction platforms also engage in a host of strategic choices that go beyond fee-setting. They are known as "non-pricing strategies" and involve various strategic choices regarding platform design. Extant work addresses three major strategic choices: Accessibility, inclusivity, and bundling.[6]

Accessibility refers to platform choices that concern the participants. The objective is to regulate access to the platform.[7] Specifically, accessibility choices control the number or type of participants that can access the focal transaction platform. The goal is to attract a sufficient number of the "right" kind of participants (Boudreau & Hagiu, 2009). Many transaction platforms choose to "open up" in an effort to attract a broader participant pool (Boudreau, 2010; Fuentelsaz et al., 2015). For example, AutoTrader, the car platform, chose to operate in English and Spanish, and the employment platform, LinkedIn, supports 24 languages noting that "Having multiple language profiles makes it easier for other members and recruiters to find you."[8]

[6]Extant work also documents a variety of choices regarding user interface, ease of use and related technical specifications (Gawer, 2014; Schilling, 2003; Suarez, 2004; Tiwana et al., 2010; Zhu & Iansiti, 2012). For example, eBay's visually appealing user experience stands in contrast to another major classified platform, Craigslist, with its choice of a text-only interface. Similarly, Uber is celebrated, in part, due to the ease of use of its mobile platform, and LinkedIn is applauded for its productivity benefits (Hagiu, 2014).

[7]A transaction platform can also attempt to regulate its participants' engagement with other platforms; e.g., explicitly restricting participants from sharing offerings or within-platform-data on other platforms. Some platforms apply strict restrictions, while others employ less explicit approaches or do not impose restrictions altogether (Cennamo & Santalo, 2013; Claussen, Kretschmer, & Mayrhofer, 2013). The former is exemplified by OnTheMarket, a property platform set up by UK estate agencies, which prohibited participants from listing their offerings on other platforms. Payment cards are often viewed as an example of the latter, launching rewards programs as a nonexplicit approach to encourage exclusive usage (Rysman, 2009). Also see footnote 14.

[8]AutoTrader states "Our goal is to serve this market how and where they want to be served—in English, in Spanish..." (http://press.autotrader.com/news-releases?item=66766). The LinkedIn quote is available at (https://www.linkedin.com/help/linkedin/answer/1717).

At the same time, other platforms opt to curate participation. Many dating platforms, for instance, restrict access to certain social groups with the goal of maximizing positive interactions while minimizing negative ones (Evans & Schmalensee, 2008; Halaburda, Piskorski, & Yıldırım, 2018). Finally, the decision to support multiple payment systems can broaden a platform's accessibility because it enables transactions among a wide range of participants (e.g., a crowdfunding platform may restrict payment to those with certified bank accounts, or also allow anonymous payment via PayPal).

Inclusivity is focused on the offerings; namely, the scope of products and services a platform accommodates. It refers to strategic choices a platform undertakes regarding the nature and number of offerings allowed on the platform (Evans, 2003). Past evidence suggests platforms view the scope of offerings as an important strategic choice, along with pricing strategies (Clements & Ohashi, 2005). Notably, platforms differ in terms of the degree of inclusivity they pursue (Eisenmann et al., 2006). For example, FarFetch specializes in luxury apparel and fashion, focusing on an exclusive set of offerings that consists of leading brands and boutiques. In contrast, eBay pursues an inclusive approach as it accommodates a wide range of sales categories, including apparel, as well as automobiles, sports memorabilia, and so on. There is notable variation even within a given sector, as illustrated by transportation platforms. Lyft exclusively accommodates participants who want to share rides whereas Uber allows ridesharing offerings as well as drivers who make private rides in regular or luxury cars (i.e., UberX and Uber Exec). One observes similar variation across crowdfunding platforms; JustGiving.com is an inclusive platform accommodating donations to a wide range of causes, whereas MedGift.com focuses on donations to cover medical expenses.

Bundling is focused on platform functionality; namely, the number of functions a platform provides. For example, YouTube bundles at least two functions; the ability to upload and watch videos, and an advertisement revenue-sharing function.[9] Formally, bundling concerns strategic choices that define a platform's market identity (Cennamo & Santalo, 2013). A platform may choose to bundle functions from its current segment with those in neighboring market segments because it stands to enjoy economies of scale and scope (Eisenmann et al., 2011; Gawer & Cusumano, 2008). The real estate platform Zillow.com bundles a rental management solution and a mortgage function along with its marketplace for residential properties. At the other extreme, platforms may opt to unbundle in an effort to sharpen their unique identity. For instance, online classified platforms decided to unbundle the functions that online newspapers traditionally served (i.e., generating news articles, sourcing advertisement as well as publishing classifieds) and provide only the latter (Seamans & Zhu, 2014).

To conclude, we review six major strategic choices investigated in the platform literature. Table 1 and the aforementioned discussion showcase the significant body of knowledge accumulated to date. As is evident from the table, several studies have made the case that strategic choices are not taken in isolation. We build on this insight, as well as on those from the strategy literature, to motivate a comprehensive investigation of the overall mix of strategic choices that platforms undertake.

[9]The YouTube example further illustrates the distinction between strategic choices [and their focus]; accessibility [participants], inclusivity [offerings], and bundling [platform functionalities]. YouTube manages accessibility of certain participants (e.g., Which languages and countries to focus on? Which age restrictions to introduce?), decides on inclusivity in terms of the scope of offerings it supports (e.g., Exclude racially offensive content? Include how-to tutorials?), and chooses what bundle of functions it provides (e.g., Only uploading and watching videos? Bundle an additional function which provides revenue-sharing of advertisement income?).

2.2 | Investigating platforms' strategy mixes: The case for an inductive study

The strategic management literature has long recognized the value of studying the overall mix of firms' strategies. The motivating insight is that superior performance arises as a result of certain combinations of firms' strategies, because the outcome of any strategic decision crucially depends on other strategic choices (Porter, 1996; Porter & Siggelkow, 2008).[10] We know that transaction platforms have the incentives and capabilities to manage their overall strategy mix (Gawer & Cusumano, 2002; Iansiti & Levien, 2004; Venkatraman & Lee, 2004). It is not surprising, thus, that within the platform literature there are calls for a comprehensive analysis of "how price and nonprice instruments coexist [and] interact" (Boudreau & Hagiu, 2009: 25). We advocate a study of platforms' overall strategy mix. Our argument is twofold.

Empirically, there is growing evidence that platforms' success is determined not by any individual strategy, but rather by the combination of multiple strategic choices. Some evidence is qualitative in nature (e.g., Boudreau & Hagiu, 2009; Li & Pénard, 2014). Quantitative analyses further uncover the interplay between selected strategy pairs; for example, the level of participants' accessibility and the degree of product inclusivity (Cennamo & Santalo, 2013). Notably, even platforms that share a seemingly similar setting can successfully pursue different mixes of strategic choices (Dushnitsky & Fitza, 2018; Halaburda et al., 2018). For example, the Chinese marketplaces TaoBao and Tmall differ in their accessibility strategy (i.e., participating sellers are companies on the latter, while they are mainly individuals on the former); inclusivity strategy (i.e., the latter filters and verifies branded offerings whereas the former allows for all offerings); and subscription fee (i.e., the latter charges upfront fees, which it attributes to the need to weed out sellers of low quality or counterfeit goods). Finally, extant work brings to light the adverse implications of a misguided strategy mix. Cennamo and Santaló (2015) attribute Groupon's failure to a misalignment in the platform's accessibility and inclusivity choices. Our discussion underscores a common thread across these studies; the insight that platforms' success is a function of their overall mix of strategic choices.

Theoretically, there is a prolific body of work on transaction platforms and their strategic choices (Baldwin & Von Hippel, 2011; Gawer, 2014; Schilling, 1998, 2002; Zhu & Iansiti, 2012). However, the work is fragmented across several distinct streams of literature that have evolved independently. Works in economics, for example, underscore arm's-length pricing as one of the central strategic choices of a transaction platform. Other studies view platforms as architects delineating strategies and structures (Baldwin & Von Hippel, 2011; Boudreau, 2010; Schilling, 1998, 2002; West, 2003; Zhu & Iansiti, 2012). There is, therefore, a host of theoretically motivated factors, but no single all-encompassing theory of platform strategies. As a result, significant uncertainty remains about optimal strategies in platform development and management (McIntyre & Srinivasan, 2017).

In summary, the platform literature could benefit from a comprehensive study of exploratory nature. The study should be comprehensive in the sense that it systematically documents the mix of strategic choices that a platform undertakes, and further details the performance implications. It should be exploratory in the sense it does not anchor on a single theoretical perspective, but rather documents a common set of stylized facts from which one can derive

[10]Porter (1996) attributes Southwest airlines success to the mix of strategic choices it undertook regarding accessibility (e.g., targeting secondary cities), offerings (e.g., no food), and prices (e.g., low fares).

theoretical insights. To facilitate such an investigation, we focus on a particular, well defined, context: the crowdfunding setting.

3 | TRANSACTION PLATFORMS: THE CROWDFUNDING SETTING

Crowdfunding platforms are transaction platforms that serve as a conduit between individuals who seek capital to fund an innovative idea, a social cause or life plans (*crowdfundees* hereafter), and prospective capital providers (*crowdfunders* hereafter) (Belleflame, Omrani, & Peitz, 2015). Although shopping malls and credit cards are often given as examples of transaction platforms (Evans & Schmalensee, 2008), crowdfunding platforms may be seen as closer to other web-based transaction platforms, which have recently attracted scholarly attention (Cusumano, Gawer, & Yoffie, 2019a, 2019b). Web-based transaction platforms include real estate platforms (e.g., Zillow, Zoopla), services or gig-economy platforms (e.g., Upwork, Fiverr), travel and transportation platforms (e.g., Expedia, Uber), dating platforms (e.g., eHarmony, Match.com), and so on. Similar to these transaction platforms, crowdfunding platforms create value by facilitating interactions and transactions (Evans & Schmalensee, 2016).

At the same time, the crowdfunding setting has some distinct features (Dushnitsky & Zunino, 2019). Understanding the environmental factors that characterize this setting can aid in interpreting observed patterns. It can also inform their applicability to other transaction platforms (Boudreau & Jeppesen, 2015). Accordingly, we discuss the crowdfunding setting along three dimensions: (a) the nature of the offerings (i.e., the products or services) that participants exchange through the platform; (b) the type of participants and the way in which they interact and consummate their transactions; and (c) the nature and intensity of the market failures and frictions that underlie the interactions. The choices that crowdfunding platforms undertake should be viewed in light of these environmental factors, as we expand below.

First, consider the nature of the offerings. The products and services differ across the different environments that transaction platforms target (Evans & Schmalensee, 2016). Some platforms facilitate the exchange of physical goods (e.g., Autotrader, the marketplace for cars; eBay, the auction marketplace; or Zillow, the real estate platform), while others focus on exchanges of labor (e.g., Upwork, a generalist freelance platform; Angie's List, a platform targeted at home contractors), or services (e.g., Skyscanner, a platform for flight booking). Crowdfunding platforms facilitate the flow of capital to fund personal, social or business projects.

Second, consider the participants and the way in which they consummate their transactions. Extant work notes that participants share an overarching goal (e.g., getting a ride, as in the case of ride-sharing platforms, or finding a partner, as in the case of dating platforms), yet may be heterogeneous in terms of their preferences and the utility that they obtain from a transaction (Halaburda et al., 2018; Seamans & Zhu, 2017). Crowdfunding participants share the common goal of exchanging money through the Internet, but they may be heterogeneous in their utility and preferences. Some crowdfundees are entrepreneurs seeking to finance their ventures; others are inventors searching for cheap capital to transform their ideas into marketable products; while others are activists championing social causes or simply people collecting money for personal purposes (Belleflame et al., 2015). Similarly, among crowdfunders, there are individuals who fund projects in expectation of financial returns; while others seek to fulfill social goals or a balance of the two (Polzin, Toxopeus, & Stam, 2018).

