

Platform business design decisions and complementors' responses: Evidence from Amazon Marketplace

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Abstract

Digital Platforms have unique ways to create value through the coordination of constitutive agents, for which they require an adequate design and governance. Complementors are a fundamental actor in this value creation process, and thus understanding how they are impacted by the platform transformation is of social importance. Previous research has explored the consequences of competition between platform owners and complementors and identified the key features that describe this relationship over time. However, we do not know enough about how platforms impact on complementor transformation, and how complementors' responses affect, in turn, platforms' decisions. Consequently, in this article we ask: *How do platform firms' business design decisions impact complementors over time? How do complementors respond? And how do these complementors' responses impact the platform firm?* To address this gap, this paper evaluates the evolution of the Amazon Marketplace with a focus on the consequences over its Third-Party Sellers (3PS). We use an inductive grounded approach based on semi-structured interviews to the different types of actors in the ecosystem and triangulated with additional primary and secondary data sources. Our findings suggest that there is an endogenous interaction between platform's design decisions and complementors' response through the shaping of the ecosystem's competitive environment. We also find evidence of a duality in design decisions (official and unofficial), creating "unwritten rules" of competition. Finally, these dynamics seem to be driving complementors' heterogeneity, as we find evidence of the emergence of a new type of complementor, so-called "aggregators".

Introduction

Digital platforms such as those operated by Amazon, Facebook, or Google have gained great economic importance, disrupting and creating markets and challenging established forms of economic and social coordination (Cusumano et al., 2019; G. G. Parker et al., 2016). Platforms have unique ways to create value through the coordination of constitutive agents (Gawer, 2014; Rochet & Tirole, 2003), for which they require an adequate design and governance (Adner & Kapoor, 2010; Baldwin & Woodard, 2009).

Platform firms' decisions over pricing, rule setting and policing, and technological interface design are likely to affect platform business success (Cusumano et al., 2019). Extant research has highlighted the importance of design in bringing the multiple and heterogenous groups of users on board and creating network effects (Caillaud & Jullien, 2003; Hagiu, 2006); ensuring value creation through good behaviour (Adner & Kapoor, 2010; Gawer & Henderson, 2007);

creating and protecting competitive advantages (Eisenmann et al., 2006); and providing tools to expand value creation (Dhanasai & Parkhe, 2006; Tiwana et al., 2010).

Complementors are a fundamental actor in this value creation process (Gawer & Henderson, 2007; G. Parker & Van Alstyne, 2017), and their participation and success is dependent of platform ecosystem design and governance (Adner & Kapoor, 2010; Baldwin & Woodard, 2009; Boudreau, 2010; Chen, Tong, et al., 2021; Yoffie & Kwak, 2006).

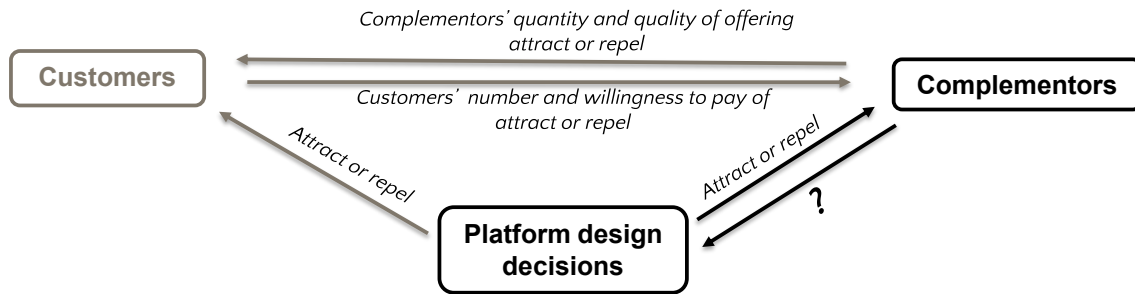
The specific role played by complementors in platforms have received ample scholarly attention. In the first place, several studies have approached the different ways in which some platform firms' specific actions impact complementors. The literature of competition with complementors explores the effects of the platform owner entering complementors' market, and the strategies used by them both in preparation and response to that action. These contributions show the product spaces more likely to be entered (He et al., 2020; Zhu & Liu, 2018), the impact of the platform's business model in complementors' participation (Chi et al., 2022; Lan et al., 2019) and profits (Hagiu et al., 2020), and responses in complementors' innovation and value-capture strategies when facing platform's entry threats (Wen & Zhu, 2019). Some recent studies have also started to explore the competitive consequences over complementors of platform functionalities design and control by the owner (Scott Morton & Athey, 2021). Finally, other approaches have discussed how platform decisions facilitate or channel complementor engagement (Engert et al., 2022; Saadatmand et al., 2019), and how they influence their offering and performance (Rietveld et al., 2021).

Another stream of research has focused instead on analysing the characteristics of the relationship between the platform firm and the complementors, emphasizing issues of power and control. These accounts show how dominance in the platform evolves over time, highlighting ownership over the digital space as the primary source of power (Cutolo & Kenney, 2020; Kretschmer et al., 2020), and associating the degrees of dominance to differentiated governance practices (Rietveld et al., 2020). Design and deployment of control mechanisms, on the other hand, has been shown to impact on some of the complementors' internal processes. By focusing on the evolution of the deployment and use of boundary resources (Ghazawneh & Henfridsson, 2013), Eaton et al. (2015) provides insights related to how control is exercised in the platform and how complementors' agency is expressed through cycles of resistance and accommodation. In a related stream, Chen et al. (2021) and Wareham et al. (2014) have also highlighted the fundamental role of governance for managing the balance between control and generativity, by productively steering paradoxical tensions among participants.

Finally, some recent studies have focused on describing and understanding complementors' strategies. This includes building a competitive advantage (Cenamor 2021), protecting value appropriation (Wang and Miller 2020), or comparing strategies adopted by complementors of different size (Hukal, Kanat, and Ozalp 2022).

Overall, previous studies have explored how platforms' decisions can both attract or repel customers and complementors, and how both customer and complementors' characteristics can attract or repel each other (Figure 1). It has also been studied the consequences of competition between platform owners and complementors and identified the key features that describe this relationship over time.

Figure 1. A high-level view of the empirical setting



However, we do not know enough about how complementors' responses affect, in turn, platforms' decisions. In addition, recent literature has only begun to identify the importance of the heterogeneity of complementors (D. McIntyre et al. 2020). These studies mostly discuss the *consequences* of complementors heterogeneity, such as how it expands the variety of the offering, or how it increases platform visibility through "marquee" complementors. However, we know of no study that examines what factors *drive* the emergence of heterogeneity among complementors. In other words, whether and how platforms design decisions affect over time the composition of complementors' population as a whole

Consequently, in this article we ask: *How do platform firms' business design decisions impact complementors over time? How do complementors respond? And how do these complementors' responses impact the platform firm?*

In this paper, "platform business design decisions" refer to decisions on the design of functionalities and interfaces (Gawer, 2009; Adner & Kapoor, 2010), but also of pricing models and levels (Caillaud & Julien, 2003; Parker & van Alstyne, 2005; Hagiu, 2013), of governance rules (Tiwana et al., 2010; Ghazawneh & Henfridsson, 2013), and of platform boundaries (Gawer, 2021) such as segments and geographies.

Methods, data sources, and data analysis

To address this gap, this paper evaluates the evolution of the Amazon Marketplace along its twenty years of existence, with a focus on the consequences over its Third-Party Sellers (3PS). Unlike products sold directly by Amazon (via agreements with providers, also called Vendors or First-Party Sellers), the Amazon Marketplace provides 3PS a platform to reach the consumer and offers additional services such as fulfilment and advertising for a fee. As stated in the letter to Amazon shareholders of 2018, this segment has become the largest component in the platform's total sales volume, reaching now 60% of the total physical gross merchandise sales.