Another important dimension of variation is the way in which participants consummate their transactions. Perhaps the most common approach is one-to-one, where there is a single participant on each side of a realized transaction (e.g., Airbnb, eHarmony). However, there are other approaches; for example, a core proposition of ride-sharing platforms (e.g., Lyft) is a one-to-many transaction where a single car concurrently carries multiple passengers. In crowdfunding, participants engage in many-to-one transactions: Each crowdfundee posts a project on the platform and the project aggregates capital from multiple crowdfunders.

Third, transaction platforms are susceptible to various market failures and frictions (Parker & van Alstyne, 2014). The type and intensity of these concerns vary across environments. They range from the mundane (e.g., the need to process payments from different sources and through different payment systems) to the substantial (e.g., the presence of information asymmetries). The intensity of the concerns is often a function of the environment; namely, the characteristics of the offerings and participants. For example, platforms that facilitate the exchange of well-defined commodity-like products or services (e.g., gardening tools on eBay, or car rides via Uber) exhibit a relatively low level of information asymmetry. Conversely, crowdfunding platforms may experience high information asymmetries between crowdfundees, who intend to finance novel ideas and/or innovative entrepreneurial projects, and crowdfunders, who evaluate the projects based on the information posted on the platform (Courtney, Dutta, & Li, 2017). It is against this background that one understands the hallmark of crowdfunding: Aggregating funds from the crowd. The many-to-one nature of transactions helps in mitigating information asymmetry concerns, as the presence of multiple crowdfunders enables project validation and risk-sharing (Bapna, 2019; Mollick & Nanda, 2016).

In sum, this section identifies three dimensions along which transaction platforms vary and maps them onto our empirical setting. Charting the environmental features specific to the crowdfunding setting aids with the interpretation of the strategic choices we document. It further allows to derive theoretical implications to transaction platforms beyond crowdfunding.

4 | METHODOLOGY: DATA AND APPROACH

Several streams of work inform our knowledge of transaction platforms and their strategic choices (Section 2). The literature review suggests that the current state of the literature is fragmented. Absent an all-encompassing theoretical framework, we avoid unwise hypotheses development that is formulated solely for the purpose of legitimizing statistically significant results (Bettis, 2012; Helfat, 2007). Rather, following Bettis, Gambardella, Helfat, and Mitchell (2014), we undertake an inductive approach and present an exploratory study of platforms' strategy mix and performance.

We construct a large dataset (details below) and conduct what Lyngsie and Foss (2017) define as an inductive large-N study. It is a quantitative-based approach that distills key facts from a comprehensive large dataset. Inductive large-N studies are increasingly common in the field of strategy (in addition to Lyngsie & Foss, 2017, see Birhanu et al., 2016; Claussen et al., 2015). Hence, our study is positioned at a mid-point between the testing of specific hypotheses and an open-ended exploratory contribution.[11] Below, we describe the data as well as the variables capturing strategic choices and platform performance. The findings

[11]The latter is associated with qualitative small-N research design that is usually employed in inductive studies (Eisenhardt, 1989). For an excellent example in the platform literature, see Boudreau and Hagiu (2009).

section reports the exploratory analyses; the interpretation section maps our findings to the literature.

4.1 | Data collection

We developed a proprietary hand-collected database including information on the population of hundreds of crowdfunding platforms in the EU-15 countries. We dropped platforms geared towards one specific project or organization, as well as those solely serving professional investors.[12] The data collection proceeded as follows. First, we identified the population of crowdfunding platforms launched in the EU-15 countries through the end of 2017. We scanned all European and national crowdfunding associations and listed their members. We also reviewed crowdfunding studies that focused either on Europe as a whole or on individual EU-15 countries. We then visited every platform's website to check whether it met our definition. Second, once included in the database, we collected detailed data on platforms' strategic choices and performance through the end of 2018. The information was gleaned from platforms' websites (both current and past pages accessed using the Wayback Machine internet archive), associated Facebook and LinkedIn pages (if available), and the crowdfunding studies mentioned above. Third, we gained access to information about platforms' web traffic through a collaboration with SimilarWeb, one of the major providers of web analytics services. It records traffic information for over 80 million websites across 190 countries and 250 categories. These efforts resulted in a comprehensive dataset covering the population of crowdfunding platforms launched in the EU-15 countries. We observe 788 crowdfunding platforms, starting from 1999, the year of the first crowdfunding platform was launched in Europe, and following their performance through the end of 2018.

4.2 | Variables capturing platforms' strategic choices and performance

We constructed empirical proxies of (pricing and non-pricing) strategic choices, as well as the performance of crowdfunding platforms. The strategic choices we considered mirror those identified through the literature review.

Platform pricing strategies are captured by the following three variables. The variable *Subscription_Fee* equals 1 if the focal platform charges participants a subscription fee, and 0 otherwise. We employ a binary variable for two reasons. First, as we describe later, a majority of crowdfunding platforms do not levy a subscription fee. Second, among those that do charge a subscription fee, some charge an absolute amount, while others set it as a percentage of

[12]Funding platforms dedicated to wealthy investors are excluded for the following reason. A common feature across crowdfunding platforms is aggregation of capital (Belleflamme, Lambert, & Schwienbacher, 2014); "external financing from a large audience [the 'crowd'], in which each individual provides a very small amount." The presence of multiple small contributions is associated with network effects; both indirect (e.g., aggregating diverse customers' and investors' opinions reduces demand uncertainty and uncovers features of interest; Strausz, 2017) and direct effects (e.g., validating the investment and creating momentum among other investors; Agrawal, Catalini, & Goldfarb, 2015; Kuppuswamy & Bayus, 2018). While certain funding platforms cater to wealthy investors, this does not mean that wealthy individuals are excluded from participation in the 788 platforms we study.

crowdfundees' funding target; such that there is not a meaningful continuous variable that is systematically available for all the platforms in our dataset.

The variable *Transaction_Fee* captures the fee a platform charges to participants when a transaction materializes. Most crowdfunding platforms set a transaction fee as a percentage of the transaction amount. Hence, the continuous variable *Transaction_Fee* is the percentage of the total capital raised that a platform charges when transactions materialize. We observe that some platforms employ a fee schedule; for example, the French platform Ulule charges fees that range from 1.67% to 4.17%, depending on the campaign's funding target. For such platforms, *Transaction_Fee* is calculated as the average percentage value.

Finally, the variable *Fee_Allocation* equals 1 when the platform charges both crowdfunders and crowdfundees, and equals 0 if platform fee(s) is (are) charged only to one group of participants.[13]

We also constructed empirical proxies for the non-pricing strategies; accessibility, inclusivity and bundling. Consider the choices aimed at controlling accessibility.[14] As Internet-based platforms, crowdfunding platforms are quite easy to access. That said, during our data collection we identified a couple of factors that shape accessibility across European platforms: The lack of awareness and the challenge to processing payments. For example, a platform that runs solely in German may miss out on participants who do not speak the language (i.e., French or Spanish speakers will be unaware of relevant projects). By listing projects in one or more widely spoken languages, a platform can substantially increase awareness of prospective participants and thus broaden accessibility. Namely, a crowdfunding platform can expand the pool of prospective participants by doing so. The variable, *Prosp_Participant_Pool_Lng*, equals the number of millions of people for whom the language(s) supported by the focal platform is the native language (source: Ethnologue).

The choice of payment systems further impacts the platforms' accessibility. Crowdfunders and crowdfundees must exchange money for a transaction to materialize. To fulfill the transaction, crowdfunding platforms have a choice of payment systems, ranging from traditional bank transfers to online ones (e.g., PayPal, Stripe, and MangoPay). A crowdfunding platform may choose to adopt multiple payment systems to boost the number of participants it can serve. Accordingly, we construct the variable *Prosp_Participant_Pool_Pymnt*, computed as the number of different payment systems adopted by a focal platform.

Offering_Inclusivity is a binary variable equal to 1 if the platform hosts a wide range of offerings, and 0 otherwise. It is an indicator of the level of inclusivity on a focal platform. For example, the variable is equal to 1 for a highly inclusive platform such as Seedrs, a UK platform for investing in start-ups and later-stage businesses which does not apply industry or sector restrictions; or BuonaCausa, an Italian platform where people collect money for personal projects, charities and causes, which does not impose any domain limitations. Conversely, the variable is

[13]Data on pricing strategies was unavailable for 172 platforms. For these platforms, we imputed the missing data by substituting in the population median. The results are robust to dropping these observations.

[14]As for participants' engagement with other crowdfunding platforms, it is often tightly regulated and crowdfundees are usually discouraged from doing so. Anecdotally, they are advised to avoid simultaneously running campaigns on multiple platforms because it bifurcates their efforts; it is time-consuming and dilutes the momentum of growing investor numbers (and investment amounts) on a focal platform. It also decreases the chances of meeting the funding threshold (where applicable). Theoretically, the advice can be traced to one of the main features of crowdfunding platforms: aggregating funds from the crowd. The many-to-one feature helps to mitigate concerns because the presence of multiple crowdfunders serves as a validation and risk-sharing mechanism (Bapna, 2019; Mollick & Nanda, 2016). Hence, crowdfundees are encouraged to keep to one platform and grow the number of investors therein.

set to 0 if a platform pursues an exclusive strategy; hosting projects dedicated to specific products or services (e.g., Musicstarter, a German platform launched to fund music projects by musicians and bands), or projects focused on a specific geographical area (e.g., Ginger, an Italian platform launched in the Emilia Romagna region that targets local projects).

The variable *Bundling* captures whether a focal platform bundles the functions of multiple crowdfunding types. The crowdfunding literature identifies four distinct crowdfunding types. We briefly describe them and assign a binary variable to each. Lending crowdfunding platforms enable crowdfunders to solicit and manage interest payments in return for a loan (*Lending* = 1, else zero). On equity platforms, crowdfunders receive an equity stake in the funded venture (*Equity* = 1, else zero). Reward crowdfunding platforms enable crowdfundees to offer tangible or intangible rewards in exchange for funding (*Reward* = 1, else zero). Finally, as the name suggests, donation crowdfunding does not entail extrinsic rewards to crowdfunders (*Donation* = 1, else zero). Many platforms choose to operate a single crowdfunding type. For these platforms the variable *Bundling* equals 0. However, there are platforms that opt to bundle several crowdfunding functions (Dushnitsky, Guerini, Piva, & Rossi-Lamastra, 2016). For these platforms the variable *Bundling* equals 1.

As for platform performance, we constructed three variables. The first is a proxy of down-side performance (i.e., dissolution), and the other two focus on up-side performance, using different proxies for platforms' growth.

The variable *Dissolved* is a binary variable that is equal to 1 if the platform dissolved prior to the end of 2018, and zero else. The benefit of this variable is that we observe it for each and every platform in our dataset. Moreover, it is a well-established proxy of performance; termination of operations has been long utilized as an indicator of performance (e.g., Schilling, 2002; Seamans & Zhu, 2017). A platform is classified as "dissolved" if it experienced one of the following three scenarios: The platform website does not operate as of December 31, 2018 (e.g., the Belgian platform Belgodisc) or had not been updated for several years (e.g., the German platform Crowdenergy); alternatively, the website explicitly states that the organization operating the platform had either failed or exited the crowdfunding sector (e.g., the UK platform Solar Schools). Lastly, a platform may have merged (e.g., the Italian platform Crowdfunding-Italia, which merged with Kapipal) or redirected all traffic to another platform (e.g., the UK platform WeDidThis, which merged with Crowdfunder).[15]

The second platform-performance variable captures the growth in the annual transaction amount. Recall, the core proposition of a transaction platform is to facilitate transactions between participants. Accordingly, the variable is a direct proxy of a platform's ability to realize this objective. The variable *Transactions_Growth* is the logarithmic growth of the annual amount (in thousands of euros) facilitated by a focal platform between 2016 and 2018. To construct this variable, we used the Wayback Machine Internet archive to capture screenshots of the homepages on the last days of every year. We hand-collected information from the following sources: (a) several platforms report the annual transaction amount in a dedicated section, including detailed platform stats (e.g., stats.goteo.org); (b) others report only the cumulated amount raised, usually on the platform's homepage (e.g., www.lendahand.com); and (c) where applicable, we calculated the annual amount by summing the individual capital raised across all the crowdfunding campaigns consummated that year.

[15]We recognize there is a marked difference between a platform (a) ceasing its crowdfunding operation, and (b) undergoing M&A. The former can be viewed as negative performance, while M&A may be interpreted as a positive performance. We combined the two scenarios in one variable because M&A is a rare event for European crowdfunding platforms: out of 788 platforms, 311 ceased crowdfunding operation (39%) and only 21 (3%) merged. We ran two robustness tests; a probit excluding the 21 merged platforms, and a multinomial probit discerning M&A from dissolution. The results are robust and available upon request.

The third platform-performance variable captures the growth in web traffic to the platform. It has been recently used as a performance proxy in the fields of information systems and finance (Burtch, Ghose, & Wattal, 2013; Kerr, Lerner, & Schoar, 2014). To construct this measure, we collaborated with SimilarWeb, a leading provider of web analytics services. It captures web traffic information for the universe of active websites that met a minimum threshold of 5,000 nonunique monthly visits. Through our collaboration we obtained historical web traffic records dating back to the start of SimilarWeb records. Using these data, we constructed *Traffic_Growth* for every platform that was active through the end of 2018 and had a standalone domain. The variable *Traffic_Growth* is the logarithm of the growth in web traffic between the median monthly traffic in 2017 and the median traffic in 2018.

5 | FINDINGS

5.1 | Descriptive statistics on strategic choices

We observe substantial variation in platforms' adoption of specific strategic choices. For instance, 84% of the European crowdfunding platforms charge transaction fees to crowdfundees who successfully secured funding, yet only 4% levy fees on both participant groups (i.e., crowdfundees and crowdfunders). The vast majority of platforms charge transaction fees, while a small minority (12%) opts for subscription fees. As for non-pricing strategies, platforms are almost evenly split in terms of inclusivity, with 48% (52%) of the platforms operating a wide (narrow) range of offerings. About 53% of the platforms opt to broaden the pool of prospective participants by supporting languages spoken by more than 200 million individuals (for comparison, the total European population is 406 million as of 2016), and 74% of the platforms broaden accessibility by adopting multiple payment systems. Finally, we observe that 16% bundle different crowdfunding functions within the same platform.

Table 2 captures correlations among pairs of strategic choices. It uncovers several interesting patterns. Among pricing strategies, platforms that choose to charge subscription fees tend to adopt lower transaction fees (correlation between *Subscription_Fee* and *Transaction_Fee*: −0.12; *p*-value: .00) and are moderately more likely to charge both crowdfunders and crowdfundees (correlation with *Fee_Allocation*: 0.09; *p*-value: .01). Within non-pricing strategies, we observe similar correlations of low to moderate magnitude. Table 2 also indicates correlations between pricing and non-pricing strategies. For example, the decision to levy a subscription fee is positively correlated with the adoption of an inclusive offering strategy (correlation between *Subscription_Fee* and *Offering_Inclusivity*: 0.11; *p*-value: .00); yet it is not significantly correlated with broadening the participant pool through the adoption of widely spoken languages (correlation between *Subscription_Fee* and *Prosp_Participant_Pool_Lng*: −0.00; *p*-value: .95). In sum, we observe correlations of meaningful magnitudes for many pairs of strategic choices. These correlations indicate there are systematic patterns to the strategic choices that platforms undertake. The Appendix further exemplifies this point through bivariate analysis of selected strategy pairs.

5.1.1 | Platforms' strategy mixes

To the extent platforms undertake a comprehensive approach to their strategic choices, we are in need of a methodology that can capture their strategy mixes (Hambrick, 1983; Porter &

TABLE 2 Correlations of platform strategic choices

	Subscription	Transaction_Fee	Fee_Allocation	Prosp_Participant_Pool_Lng	Prosp_Participant_Pool_Pymnt	Offering_Inclusivity
Subscription_Fee	1.000 [.000]					
Transaction_Fee	−0.118 [.001]	1.000 [.000]				
Fee_Allocation	0.094 [.008]	−0.038 [.282]	1.000 [.000]			
Prosp_Participant_Pool_Lng	−0.002 [.946]	−0.032 [.369]	−0.016 [.661]	1.000 [.000]		
Prosp_Participant_Pool_Pymnt	−0.087 [.014]	0.016 [.653]	−0.095 [0.008]	0.111 [.002]	1.000 [.000]	
Offering_Inclusivity	0.112 [.002]	−0.096 [.007]	0.108 [.002]	0.105 [.003]	−0.018 [.615]	1.000 [.000]
Bundling	0.046 [.195]	0.019 [.596]	−0.039 [.273]	0.036 [.310]	0.073 [.039]	0.073 [.042]

Note: p values in square brackets.

Siggelkow, 2008).[16] Following prior work, we run a cluster analysis to unveil similarities in platforms' strategy mixes (Gruber, Heinemann, Brettel, & Hungeling, 2010; Ichniowski, Shaw, & Prennushi, 1997; Leiponen & Drejer, 2007). The cluster analysis groups the platforms such that the statistical variance among platforms clustered together is minimized while between-cluster variance is maximized. To that end, we employed a common two-step clustering procedure (Short McKenny, Ketchen, Snow, & Hult, 2016; Jansen, Simsek, & Cao, 2012). As inputs to the cluster analysis, we included all the proxies of platforms' strategic choices and further standardized them to address concerns arising from scale differences (Milligan & Hirtle, 2003). The two-step clustering procedure first entailed running hierarchical cluster analysis developed by Ward (1963) to determine the number of clusters and their centroids. Next, we drew on the output from the first stage and assigned platforms to clusters using the *k*-means nonhierarchical clustering method.[17] The cluster analysis highlights three groups of platforms where each group deploys a similar mix of strategic choices.

Table 3 (Panel a) reports variables mean values across each of the three clusters as well as for the overall sample.[18] The Scheffé post hoc tests are used to gauge variable values that statistically differ across clusters. Where there are no significant differences between clusters, the variable is assigned the same superscript label. Table 3 (Panel b) translates these superscripts into verbal bracket names for

[16]In his seminal test of Porter's framework, Hambrick (1983) argues cluster analysis is the appropriate approach to study firm strategy; "Regression indicates the independent effects of strategic attributes on [performance]; but, without a complex web of interaction terms, regression does not reveal which combinations of attributes are particularly good or bad. For example, from the regression results noted above one could conclude that [a firm] will do well if it has these characteristics: patented innovations, high capacity utilization, a relatively broad domain, and low vertical integration. But, because regression quite literally identifies the isolated effects of each independent variable, nothing is known about whether it makes sense to pursue these characteristics in concert. It may be that this combination of attributes in a single business actually leads to very low performance or, more likely, that this combination simply is not very feasible." (p. 696).

[17]The Stata commands *cluster wardslinkage* and *cluster kmeans* were used to estimate the first and second parts of the cluster analysis, respectively. To determine the number of clusters in the data set we considered the popular Duda–Hart stopping rule (Duda, Hart, & Stork, 2011; Everitt, Landau, Leese, & Stahl, 2011) which has been used in prior work (e.g., Criscuolo, Dahlander, Grohsjean, & Salter, 2017; Haas, Criscuolo, & George, 2015; Thatchenkery, Katila, & Chen, 2012). Using the Calinski–Harabasz pseudo-F yields equivalent clustering.

[18]Table 3 reports the variables in original units (i.e., nonstandardized values) for clarity and ease of interpretation.

ease of interpretation, in line with Gruber et al. (2010). Specifically, we denote whether each strategic choice within a focal cluster is associated with low or high values compared to the other clusters. In this section, we describe the three clusters and the mix of crowdfunding strategic choices they represent. General labels were used to name the clusters in order to facilitate interpretation of the findings (see Section 6 for discussion of generalizable implications). To avoid overly lengthy labels, the names identify only those non-pricing and pricing strategies on which the cluster scores high.

The cluster *Catch Participants*, *Charge Transactions*, *Asymmetrically* is the most populated of the three. It consists of 365 crowdfunding platforms. Over half of the platforms facilitate reward crowdfunding; and the remainder is donation crowdfunding platforms.[19] As for other non-pricing strategies, one observes a nuanced approach whereby the platforms are highly expansive on one dimension and more focused on another dimension. A typical platform engages in a broad accessibility strategy; using languages spoken by over 300 million individuals and supporting several payment systems. At the same time, the platforms pursue a narrow, exclusive, range of offerings.[20] As for pricing strategies, the platforms usually charge high transaction fees to crowdfundees. They do not pursue subscription fees; nor do they allocate fees to the other participant group (i.e., crowdfunders).

One could argue that these platforms cleverly juxtapose pricing and non-pricing strategies as a way to maximize successful transactions. The choice of high accessibility along with a narrow, exclusive range of offerings implies that the platforms seek to attract the largest possible pool while focusing on like-minded participants in terms of their preferences or interests. Moreover, the pricing choices encourage prospective participants to join the platform and browse or post projects of interest. To that end, the platforms charge (a) zero or trivial fees to crowdfunders, and (b) high fees to crowdfundees, but mainly on successful transactions. To facilitate performance analyses, we defined the variable *Participants_Transactions_Asy* which equals 1 for platforms affiliated with this cluster, else zero.

The second cluster, *Catch Offerings*, *Charge Subscription*, *Symmetrically*, is populated by 315 crowdfunding platforms. About half of these platforms are lending and the other half are equity crowdfunding platforms.[21] A common feature of these platforms is that the dominant logic for both participant groups is one of engaging in a financial transaction. The crowdfundees seek funding and the crowdfunders participate in anticipation of a monetary return. As for the other non-pricing strategies, the specific choices seem to be the inverse of those observed for the previous cluster. Still, we observe a subtle balance between inclusivity and accessibility. On the one hand, the platforms host a wide range of offerings; that is, a "catch all" strategy. On the other hand, their accessibility strategy is less broad; in comparison to other clusters, these platforms reach fewer prospective participants as they use less widely spoken languages and support fewer payment systems. As for pricing strategies, the platforms are (a) more likely to charge subscription fees, and (b) transaction fees are set at a lower percentage than other platforms. Also, fees are allocated symmetrically to both participant groups.

These 315 platforms also pursue a nuanced mix of strategic choices. Yet, whereas platforms in the *Catch Participants*, *Charge Transactions*, *Asymmetrically* cluster seem to adopt a "go deep" strategy

[19]As illustrated by binary variables values for *Reward* (0.53) and *Donation* (0.46) in Table 3, Panel a (Cluster 1).

[20]This is not to say that every donation platform strictly adheres to this profile. For example, the prominent donation platform GoFundMe explicitly chose to include campaigns across a wide range of causes and domains. It is noteworthy that the platform opted to uphold its approach even in the face of external pressures to prune certain offerings (e.g., calls to avoid hosting campaigns associated with politically sensitive issues such as abortion, alt-right causes, etc.). We thank the editors and an anonymous reviewer for highlighting this example.

[21]Lending and equity crowdfunding platforms populate the cluster at about equal fractions, as is evident from the value of 0.5 for each of the respective indicators; Lending and Equity (Table 3, Panel a: Cluster 2).