We adopted an inductive grounded approach, which is best suited for analysing a phenomenon in an exploratory manner (Charmaz & Bryant, 2008; Eisenhardt, 1989). It is oriented towards theory development rather than proving existing hypotheses (Thornberg & Charmaz, 2014).

To develop a comprehensive set of information about the Marketplace, we conducted semi-structured interviews to the different relevant types of participants in the ecosystem (Table 1).

The participants were selected through purposeful sampling (Emmel, 2013) and snowballing (C. Parker et al., 2019). We reached saturation (Rheinhardt et al., 2018) in the themes discussed.

Table 1. Detail of interviews conducted

	Amazon	Third-party sellers	Aggregators	Service providers	Experts & Media	Activists	Total
<i>Interviews</i>	2	10	9	7	4	2	34
<i>Average Duration (Minutes)</i>	41	37	33	35	40	30	35

We complemented the interviews with other primary and secondary data sources for context building and triangulation (Rheinhardt et al. 2018). Additional primary data consists of online and offline engagement with the community through participations in events, official and unofficial forums, and social media. Secondary data consists of financial statements, surveys, market reports, and legislation.

The interviews were transcribed and open coded (Corbin & Strauss, 2008) to conceptualize the actors' strategies and interactions towards the marketplace. We conducted code triangulation by the second author for validation (Rheinhardt et al. 2018).

Findings

Our findings suggest that there is an endogenous interaction between the platform firm's business design decisions and complementors' responses, in which they are mutually shaped through the transformation of the ecosystem's competitive environment. Further, we find evidence of two categories of platform design decisions: official ones and unofficial ones. Their interplay, along with complementors' tactics to elude or infringe platform's rules ("grey hat" and "black hat" tactics, as explained in section II), crucially shape the competitive environment by the creation of "unwritten rules of competition". Finally, we find that large platform-based ecosystems can create heterogeneous structures not predicted in the literature so far, as there is evidence of the emergence of a new type of complementor, so-called "aggregators".

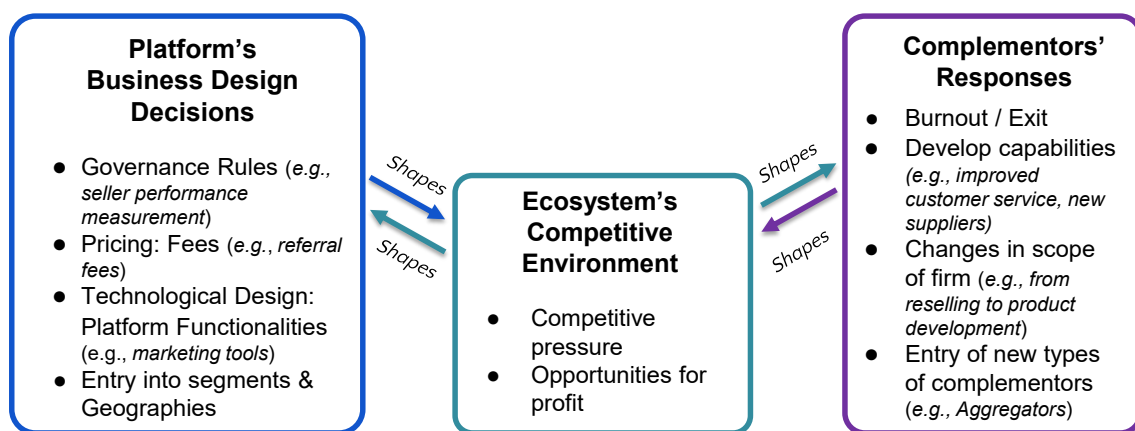
1. Interaction between platform design decisions and complementors responses

We find evidence of an interaction going both ways between platform's design decisions and complementors' response. The way these two interact is through the shaping of the ecosystem's competitive environment.