TABLE 3 Crowdfunding strategy mixes: Clusters of platforms with similar strategic choices

Panel a: Cluster analysis results

Variables	Sample mean	Cluster 1: Catch participants, charge transactions, asymmetrically ($n = 365$)	Cluster 2: Catch offerings, charge subscription, symmetrically ($n = 315$)	Cluster 3: Catch all, charge high ($n = 108$)
Subscription_Fee	0.120	0.036[b]	0.206[a]	0.157[a]
Transaction_Fee	4.854	5.117[a]	4.548[b]	4.858[b]
Fee_Allocation	0.043	0.003[b]	0.095[a]	0.028[b]
Prosp_Participant_Pool_Lng	279.6	296.4[a]	248.1[b]	314.7[a]
Prosp_Participant_Pool_Pymnt	2.095	2.296[a]	1.781[b]	2.333[a]
Offering_Inclusivity	0.481	0.307[b]	0.654[a]	0.565[a]
Bundling	0.155	0.000[b]	0.044[b]	1.000[a]
Equity	0.240	0.000[c]	0.505[a]	0.278[b]
Lending	0.242	0.000[c]	0.533[a]	0.213[b]
Reward	0.378	0.534[b]	0.000[c]	0.954[a]
Donation	0.324	0.466[b]	0.006[c]	0.768[a]

Note: In the columns capturing the three clusters, cluster means are reported in original units. In each row, cluster means with the same superscript are not significantly different ($p < .1$) on the basis of Sheffe post hoc test. The highest bracket is labeled with superscript "a", the next highest bracket with superscript "b", and so on.

Panel b. Verbal description of cluster average strategy mix

Variables	Cluster 1: Catch participants, charge transactions, asymmetrically	Cluster 2: Catch offerings, charge subscription, symmetrically	Cluster 3: Catch all, charge high
Subscription_Fee	Low	High	High
Transaction_Fee	High	Low	Low, high
Fee_Allocation	Low	High	Low
Prosp_Participant_Pool_Lng	High	Low	High
Prosp_Participant_Pool_Pymnt	High	Low	High
Offering_Inclusivity	Low	High	High
Bundling	Low	Low	High
Equity	Low	High	Medium
Lending	Low	High	Medium
Reward	Medium	Low	High
Donation	Medium	Low	High

mix, those in the current *Catch Offerings*, *Charge Subscription*, *Symmetrically* cluster opt for a "go wide" approach. To see that, note that the choice of an inclusive offering strategy is geared toward increasing the number of projects. At the same time, the pricing choices operate in tandem to levy (a) significant

fees, (b) upfront, (c) on both sides of the market. These choices effectively operate as a screening mechanism, deterring crowdfundees with low-quality projects as well as "tourist" crowdfunders who do not intend to invest actively. The pursuit of a narrow accessibility strategy reinforces this approach. To facilitate performance analyses below, we defined *Offerings_Subscription_Sym*, which equals 1 for every platform that is affiliated in this cluster, else zero.

The third cluster *Catch All*, *Charge High* consists of 108 platforms. As the label suggests, these platforms bundle functions of several crowdfunding types. A limited fraction (17% of the platforms in the cluster) bundle three or even four crowdfunding types. The most common approach is to bundle reward and donation in a single platform (62% of the platforms in this cluster).[22] The choice reflects an assumption of commonalities in participants' preferences and hence an opportunity for economies of scale and scope. It further indicates that the competencies needed to facilitate reward crowdfunding likely overlap with those required in donation crowdfunding (e.g., mobilizing communities of participants who share a complex set of social and financial motivations; also see Ryu, Kim, Kim, & Kim, 2017).

This strategy mix stands apart from the other two clusters. A key feature of *Catch All*, *Charge High* platforms is that their all-embracing approach is manifested predominantly in their non-pricing choices. A typical platform accommodates a wide range of offerings, broad participant accessibility and a bundled approach. The pricing choices of these platforms exhibit a less consistent pattern; an upfront subscription fee is common but is usually levied only on one group of participants. To facilitate performance analyses, we defined *CatchAll_ ChargeHigh* to equal 1 for every platform affiliated with this cluster, else zero.

In conclusion, European crowdfunding platforms cluster into three strategy mixes. Each mix features a set of strategic choices that are arguably geared toward supporting successful transactions. Every one of the 788 platforms is affiliated with one of the three strategy mixes. However, platforms do not strictly adhere to the profile of the strategy mix they are affiliated with.[23] In fact, a study of platforms' choices would be incomplete without recognizing that platforms may choose to differentiate from the exact strategy mix profile. The variable *Differentiation* captures the extent to which a given platform's strategic choices differ from the profile of the strategy mix the platform is affiliated with.[24] Formally, it is the Euclidian distance between the focal platform and the centroid of the cluster to which it is affiliated, along the vector of the strategic choices.[25]

Figure 1 presents a histogram of *Differentiation*. Several insights follow. First, we note some level of differentiation in platforms' strategic choices: Many platforms differ from the profile of the strategy mix they are affiliated with. This underscores the fact that each platform proactively makes choices that shape the pool of participants and offerings. This observation advances an agentic view of platforms (i.e., platforms are agents that are in control of their

[22]Almost all the Bundled platforms include a reward approach, as can be seen from the fact that the binary variable *Reward* takes the value of 0.95 (Table 3, Panel a: Cluster 3). A donation approach constitutes a close second (value of 0.77), whereas lending and equity approaches are a distant third and fourth (with values of 0.28 and 0.21, respectively).

[23]By construction, the cluster analysis implies that a platform i is associated with cluster x if its distance from the centroid of cluster x is smaller than its distance from any other cluster. This is not to say that there is no variation within a cluster. It is possible that both platforms i and j are part of cluster x, yet platform i is more distant from the centroid of cluster x than platform j.

[24]Here, differentiation refers to the extent to which a platform differs from its strategy mix profile on multiple strategic choices. It is not to be confused with differentiation on a single strategic choice (e.g., pursuing a specialist focus where other platforms operate as generalists).

[25]In constructing *Differentiation*, we use cluster centroids which exclude the focal platform.

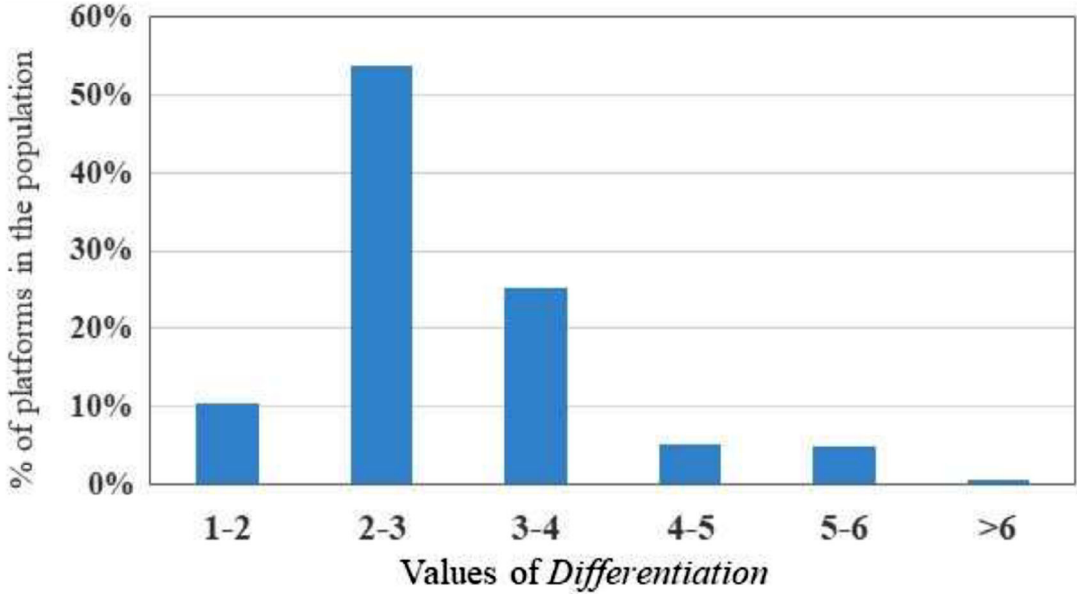

FIGURE 1 Histogram of the level of differentiation in platforms' strategic choices

strategy). Second, at the same time, the level of differentiation is moderate. About 64% of the platforms differ along a couple of strategic choices, of which about a fifth of the platforms closely adheres to the set of choices in their respective strategy mix. It is a noteworthy observation, given that there are hundreds of possible permutations of the strategic choices under scrutiny. The "closeness" to a small number of strategy mixes could be seen as an indication of the interplay among platform choices. It underscores the need for a comprehensive approach to the study of platform strategic choices. Taken together, these observations beg the question of whether differentiation breeds results. We address this below.

5.1.2 | Platforms' performance

We turn to investigate the association between strategic choices and performance. To that end, we employ three performance measures; one that captures downside performance (dissolution), and two measures of upside performance (growth in transaction amounts and web traffic).

Our data suggest that 788 crowdfunding platforms were launched across the EU-15 countries through the year 2016, of which 332 platforms (42%) were no longer active by the end of 2018. Table 4 reports the results of a Probit regression where *Dissolved* is the dependent variable. The models include the strategy mix indicators and the differentiation variable. We control for the number of years elapsed between the year a platform was launched and the last year in our data (*Year_Elapsed_2018*). For each platform, we control for the characteristics of its home country at the year of entry; $GDP\_Per\_Capita_e$ is the gross domestic product (in 1,000 euros) per capita (source: World Bank), $Population\_Density_e$ is country population divided by its land area (source: Eurostat), and $Country\_Failure\_Rate_e$ is the ratio between the number of firms dissolved and the number of firms active in the country (source: Eurostat).

Model 1 presents a base model with the control variables. Neither GDP per capita nor population density are statistically significant at conventional confidence levels. Conversely, both *Year_Elapsed_2018* and *Country_Failure_Rate* have positive and statistically significant coefficients (respectively, β = .14, *p*-value = .04 and *β* = .09, *p*-value = .04).

Model 2 adds the variable *Differentiation* as well as the strategy mix indicators. That is, we include *Participants_Transactions_Asy* and *CatchAll_ChargeHigh*, while keeping *Offerings_Subscription_Sym* as the omitted category. Both strategy mix indicators have coefficients that are positive and statistically significant (β = .39, *p*-value = .00 and β = .61, *p*-value = .00, respectively). Namely, nonfinancial (i.e., donation and reward) platforms and platforms bundling several crowdfunding functions are 14 and 22% more likely to dissolve, respectively, compared to financial (i.e., equity and lending) crowdfunding platforms.

As for *Differentiation*, it exhibits a negative and significant coefficient (β = −.22, *p*-value = .00). Note that the specification includes the strategy mix indicators, such that *Differentiation* captures the effect of platforms' differentiation irrespective of the specific strategy mix they are affiliated with. The fact that the coefficient is highly statistically significant indicates that the strategic choices a focal platform undertakes, and specifically the extent to which it chooses to deviate from the strategy mix it is affiliated with, are systematically associated with its performance. Interestingly, the economic magnitude of the effect of differentiation is sizable (the effects are calculated while holding the other variables at their means). As *Differentiation* goes from its mean value to one standard deviation above it, the probability of platform dissolution decreases by a fifth; from 42% to 34%. The findings indicate that more differentiated platforms exhibit greater longevity.

We now shift our attention from downside to upside performance, exploring platforms' growth in transactions and traffic. Because growth models can be estimated only for platforms that did not dissolve prior to December 2018, a survivorship bias may influence the relationships between platform strategic choices and growth. Thus, in the analyses below we report

TABLE 4 Crowdfunding platform performance analysis: Likelihood of dissolution

	Model 1			**Model 2**		
	Coeff.	**(*SD*)**	***p***	**Coeff.**	***SD***	***p***
Constant	−1.404	(0.346)	[.000]	−1.066	(0.408)	[.009]
Participants_Transactions_Asy	–			0.390	(0.104)	[.000]
CatchAll_ChargeHigh	–			0.614	(0.153)	[.000]
Differentiation	–			−0.218	(0.063)	[.001]
Years_Elapsed_2018	0.087	(0.024)	[.000]	0.087	(0.025)	[.001]
$GDP\_Per\_Capita_e$	0.006	(0.006)	[.329]	0.007	(0.006)	[.280]
$Population\_Density_e$	−0.000	(0.000)	[.487]	−0.000	(0.000)	[.509]
$Country\_Failure\_Rate_e$	0.055	(0.024)	[.022]	0.053	(0.025)	[.032]
Number of observations		788			788	
Pseudo-R^2		0.024			0.059	

Note: Results for Probit regression. The omitted strategy mix is *Offerings_Subscription_Sym*. Robust standard errors in parentheses; *p* values in square brackets.

estimates based on a two-stage sample selection model (Heckman, 1979). As the first-stage selection equation, we use the dissolution model (Model 2 in Table 4).[26]

In the second stage, the main analyses report the estimation of growth models with the two proxies of platforms' performance; *Transaction_Growth* and *Traffic_Growth*. We were able to obtain growth information for the majority of the 456 active platforms; we have performance information for 311 platforms (i.e., 68% of surviving platforms), including transaction amounts and web traffic for 194 (43%) and 211 (46%) platforms, respectively.

Tables 5 and 6 report regression analyses for the logarithms of *Transactions_Growth* and *Traffic_Growth*, respectively. Both tables report Ordinary Least Squares (OLS) regressions using sampling weights.[27] The models follow a specification that is common in the literature testing Gibrat's law, with the measure of growth on the left-hand side and the logarithms of size and age on the right-hand side (Evans, 1987a, 1987b). Other regressors include variables capturing platforms' strategic choices, the controls *GDP_Per_Capita* and *Population_ Density* in 2016, and the Inverse Mills ratio which is calculated using the first stage.

Table 5 presents the analyses of growth in platforms' transaction amounts. Model 1 reports the base model, including only controls. The coefficient for a platform's past transaction amount is negative and statistically significant ($\beta = -.20$, p-value = .07), while all the other variables, including the Inverse Mills ratio, are not statistically significant at traditional levels.

In Model 2, we add *Differentiation* as well as the binary variables *Participants_Transactions_Asy* and *CatchAll_ChargeHigh* (the omitted category is again *Offerings_Subscription_Sym*). The coefficients of both variables are negative and statistically significant ($\beta = -3.8$, p-value = .02, and $\beta = -5.5$, p-value = .01 respectively). These findings indicate financial (i.e., equity and lending) crowdfunding platforms experience a higher rate of growth in annual transaction amount compared to platforms in the other strategy mixes. The finding is consistent with broader patterns in the crowdfunding sector (Wardrop, Zhang, Rau, & Gray, 2015) and underscores the important role of financially orientated crowdfunding.

The coefficient for *Differentiation* is positive and statistically significant ($\beta = .72$, p-value = .05). Namely, more differentiated platforms exhibit greater growth rates. This result is in line with the previous analysis: Differentiation is negatively correlated with downside performance (dissolution) and positively correlated with upside (growth). The magnitude of the effect is meaningful: A one-standard deviation increase of *Differentiation* is associated with a 64% increase in the growth in transaction amount. Finally, the control for past platform's transaction amount retains its sign, while the negative coefficients of both platform age and the Inverse Mills ratio become significant.

Table 6 presents analyses of platforms' growth in web traffic. Model 1 reports the base model, including only controls. The coefficient for platform's past transaction amount is negative and significant ($\beta = -.18$, p-value = .00), while the other variables are not statistically significant at traditional levels.

In Model 2, we add *Differentiation* as well as the strategy mix indicators (again, keeping *Offerings_Subscription_Sym* as the omitted category). The coefficient for *Participants_Transactions_Asy* is not statistically significant ($\beta = -.17$, p-value = .27), while

[26]Because the Heckman procedure is susceptible to identification problems (Sartori, 2003), we use *Country_Failure_Rate* as the exclusion restriction variable; i.e. a variable that explains selection but is unrelated to growth in a platform's web traffic or transaction amounts.

[27]The weights denote the inverse of the probability that each platform is included in the analysis based on the distribution of strategy mix clusters in the sample and the population of surviving platforms.

TABLE 5 Crowdfunding platform performance analysis: Growth in transaction amount

	Model 1			Model 2		
	Coeff.	**(*SD*)**	***p***	**Coeff.**	**(*SD*)**	***p***
Constant	−1.436	(3.406)	[.714]	6.955	(1.385)	[.052]
Participants_Transactions_Asy	–			−3.791	(0.534)	[.019]
CatchAll_ChargeHigh	–			−5.452	(0.649)	[.011]
Differentiation	–			0.719	(0.165)	[.049]
Ln_Transactions	−0.198	(0.057)	[.074]	−0.287	(0.047)	[.026]
Ln_Traffic	–			–		
Ln_Platform_Age	−0.127	(0.565)	[.844]	−1.382	(0.326)	[.051]
GDP_Per_Capita	0.080	(0.037)	[.163]	0.059	(0.038)	[.259]
Population_Density	−0.001	(0.003)	[.854]	0.001	(0.003)	[.831]
Inverse_Mills_Ratio	1.289	(0.835)	[.262]	−6.141	(1.385)	[.047]
Number of observations		194			194	
Pseudo-R^2		.060			.125	

Note: Results for second-stage of Heckman-selection model. The second-stage regressions are estimated using OLS regression. The omitted strategy mix is *Offerings_Subscription_Sym*. Robust standard errors in parentheses; *p* values in square brackets.

TABLE 6 Crowdfunding platform performance analysis: Growth in web traffic

	Model 1			Model 2		
	Coeff.	**(*SD*)**	***p***	**Coeff.**	**(*SD*)**	***p***
Constant	1.788	(0.511)	[.001]	2.571	(0.681)	[.000]
Participants_Transactions_Asy	–			−0.165	(0.148)	[.266]
CatchAll_ChargeHigh	–			−0.607	(0.256)	[.019]
Differentiation	–			0.174	(0.104)	[.094]
Ln_Transactions	–			–		
Ln_Traffic	−0.178	(0.029)	[.000]	−0.182	(0.029)	[.000]
Ln_Platform_Age	−0.026	(0.103)	[.792]	−0.247	(0.164)	[.134]
GDP_Per_Capita	0.009	(0.006)	[.132]	0.007	(0.006)	[.236]
Population_Density	0.000	(0.000)	[.471]	0.000	(0.000)	[.436]
Inverse_Mills_Ratio	−0.080	(0.186)	[.665]	−0.888	(0.477)	[.064]
Number of observations		211			211	
Pseudo-R^2		0.195			0.215	

Note: Results for second stage of Heckman-selection model. The second-stage regressions are estimated using OLS regression. The omitted strategy mix is *Offerings_Subscription_Sym*. Robust standard errors in parentheses; *p* values in square brackets.

CatchAll_ChargeHigh is negative and significant (β = −.61, *p*-value = .02). As for *Differentiation*, the coefficient is positive and statistically significant (β = .17, *p*-value = .09). The more a platform is differentiated from the profile of the strategy mix it is affiliated with, the higher is its

rate of web traffic growth. The effect is fairly large; a one-standard deviation increase of *Differentiation* is associated with a 15% increase in web traffic growth.

To conclude, the findings suggest that platforms' strategic choices are associated with subsequent performance. Moreover, the impact on performance is correlated with the extent to which platforms differ from the strategy mix profile they are affiliated with. These findings are consistent across several performance variables. Next, we discuss how the findings inform our understanding of crowdfunding platforms, in particular, and transaction platforms, in general.

6 | INTERPRETATION

Our analyses of 788 crowdfunding platforms offer insights for scholars working at the intersection of the platform and strategic management literatures. The empirical patterns we documented shed light on the strategic choices crowdfunding platforms—which are an example of transaction platforms—mix together, as well as on how these mixes—and differentiation therefrom—are associated with platforms' performance. Below, we interpret our findings in light of the broader platform literature; drawing on existing debates and pointing to key takeaways. The discussion is organized into four key insights.

6.1 | Insight (1): Common mixes of strategic choices

We observe that crowdfunding platforms cluster around a notably limited number of strategy mixes. Although there are hundreds of ways to mix the strategic choices under scrutiny, our analysis reveals that platforms' choices cluster into three strategy mixes. This observation suggests that platforms' (pricing and non-pricing) strategic choices are interrelated. It further hints that platforms deliberately pursue a mix of strategic choices in an effort to create value to their participants.

Across the three clusters, the strategic choices that platforms mix together seem to exhibit a common logic. This is nicely illustrated by looking at the cluster *Catch All*, *Charge All*. To expand the participant pool, these platforms pursue an all-embracing agenda in their choices of non-pricing strategies; pursuing an inclusive approach by accommodating a wide range of offerings, enhancing accessibility by supporting multiple languages and payment systems, as well as bundling several functions within a single platform. At the same time, they deploy pricing strategies that are of a more constricting nature; platforms in the *Catch All*, *Charge All* cluster levy subscription fees and often charge high transaction fees. These platforms seem to be using pricing and non-pricing strategies in tandem, where the latter are geared towards expansion while the former towards curation. This strategy mix, when appropriate, may result in a pool of broad yet high-quality participants and offerings. This observation echoes a recent stream of work that explicitly studies the interplay between pricing and non-pricing strategies (Boudreau & Hagiu, 2009; Cennamo & Santalo, 2013; Li & Pénard, 2014; Zhu & Iansiti, 2012).

The analyses further reveal that platforms undertake a mix of expansion and curation choices not only across pricing or non-pricing strategies, but also within each group of strategies. Consider the platforms within the *Catch Participants*, *Charge Transaction*, *Asymmetrically* cluster. Typically, they set little or no subscription fees, while charging high

transaction fees. These pricing strategies have expansive and curating effects respectively. These platforms adopt an equally balanced approach to non-pricing strategies; adopting languages spoken by hundreds of millions of people while usually supporting only a narrow range of offerings. The examples illustrate the trade-offs are also managed within each group of strategic choices (i.e., pricing and non-pricing strategies). To the best of our knowledge, the interplay between strategic choices in the same group (especially among non-pricing strategies) received little attention in the literature. It poses fertile ground for future work.

6.2 | Insight (2): Strategy mixes and environmental factors

Why do platforms pursue certain mixes of strategic choices? The previous insight suggests a common theme—balancing expansion and curation—but it offers little guidance as to the reason why we observe platforms juxtaposing different strategic choices to that end. For example, one may ponder why the clusters *Catch Participants*, *Charge Transactions*, *Asymmetrically* and *Catch Offerings*, *Charge Subscription*, *Symmetrically* exhibit an exact opposite set of strategic choices; the platforms in the former cluster expand participation and narrow the range of offerings, while platforms in the latter opt for a flipped approach.

These strategic choices likely reflect the environment in which a platform operates. The platform literature investigates these issues, focusing on environmental factors such as the nature and number of participants, the offerings and the intensity of market failures (Claussen et al., 2015; Evans & Schmalensee, 2016; Halaburda et al., 2018; Parker & van Alstyne, 2014; Seamans & Zhu, 2017). In the following, we first summarize extant arguments and then draw on these arguments to derive insights into platforms' strategy mixes.