The Amazon Marketplace experienced a remarkable transformation through its years of existence: from an overlooked annex to the initial Amazon's value proposition of e-retailing, to becoming its main segment in terms of sales volume, and allegedly its most profitable business. We conceptualize the changes made by Amazon to its business model under the notion of platform business design decisions (Figure 2), encompassing a wide range of tools and strategies that include:

- *Governance rules*, such as the use of seller performance measures to define access to the platform, or the change in the parameters driving search results such as the use of metrics (reviews or ratings), or paid advertising.
- *Pricing*, including definition of differential referral fees for each product category, but also the bundling with optional services such as fulfilment or advertising.
- *Functionalities and tools*, ranging from use of technological modules for new marketing services (such as product videos, or the possibility of conducting A/B experiments), to loyalty programs (A-to-Z guarantee) and the provision of optional services to sellers such as fulfilment, international logistics, analytics, and taxes management among others.
- *Segments and geographies* definitions, changing the range of products and services possible to be sold through the Marketplace, and in which countries.

Figure 2. Interaction between Platform Design and Complementors' Responses



Through these changes, Amazon transformed the Marketplace's business design, which also implied changes to the value creation models available for sellers and the creation of opportunities for profit (Figure 2). Along these opportunities, we find evidence of the use of the design decisions to strategically shape the competitive pressure faced by sellers. For example, some of our interviewees said...

"A carrot can quickly become a stick. So to use the fulfilment example, there is an advantage to offering the prime badge right... but actually, I'm just a guinea pig. I'm dealing with all the system challenges and problems to go and get ironed out and rolled out and then the market becomes hooked on it like a drug and mounting that competitive advantage is eroded" (Amazon Third-Party Seller)

"They kind of let you join up the dots but there's no like pressure "You must take this service". But if you don't, you're just gonna see your sales in terminal decline." (Amazon Third-Party Seller)

This shaping of the competitive environment, in turn, also shapes the complementors' responses in adapting to it. We identify four types of responses to the changing competitive pressure (Figure 2), suggesting that platform design decisions have an impact in driving complementor heterogeneity.

- *Burnout/Exit* is an evident option when facing competitive pressure. Our interviewees and secondary data suggest that turnover rates are higher than in alternative marketplaces and highlighted its importance in shaping the complementor population.
- *Developing capabilities* to conform to the standards defined by the platform or imposed by the competition. This can be improved customer service, increasing supply chain service levels, or development of new products.
- *Changes in the scope of the seller's firm*, such as a purely reselling businesses engaging in new product development and manufacturing.
- *Entry of new type of complementors*, oriented to overcome the limitations of existent sellers (see section III. below)

Overall, the platform firm's design decisions seem to shape complementors' responses towards delivering the platform firm's value proposition (service level, selection). In addition, complementor's success in adapting will also impact in the platform owner's decisions as it creates opportunities for adding new layers of value creation (marketing, fulfilment, analytics), that can be monetized.

"The whole platform in all, you know, the platform's been evolving... they're just changing it all the time... is almost become like, impossible to keep up with... you need more and more people to manage it" (Amazon Third-Party Seller)

II. The unwritten rules of competition

Our second set of findings relates to the existence of a set of "unwritten rules of competition", that ecosystem's actors need to acknowledge and play by to successfully compete. These unwritten rules are the result of both Amazon's and complementors' engaging in practices that transgress platform rules or external legislation and regulation alike.

On the one hand, we find evidence of two categories of platform design decisions: official ones and unofficial ones (Figure 3). Official design decisions are those set in the formal rules of engagement in the Amazon Marketplace, such as those described in the previous section. Unofficial design decisions, in turn, are not declared by Amazon, but actors in the ecosystem identify as established practices in this space. We found evidence of two types of unofficial design decisions:

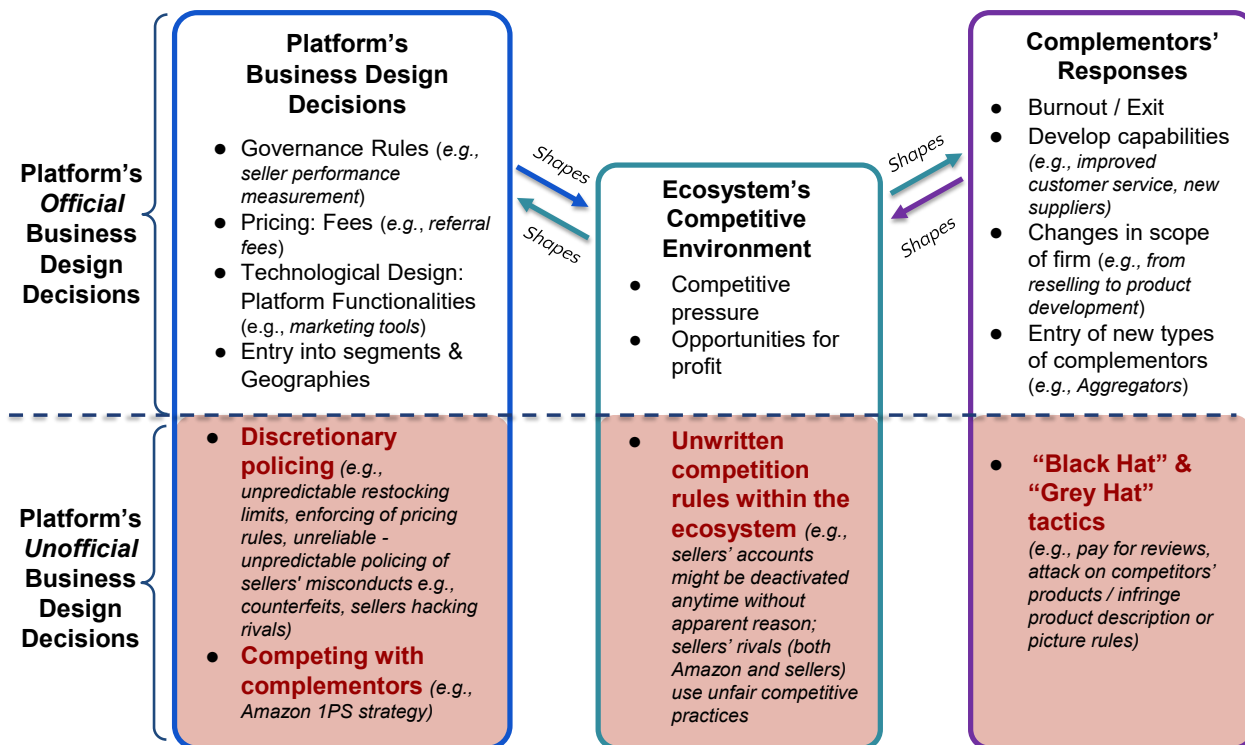
- *Competing with complementors*, such as entering a seller's market space with identical or similar products, and self-preferencing in search results and advertising costs.
- *Discretionary policing* when changing parameters or enforcing marketplace rules. Examples of this are unpredictable enforcing of pricing rules, or unreliable and unpredictable policing of sellers' misconducts such as counterfeits and sellers hacking rivals.

"And the first thing I'd say is, again, when I started trading on Amazon, it was the Wild West, it really was, it was hugely frustrating... the two major challenges that historically have faced sellers of Blackhat tactics, for sure... And then the other one would be Amazon's fairness, the fairness around Amazon is an enforcement of certain policies. If it's the Wild West, then Amazon's approach was to shoot first and then ask the questions afterwards" (Amazon Third-Party Seller and Ecosystem Service Provider)

On the other hand, complementors also engage in practices that are formally prohibited or limited by the platform's rules. In the ecosystem they are known as

- *Black hat tactics*, which involve a practice explicitly prohibited by the platform, including illegal ones. Examples of these practices are paying customers or other agents for favourable reviews, hacking competitors' accounts and listings, or selling counterfeit products.
- *Grey hat tactics* consist of infringing platform's rules in subtle ways to obtain minor advantages in search results and product display. Examples of this are infringing product description or picture rules

Figure 3. Official and Unofficial set of actors' practices



These set of practices seem to justify or reinforce each other and result in the creation of unwritten rules of competition. Examples of these rules are the knowledge that sellers' accounts might be deactivated anytime without apparent reason, or that a sellers' rivals (both Amazon and sellers) would probably use unfair competitive practices.