The nature of participants can vary across environments. One environment may be characterized by homogeneous preferences; participants value similar offerings and features. In another environment, different participants may value different offerings and distinct features such that the environment exhibits heterogeneous preferences. It follows that search costs are likely higher in the latter environment. Next, we shift to the nature of the offerings and ensuing market frictions. Some offerings (e.g., commodities and other well-established products or services) are simpler to communicate, relatively easy to certify and carry little or medium cost of inventory and distribution. On the other extreme, offerings with limited or unobservable credentials are susceptible to critical market frictions; even when participants share similar preferences, they face severe information asymmetries that could result in market failures. It follows that transaction costs are likely higher in the latter environment.

Each platform operates in an environment that has a distinct set of underlying factors (i.e., participants, offerings, and market frictions) and associated costs (i.e., search costs, transaction costs). In turn, these factors shape the platform's choice of strategies and the exact mix thereof. Consider a platform targeting an environment where participants' preferences are homogenous but it is plagued with asymmetric information regarding offerings' quality. The former indicates low to moderate search costs and suggests a platform may opt to "go wide", that is, pursue an inclusive strategy that accommodates a wide range of offerings. To the extent that this approach generates a sufficient volume of prospective transactions, there is no need to further bolster market thickness by aggressively expanding participants' numbers. The uncertainty around offerings' quality implies significant transaction costs. A reasonable strategy, therefore, may be to set transaction fees low and subscription fees high. The upfront (subscription) fees can act as a

screening mechanism that deters low-quality offerings and therefore secures transaction safety on the platform. And, at the same time, the high subscription fees enable the platform to lower transaction fees. This discussion helps us interpret the strategy mix of *Catch Offerings*, *Charge Subscription*, *Symmetrically* platforms. The cluster is populated by platforms that chose to operate either an equity or a lending based crowdfunding. They operate in an environment characterized by homogenous preferences (for financial returns) and intense asymmetric information (regarding project's quality). As this cluster's label indicates, we document a mix of strategic choices consistent with the aforementioned theoretical argument.

Next, consider a platform operating under the inverse environmental conditions. Specifically, different participants value different features such that preferences are heterogeneous and there is no objectively superior offering. This environment is characterized by high search costs and lower transaction costs. The platform may opt to "go deep"; combine an exclusive offering strategy, which economizes on search costs, with a broad participation strategy, to achieve a sufficient volume of prospective transactions. To further bolster market thickness, the platform should lower upfront subscription fee and ideally allocate fees to one group (the less sensitive one).[28] Indeed, this discussion helps us interpret the *Catch Participants*, *Charge Transactions*, *Asymmetrically* strategy mix. This cluster is populated by donation and reward crowdfunding platforms. They operate in an environment characterized by heterogeneous preferences for social and nonpecuniary returns. Again, our analysis of these platforms finds evidence of strategic choices that are aligned with the theoretical arguments.

Finally, a platform may target environments where participants' preferences are heterogeneous and there are also substantial market frictions. This may be the case when a platform attempts to serve the aforementioned environments concurrently. One way to mitigate frictions regarding the quality of the offerings may be to screen on observables (e.g., a platform can require proof of authenticity as a prerequisite of participation). To the extent that screening on observables is not feasible (e.g., the offering is for the development of future business, the outcome of which is unknown at this time), the platform could adopt upfront subscription fees. The advantage of this strategic choice is that it can deter low-quality offerings and has the effect of removing frictions and enhancing safety. The disadvantage, however, is that it could impede participation altogether. To offset this effect, the platform can choose all-embracing non-pricing strategies (e.g., enhancing accessibility and inclusivity). The ultimate success of this strategy mix is contingent on whether it can overcome the double-challenge of high search and transaction costs. This discussion helps us interpret the *Catch All*, *Charge All* cluster. The platforms within this cluster face such an environment. They engage in a seemingly consistent strategy mix; an expansive set of non-pricing strategies and high subscription fees.

To conclude, transaction platforms face a multitude of environmental factors. The nature of these factors and the intensity of the associated costs vary across different settings. Thus, it is not surprising that different platforms undertake different strategic choices. Nonetheless, the three seemingly distinct strategy mixes do have at least one thing in common. They share the insight that the ultimate goal of every transaction platform is to balance expansion and curation efforts such that participants enjoy valuable transactions. The specific trade-offs and choices that realize this goal are a function of the underlying environmental factors, but the three mixes likely share a similar logic. This insight resonates with recent platform studies (Cennamo & Santalo, 2013) and underscores strategic management long-standing effort to understand the combination of choices that firms undertake (Porter, 1996; Porter & Siggelkow, 2008).

6.3 | Insight (3): The competitive crowding dilemma

As the previous insight discusses, transaction platforms often balance expansion and curation. The specific mix of strategic choices may vary across environments, but the fundamental need to manage the trade-off likely persists for all platforms. We turn to discuss a related dilemma that has attracted the attention of the platform literature. Specifically, transaction platforms have to decide between two distinct and potentially competing forces shaping network effects (Cennamo, 2019; Rysman, 2009). On the one hand, participants derive value from indirect network effects; that is, a large pool of participants and offerings on the other side of the platform. On the other hand, they have aversion to over-crowding and competition on their own side of the platform (hereafter, competitive crowding effect). Which of these two forces dominates and how might it affect platforms' strategic choices remains a theoretical and empirical puzzle.

A careful investigation of the three strategy mixes informs these questions. Recall our earlier observations that *Catch Offerings*, *Charge Subscription*, *Symmetrically* platforms opt for a "go wide" strategy, whereas *Catch Participants*, *Charge Transactions*, *Asymmetrically* platforms "go deep". While seemingly contradictory, both exemplify a case where the pursuit of indirect network effects seems to dominate over concerns of competitive crowding.

Consider *Catch Offering*, *Charge Subscription*, *Symmetrically* platforms. Where participants' preferences are homogenous and search costs are low, a platform that includes a wide range of offerings enables greater search and hence more valuable matching. However, in doing so it effectively increases the competition among the different offerings. Our empirical setting offers an instructive example. A lending crowdfunding platform that lists numerous offerings by borrowers allows lenders to search across more prospects and secure the most attractive terms. But that comes at the cost of increased competition among borrowers.

Next, we turn to the *Catch Participants*, *Charge Transaction*, *Asymmetrically* platforms where participants' preferences are heterogeneous (see Insight (2)). This strategy mix combines a narrow range of offerings (aimed at coalescing around shared interests) with an explicitly broad participation strategy and low upfront subscription fee levied on one side (i.e., three strategic choices bolstering market thickness). Arguably, this strategy mix also focuses on indirect-network effects over competitive crowding. By way of example, think of a donation crowdfunding platform focused on individuals with healthcare needs which attracts participants from multiple countries. This approach may channel funding to a few who are in most dire need but it also implies intense competition among all individuals.

To conclude, the strategy mixes we document indicate that platforms prioritize indirect network effects at the risk of more intense same-side competition. Interestingly, we observe this pattern across different mixes and environments that vary in the intensity of search and transaction costs. The extent to which it applies to other platform settings is a valid question. Arguably, this pattern should be viewed with an eye to the boundary conditions characteristics of the crowdfunding setting.[29]

[29]We qualify this insight and highlight a few boundary conditions. For example, the number of offerings on a crowdfunding platform may be below the scale which brings about intense competitive crowding (Boudreau, 2010). Moreover, the negative competitive effect could be attenuated due to the many-to-one nature of crowdfunding transactions (i.e., each project aggregates funding across multiple crowdfunders such that an increase in the number of crowdfunders does not necessarily result in more intense same-side competition for a focal project). That said, an increase in the number of crowdfundees is likely to evoke greater same-side competition. Finally, crowdfunding platforms may attenuate competitive crowding in other ways which are not readily observable.

6.4 | Insight (4): Platforms' performance

We observe that platforms' performance is sensitive to the mix of strategic choices they adopt. We also observe that many platforms differentiate from the strategy mix profile they are affiliated with, and differentiation is associated with greater platform longevity.[30] Moreover, differentiation is associated with superior up-side performance; both growth in web traffic to a platform as well as growth in transaction amount. Below, we discuss generalizable implications to the platform literature.

First, the findings are consistent with a theoretical prediction that, in the presence of network effects, even small differences between platforms can impact performance (Arthur, 1989; Katz & Shapiro, 1992). Past empirical work supports this prediction. For example, platforms that choose to differentiate their accessibility strategy (e.g., pursuing a more open approach) experience superior performance (Baldwin & von Hippel, 2011; Boudreau, 2010; Eisenmann et al., 2009). Our analysis supplements this work by looking at the overall strategy mix. We show that differentiation is positively associated with performance, and that pattern goes beyond any specific strategic choices.

Recent anecdotal evidence resonates with these findings. Consider insights from Andreessen Horowitz, the venture capitalist firm that backed Box, GitHub, Lyft, Slack, and Zynga. Their explicit view and investment thesis are that platforms with a differentiated strategy mix may better cater to certain participants and offerings and hence experience substantial growth; "they serve the needs of users in their vertical so much better that they can compete for a much larger share of their vertical...".[31] Andreessen Horowitz provides the following example: "The leading digital real estate platform in the U.S., Zillow... [facilitates] from buying/selling a home, to leasing or renting a home/apartment, to sourcing home loans, to finding an agent. It's current market cap is $7 billion. But those are a lot of different marks, with different business models and different users... [other successful platforms are] Compass, OpenDoor, and FlyHomes..." They also discuss successful differentiation in the context of transaction platforms for video (YouTube vs. Twitch, TikTok, etc.) and employment (LinkedIn vs. Hired, Wonolo, etc.).

Second, our findings further inform the likely mechanisms that underlie platforms' performance. Extant work offers a range of explanations regarding the impact of differentiation. On the one hand, a platform that opts to differentiate from the profile of the strategy mix it is affiliated with may be susceptible to a loss of alignment and blurring of strategic focus (Cennamo & Santaló, 2015). Extant work suggests that the resulting loss of alignment erodes platforms' ability to realize network effects and could have adverse performance implications. On the other hand, other studies postulate about a number of advantageous mechanisms that may give rise to a positive differentiation-performance association. For example, differentiation can realize network effects through the discovery of latent demand (Boudreau, 2010; Eisenmann et al., 2009). It may also strengthen platforms' value proposition to its existing participant pool (Lee et al., 2006; Shankar & Bayus, 2003; Suarez, 2005). Finally, differentiation crystalizes and augments a focal platform's value-add vis-à-vis other platforms (Cennamo & Santalo, 2013; Seamans & Zhu, 2014). Our results are consistent with such advantageous mechanisms.

In sum, our findings corroborate extant platform research and highlight areas for further work. In line with past work, our observations allude to a substantial level of interplay between

[30]As we clarified in footnote 24, differentiation refers to the extent a platform differs from the profile of the strategy mix it is affiliated with.

[31]The article is available at https://a16z.com/2019/09/11/platforms-verticals-unbundling/.

platform strategic choices (e.g., Boudreau & Hagiu, 2009; Cennamo & Santalo, 2013; Zhu & Iansiti, 2012). In addition, our analyses identify opportunities for theory development. Consider the evidence that platforms cluster into three common strategy mix profiles. This directs future work to focus on the cumulative impact of platforms' overall strategy mix, in addition to the investigation of specific strategic choices. Moreover, per Insights (2) and (3), one could explore the prospect of equifinality in platforms' strategic choices; namely, the extent to which seemingly different strategy mixes can equally stimulate network effects. Per Insight (4), we wonder whether a platform should focus solely on the environmental factors characteristic of its participants when crafting its strategic choices or should it deliberate other platforms and their strategic choices. A dual view that focuses on participants inside the platform as well as other platforms outside can prove fertile ground for future work.

7 | CONCLUSIONS

We present a large-N inductive study of the population of European crowdfunding platforms. Across these 788 transaction platforms, we documented several key patterns. First, we observe that hundreds of platforms cluster around three common mixes of strategic choices. Second, not all platforms strictly adhere to the profile of the strategy mix they are affiliated with. Third, platforms' performance is sensitive to their strategic choices. Specifically, there is a positive association (though notably we do not test for causation) between the degree to which the choices of a focal crowdfunding platform differentiate from the profile of the strategy mix it is affiliated with and platform's subsequent performance. The previous section discusses the findings at length and derives four key insights to inform future works on transaction platforms.

Our contributions lie at the intersection of the platform and strategic management literatures. Empirically, we believe that the sheer scale of the empirical investigation—documenting six strategic choices across hundreds of platforms—makes a contribution. As a large-N inductive study, our work does not aim to develop or test theoretical hypotheses, but it may offer validation and extension of extant work. Specifically, we supplement the platform literature where empirical studies either focus on a careful investigation of a large number of strategic choices by a handful of platforms (Boudreau & Hagiu, 2009; Li & Pénard, 2014; Schilling, 2002), or use data from several dozen platforms while testing causal hypotheses concentrating on a few strategic choices (Cennamo & Santalo, 2013; Claussen et al., 2013; Zhu & Iansiti, 2012).

Importantly, the unique data facilitate theoretical development. Drawing on strategy work (Gruber et al., 2010; Porter & Siggelkow, 2008), we advocate a comprehensive view of strategic choices to the platform literature. We do so by documenting patterns that uncover platforms' strategy mix. The advantage of a comprehensive approach is evident, for example, by looking at the crowdfunding literature. Extant work employs a crowdfunding typology where crowdfunders' investment logic is the sole classification rationale (i.e., donation, reward, lending or equity; Fleming & Sorenson, 2016). Our results show that crowdfunding type is not a single, standalone choice but rather is associated with a broad mix of (pricing and non-pricing) strategic choices.

7.1 | Limitations and directions for future research

Like any study, our paper has limitations that open up avenues for future research. One set of limitations comes from our empirical setting. First, crowdfunding platforms are highly

popular transaction platforms; nonetheless, one should be mindful of the unique characteristics of the crowdfunding setting, as discussed in Section 3. Future work could investigate other types of transaction platforms to understand whether these results generalize to other contexts. For instance, a possible replication setting is that of dating platforms, which are gaining momentum among laypersons and scholars alike (Bryant & Sheldon, 2017; Halaburda et al., 2018). This setting is also interesting because dating platforms differ from crowdfunding platforms on some of the underlying characteristics; for example, the content of the transaction (respectively, participants' time versus capital), or the way in which participants consummate their transactions (one-to-one versus many-to-one). Such investigation not only establishes generalizability across different platform settings, but also sheds light on the impact of the underlying characteristics.

Second, we welcome studies that expand the geographical coverage beyond the EU-15 countries. Although crowdfunding platforms are supposedly accessible from all over the world, prior work finds a geographical proximity effect (Agrawal et al., 2015). The proximity effect may reflect similarity in socioeconomics, culture and values that result in an excessive occurrence of within-country matches. We are fortunate to have quality work on prominent US-based platforms such as Kickstarter (e.g., Colombo, Franzoni, & Rossi-Lamastra, 2015; Mollick, 2014; Sorenson, Assenova, Li, Boada, & Fleming, 2016), Prosper (e.g., Hildebrand, Puri, & Rocholl, 2016; Lin, Prabhala, & Viswanathan, 2013), and others (e.g., Bapna, 2019; Burtch, Ghose, & Wattal, 2015). Replicating our analysis across multiple platforms in different countries could establish boundary conditions and further inform other transaction platform settings.

Another set of limitations is associated with the operationalization of platforms' strategic choices. Other strategic choices (e.g., advertising or innovating the internal organization) may influence transaction platforms' success. Studying these strategic choices is beyond the scope of this paper. Moreover, we are not aware of any systematic approach for collecting and coding data on these strategic choices across hundreds of different platforms. Future work can explore questions such as: Do some strategy mixes require more investments in advertising as they are less attractive for participants? Do some strategy mixes require an innovative internal organization as they are challenging to deploy?

7.2 | Managerial implications

Despite these limitations, our study offers interesting insights for practitioners and policymakers involved in the development of transaction platforms. In particular, we witness that platforms' (pricing and non-pricing) strategic choices are associated with platform survival, web traffic and total value of the transactions enabled. This finding indicates the fate of transaction platforms need not be sealed by first-mover advantage that inevitably leads to a winner-takes-all outcome (Eisenmann et al., 2006; Hagiu, 2009). Transaction platforms may succeed by devising the mix of strategic choices to leverage the diverse preferences of distinct groups of participants. Platform managers could also consider the option not to mimic the strategic choices undertaken by other platforms in their sector. Our results, indeed, suggest that differentiation from the strategy mix profile a platform is affiliated with is a common practice; one that exhibits a positive correlation with platforms' performance. In sum, our results encourage transaction platforms' managers to adopt a comprehensive approach whereby the various elements align to better coordinate participants from the distinct groups.

REFERENCES

Afuah, A. (2013). Are network effects really about size? The role of structure and conduct. *Strategic Management Journal*, *34*, 257–273.

Agrawal, A., Catalini, C., & Goldfarb, A. (2015). Crowdfunding: Geography, social networks, and the timing of investment decisions. *Journal of Economics and Management Strategy*, *24*(2), 253–274.

Arthur, W. B. (1989). Competing technologies, increasing returns and lock-in by historical events. *Economic Journal*, *99*(394), 116–131.

Baldwin, C., & Von Hippel, E. (2011). Modeling a paradigm shift: From producer innovation to user and open collaborative innovation. *Organization Science*, *22*(6), 1399–1417.

Baldwin, C. Y., & Woodard, J. J. (2009). The architecture of platforms: A unified view. In A. Gawer (Ed.), *Platforms, markets and innovation* (pp. 19–44). Cheltanham, UK: Edward Elgar.

Bapna, S. (2019). Complementarity of signals in early-stage equity investment decisions: Evidence from a randomized field experiment. *Management Science*, *65*(2), 459–954.

Belleflame, P., Omrani, N., & Peitz, M. (2015). The economics of crowdfunding platforms. *Information Economics and Policy*, *33*(12), 11–28.

Belleflamme, P., Lambert, T., & Schwienbacher, A. (2014). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing*, *29*(5), 585–609.

Bettis, R., Gambardella, A., Helfat, C., & Mitchell, W. (2014). Quantitative empirical analysis in strategic management. *Strategic Management Journal*, *35*(7), 949–953.

Bettis, R. A. (2012). The search for asterisks: Compromised statistical tests and flawed theories. *Strategic Management Journal*, *33*(1), 108–113.

Birhanu, A. G., Gambardella, A., & Valentini, G. (2016). Bribery and investment: Firm-level evidence from Africa and Latin America. *Strategic Management Journal*, *37*(9), 1865–1877.

Boudreau, K. J. (2010). Open platform strategies and innovation: Granting access vs. devolving control. *Management Science*, *56*(10), 1849–1872.

Boudreau, K. J., & Hagiu, A. (2009). Platform rules: Multi-sided platforms as regulators. In A. Gawer (Ed.), *Platforms, Markets and Innovation*. Cheltanham, UK: Edward Elgar.

Boudreau, K. J., & Jeppesen, L. B. (2015). Unpaid crowd complementors: The platform network effect mirage. *Strategic Management Journal*, *36*(12), 1761–1777.

Bryant, K., & Sheldon, P. (2017). Cyber dating in the age of mobile apps: Understanding motives, attitudes, and characteristics of users. *American Communication Journal*, *19*(2), 1–15.

Burtch, G., Ghose, A., & Wattal, S. (2013). An empirical examination of the antecedents and consequences of contribution patterns in crowd-funded markets. *Information Systems Research*, *24*(3), 499–519.

Burtch, G., Ghose, A., & Wattal, S. (2015). The hidden cost of accommodating crowdfunder privacy preferences. *Management Science*, *61*(5), 949–962.

Caillaud, B., & Jullien, B. (2003). Chicken & egg: Competition among intermediation service providers. *The RAND Journal of Economics*, *34*(2), 309–328.

Cennamo, C. (2019). Competing in digital markets: A platform-based perspective. *Academy of Management Perspectives*.

Cennamo, C., & Santalo, J. (2013). Platform competition: Strategic trade-offs in platform markets. *Strategic Management Journal*, *34*(11), 1331–1350.

Cennamo, C., & Santaló, J. (2015). How to avoid platform traps. *Sloan Management Review*, *57*(1), 12–15.

Claussen, J., Essling, C., & Kretschmer, T. (2015). When less can be more—Setting technology levels in complementary goods markets. *Research Policy*, *44*, 328–339.

Claussen, J., Kretschmer, T., & Mayrhofer, P. (2013). The effects of rewarding user engagement: The case of Facebook apps. *Information Systems Research*, *24*(1), 186–200.

Clements, M. T., & Ohashi, H. (2005). Indirect network effects and the product cycle: Video games in the US, 1994–2002. *The Journal of Industrial Economics*, *53*(4), 515–542.

Colombo, M. G., Franzoni, C., & Rossi-Lamastra, C. (2015). Internal social capital and the attraction of early contributions in crowdfunding. *Entrepreneurship Theory and Practice*, *39*(1), 75–100.

Courtney, C., Dutta, S., & Li, Y. (2017). Resolving information asymmetry: Signaling, endorsement, and crowdfunding success. *Entrepreneurship Theory and Practice*, *41*(2), 265–290.

Criscuolo, P., Dahlander, L., Grohsjean, T., & Salter, A. (2017). Evaluating novelty: The role of panels in selection of R&D projects. *Academy of Management Journal*, *60*, 433–460.

Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019a). *Platform versus non-platform company performance: Some exploratory data analysis, 1995–2015. MIT working paper*. Cambridge, MA: MIT Sloan School of Management.

Cusumano, M. A., Gawer, A., & Yoffie, D. B. (2019b). *The business of platforms: Strategy in the age of digital competition, innovation, and power*. New York, NY: HarperCollins Publishers.

Duda, R. O., Hart, P. E., & Stork, D. G. (2011). *Pattern classification* (2nd ed.). Hoboken, NJ: Wiley-Interscience.

Dushnitsky, G., & Fitza, M. (2018). Are we missing the platforms for the crowd? Comparing investment drivers across multiple crowdfunding platforms. *Journal of Business Venturing Insights*, *10*, e00100.

Dushnitsky, G., Guerini, G., Piva, E., & Rossi-Lamastra, C. (2016). Crowdfunding in Europe: State-of-the-art and determinants of platforms' creation across countries. *California Management Review*, *6*, 337–433.

Dushnitsky, G., & Zunino, D. (2019). The role of crowdfunding in entrepreneurial finance. In *In handbook of research on crowdfunding*. Cheltenham, UK: Edward Elgar.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, *14*(4), 532–550.

Eisenmann, T. R., Parker, G., & van Alstyne, M. W. (2006). Strategies for two-sided markets. *Harvard Business Review*, 1–11.

Eisenmann, T. R., Parker, G., & van Alstyne, M. W. (2009). Opening platforms: How, when and why? *Platforms, Markets and Innovation*, *6*, 131–162.

Eisenmann, T. R., Parker, G., & van Alstyne, M. W. (2011). Platform envelopment. *Strategic Management Journal*, *32*, 1270–1285.

Evans, D. S. (1987a). Test of alternative theories of firm growth. *Journal of Political Economy*, *95*, 657–674.

Evans, D. S. (1987b). The relationship between firm growth, size and age: Estimates for 100 manufacturing industries. *The Journal of Industrial Economics*, *35*, 567–581.

Evans, D. S. (2003). Some empirical aspects of multi-sided platform industries. *Review of Network Economics*, *2* (3), 191–209.

Evans, D. S., & Schmalensee, R.. 2007. *The industrial organization of markets with two-sided platforms*. NBER Working Paper Series, Working Paper 11603, 1–37.

Evans, D. S., & Schmalensee, R. (2008). Markets with two-sided platforms. *Issues in Competition and Law and Policy (ABA Section of Antitrust Law)*, *1*, 667–693.

Evans, D. S., & Schmalensee, R. (2016). *Matchmakers: The new economics of multisided platforms*. Brighton, MA: Harvard Business Review Press.

Evans PC, Gawer, A. 2016. The rise of the platform enterprise: A global survey. Working paper.

Everitt, B., Landau, S., Leese, M., & Stahl, D. (2011). *Cluster analysis Wiley Series in Probability and Statistics* (5th ed.). Hoboken, NJ: Wiley.

Fleming, L., & Sorenson, O. (2016). Financing by and for the masses: An introduction to the special issue on crowdfunding. *California Management Review*, *58*(2), 5–19.

Fuentelsaz, L., Garrido, E., & Maicas, J. P. (2015). A strategic approach to network value in network industries. *Journal of Management*, *41*(3), 864–892.

Gawer, A. (2009). *Platforms, markets and innovation*. Northampton, MA: Edward Elgar.

Gawer, A. (2014). Bridging differing perspectives on technological platforms: Toward an integrative framework. *Research Policy*, *43*(7), 1239–1249.

Gawer, A., & Cusumano, M. A. (2002). *Platform leadership: How Intel, Microsoft, and Cisco drive industry innovation* (Vol. 5, pp. 29–30). Boston, MA: Harvard Business School Press.

Gawer, A., & Cusumano, M. A. (2008). Platform leaders. *MIT Sloan Management Review*, *43*(3), 4335.

Gruber, M., Heinemann, F., Brettel, M., & Hungeling, S. (2010). Configurations of resources and capabilities and their performance implications: An exploratory study on technology ventures. *Strategic Management Journal*, *31*(12), 1337–1356.

Haas, M. R., Criscuolo, P., & George, G. (2015). Which problems to solve? Online knowledge sharing and attention allocation in organizations. *Academy of Management Journal*, *58*, 680–711.

Hagiu, A. (2009). Two-sided platforms: Product variety and pricing structures. *Journal of Economics and Management Strategy*, *18*(4), 1011–1043.

Hagiu, A. (2014). Strategic decisions for multisided platforms. *MIT Sloan Management Review*, *55*(2), 92–93.

Halaburda, H., Piskorski, M. J., & Yıldırım, P. (2018). Competing by restricting choice: The case of matching platforms. *Management Science*, *64*(8), 3574–3594.

Hambrick, D. C. (1983). High profit strategies in mature capital goods industries: A contingency approach. *Academy of Management Journal*, *264*, 687–707.

Heckman, J. (1979). Sample selection bias as a specification error. *Econometrica*, *47*(1), 153–161.

Helfat, C. E. (2007). Stylized facts, empirical research and theory development in management. *Strategic Organization*, *5*(2), 185–192.

Hildebrand, T., Puri, M., & Rocholl, J. (2016). Adverse incentives in crowdfunding. *Management Science*, *63*(3), 587–608.

Iansiti, M., & Levien, R. (2004). *The keystone advantage*. Boston, MA: Harvard Business School Press.

Ichniowski, C., Shaw, K., & Prennushi, G. (1997). The effects of human resource management practices on productivity: A study of steel finishing lines. *The American Economic Review*, *87*(3), 291–313.

Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, *39*, 2255–2276.

Jansen, J. J., Simsek, Z., & Cao, Q. (2012). Ambidexterity and performance in multiunit contexts: Cross-level moderating effects of structural and resource attributes. *Strategic Management Journal*, *33*, 1286–1303. https://doi.org/10.1002/smj.1977

Kapoor, R., & Lee, J. M. (2013). Coordinating and competing in ecosystems: How organizational forms shape new technology investments. *Strategic Management Journal*, *34*(3), 274–296.

Katz, M. L., & Shapiro, C. (1992). Product introduction with network externalities. *Journal of Industrial Economics*, *40*(1), 55–84.

Kay, N. (2013). Rerun the tape of history and QWERTY always wins. *Research Policy*, *42*, 1175–1185.

Kerr, W. R., Lerner, J., & Schoar, A. (2014). The Consequences of Entrepreneurial Finance: Evidence from Angel Financings. *Review of Financial Studies*, *27*(1), 20–55.

Kuppuswamy, V., & Bayus, B. L. (2018). Crowdfunding creative ideas: The dynamics of project backers. In D. Cumming & L. Hornuf (Eds.), *The economics of crowdfunding* (pp. 151–182). Cham: Palgrave Macmillan.

Lee, E., Lee, J., & Lee, J. (2006). Reconsideration of the winner-take-all hypothesis: Complex networks and local bias. *Management Science*, *52*(12), 1838–1848.

Leiponen, A., & Drejer, I. (2007). What exactly are technological regimes? Intra-industry heterogeneity in the organization of innovation activities. *Research Policy*, *36*(8), 1221–1238.

Lerner, J., & Tirole, J. (2002). Some simple economics of open source. *Journal of Industrial Economics*, *50*(2), 197–234.

Li, S., Liu, Y., & Bandyopadhyay, S. (2010). Network effects in online two-sided market platforms: A research note. *Decision Support Systems*, *49*(2), 245–249.

Li, Z., & Pénard, T. (2014). The role of quantitative and qualitative network effects in B2B platform competition. *Managerial and Decision Economics*, *35*(1), 1–19.

Lin, M., Prabhala, N. R., & Viswanathan, S. (2013). Judging borrowers by the company they keep: Friendship networks and information asymmetry in online peer-to-peer lending. *Management Science*, *59*(1), 17–35.

Lyngsie, J., & Foss, N. J. (2017). The more, the merrier? Women in top-management teams and entrepreneurship in established firms. *Strategic Management Journal*, *38*(3), 487–505.

McIntyre, D. P., & Srinivasan, A. (2017). Networks, platforms, and strategy: Emerging views and next steps. *Strategic Management Journal*, *38*(1), 141–160.

McIntyre, D. P., & Subramaniam, M. (2009). Strategy in network industries: A review and research agenda. *Journal of Management*, *35*(6), 1494–1517.

Milligan, G. W., & Hirtle, S. C. (2003). Clustering and classification methods. In J. Schinka & W. Velicer (Eds.), *Handbook of Psychology: Research Methods in Psychology* (pp. 189–210). New York, NY: Wiley.

Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, *29*(1), 1–16.

Mollick, E., & Nanda, R. (2016). Wisdom or madness? Comparing crowds with expert evaluation in funding the arts. *Management Science*, *62*(6), 1533–1553.

Parker, G. G., & van Alstyne, M. W. (2005). Two-sided network effects: A theory of information product design. *Management Science*, *51*(10), 1494–1504.

Parker, G. G., & van Alstyne, M. W.. 2014. Platform strategy. Boston University School of Management Research Paper, 2439323.

Polzin, F., Toxopeus, H., & Stam, E. (2018). The wisdom of the crowd in funding: Information heterogeneity and social networks of crowdfunders. *Small Business Economics*, *50*(2), 251–273.

Porter, M., & Siggelkow, N. (2008). Contextuality within activity systems and sustainability of competitive advantage. *Academy of Management Perspectives*, *22*(2), 34–56.

Porter, M. E. (1996). What is strategy? *Harvard Business Review*, *74*(6), 61–78.

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.

Rysman, M. (2009). The economics of two-sided markets. *The Journal of Economic Perspectives*, *23*(3), 125–143.

Ryu, S., Kim, K., Kim, S., & Kim, Y.-G. (2017). Reward and philanthropy: The role of contributor motivation in crowdfunding. *SSRN Electronic Journal* Retrieved from https://ssrn.com/abstract=2966673

Sartori, A. E. (2003). An estimator for some binary-outcome selection models without exclusion restrictions. *Political Analysis*, *11*(2), 111–138.

Schilling, M. A. (1998). Technological lockout: An integrative model of the economic and strategic factors driving technology success and failure. *Academy of Management Review*, *23*, 267–284.

Schilling, M. A. (2002). Technology success and failure in winner-take-all markets: The impact of learning orientation, timing, and network externalities. *Academy of Management Journal*, *45*(2), 387–398.

Schilling, M. A. (2003). Technological leapfrogging: Lessons from the U.S. Video game console industry. *California Management Review*, *45*, 6–32.

Seamans, R., & Zhu, F. (2014). Responses to entry in multi-sided markets: The impact of craigslist on local newspapers. *Management Science*, *60*(2), 476–493.

Seamans, R., & Zhu, F. (2017). Repositioning and cost-cutting: The impact of competition on platform strategies. *Strategy Science*, *2*(2), 83–99.

Shankar, V., & Bayus, B. L. (2003). Network effects and competition: An empirical analysis of the home video game industry. *Strategic Management Journal*, *24*(4), 375–384.

Sheremata, W. A. (2004). Competing through innovation in network markets: Strategies for challengers. *Academy of Management Review*, *29*, 359–377.

Short, J. C., McKenny, A. F., Ketchen, D. J., Snow, C. C., & Hult, G. T. M. (2016). An Empirical Examination of Firm, Industry, and Temporal Effects on Corporate Social Performance. *Business & Society*, *55*(8), 1122–1156.

Sorenson, O., Assenova, V., Li, G. C., Boada, J., & Fleming, L. (2016). Expand innovation finance via crowdfunding. *Science*, *354*(6319), 1526–1528.

Stango, V. (2002). Pricing with consumer switching costs: Evidence from the credit card market. *The Journal of Industrial Economics*, *50*(4), 475–492.

Strausz, R. (2017). A theory of crowdfunding: A mechanism design approach with demand uncertainty and moral hazard. *American Economic Review*, *107*(6), 1430–1476.

Suarez, F. (2004). Battles for technological dominance. *Research Policy*, *33*, 271–286.

Suarez, F. (2005). Network effects revisited: The role of strong ties in technology selection. *Academy of Management Journal*, *48*, 710–722.

Tee, R., & Gawer, A. (2009). Industry architecture as a determinant of successful platform strategies. *European Management Review*, *6*, 217–232.

Thatchenkery, S., Katila, R., & Chen, E. (2012). Sequences of competitive moves and effects on firm performance. In *Academy of Management Best Paper Proceedings*. Boston, MA: Academy of Management.

Tiwana, A., Konsynski, B., & Bush, A. A. (2010). Platform evolution: Coevolution of platform architecture, governance, and environmental dynamics. *Information Systems Research*, *21*, 675–687.

Venkatraman, N., & Lee, C. H. (2004). Preferential linkage and network evolution: A conceptual model and empirical test in the U.S. video game sector. *Academy of Management Journal*, *47*, 876–892.

Wan, X., Cenamor, J., Parker, G., & van Alstyne, M. (2017). Unraveling platform strategies: A review from an organizational ambidexterity perspective. *Sustainability*, *9*(5), 734–752.

Ward, J. H. (1963). Hierarchical grouping to optimize an objective function. *Journal of the American Statistical Association*, *58*(301), 236–244.

Wardrop, R., Zhang, B., Rau, R., & Gray, M. (2015). *Moving mainstream. The European Alternative Finance Benchmarking Report*. Cambridge: University of Cambridge and Ernst and Young.

West, J. (2003). How open is open enough? Melding proprietary and open source platform strategies. *Research Policy*, *32*, 1259–1285.

Zhu, F., & Iansiti, M. (2012). Entry into platform-based markets. *Strategic Management Journal*, *33*, 88–106.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

How to cite this article: Dushnitsky G, Piva E, Rossi-Lamastra C. Investigating the mix of strategic choices and performance of transaction platforms: Evidence from the crowdfunding setting. *Strat Mgmt J*. 2020;1–36. https://doi.org/10.1002/smj.3163