“...Amazon's view is, we're not going to waste time and resource on this, if you want to get it sorted, you can do that. And, and Amazon's approach is always customer first and work back to their view is forget the nuance of individual sellers, we have a blanket policy that makes sure our marketplace is safe for the customer. If you get caught up in that policy, that's your problem, you've got to fix it.” (Amazon Third-Party Seller and Ecosystem Service Provider)

III. The emergence of new types of complementors

In third place, we find evidence of entry of a new category of complementors, so-called “aggregators”. Aggregators are companies specialized in acquiring successful Amazon 3PS’s accounts and operating them. Since the first one appeared in 2018, they have quickly increased in number, raising in total over \$12B in 2021 for investing in this space.

These actors’ entry is a response to the identification of limits of current 3PS, such as burnout and insufficient scale of capital and know-how.

“Entrepreneurs are creators of some of these businesses are typically reaching the capacity of their time, their knowledge, or their capital, and it can be one or all of those three things. So historically, there’s never really been a way for them to exit their businesses.” (Amazon Aggregator)

Rather than just acquiring the businesses, they frame their role as developing successful brands operating in the Marketplace.

“And our job is really, more importantly, than just buying these companies is also operating them. And I think one thing you can say about the industry as a whole is that it’s becoming more institutionalized.” (Amazon Aggregator)

The Amazon Marketplace has always been characterized by a very large hub, and numerous small sellers. While playing a similar role as suppliers of the platform, aggregators are nonetheless a different type of complementors, with significantly larger scale in capital, human resources and know how.

Discussion

This article offers three main findings: a) we find evidence of an interaction going both ways between platform’s design decisions and complementors’ response, that occurs through the shaping of the ecosystem’s competitive environment; b) we find evidence of two categories of design decisions: official ones and unofficial ones; these have consequences such as creating “unwritten rules” of competition, and so-called “black hat” and “grey hat” complementors responses; and c) we find evidence of entry of a new categories of complementors, so-called “aggregators”, which increase the heterogeneity of the complementors pool.

These findings illuminate how platforms govern ecosystems; and how, to some extent, platforms are also subject to ecosystem members’ responses. We identify three sets of problems in which these findings pose new questions to extant knowledge in the field

Is the platform doing a good job at governing its ecosystem?

Many studies assume or suggest that it is always in the interest of platforms to satisfy all their sides (Hagiu, 2013; Chesbrough et al., 2018). However, our study indicates that many sellers are not satisfied: they feel constrained, operating in an unpredictable environment, and subject to

huge power asymmetries. This is consistent with findings in other studies (Crémer et al., 2019; Stigler report, 2019).

Our study also suggests that the platform design decisions are driving complementor heterogeneity. So far, the literature has either focused on the specific impact over competition (Rietveld et al., 2020; Zhu & Liu, 2018), or over the owner-complementor relationship (Cutolo & Kenney, 2020; Eaton et al., 2015). This article shows how platform design can have a significant impact in shaping complementors' characteristics over time. This adds new complexities to ecosystem governance, as it creates opportunities for expanding value creation in the ecosystem (through additional offering, better quality, new services), but also create unequally distributed challenges to complementors, that need to adapt.

In third place, our study shows that in addition to a large central actor and several small complementors, intermediate actors can emerge. This could change the balance of forces (with intermediate players potentially acquiring more bargaining power) and become relevant for the regulatory debate on platform to business relationships (Crémer et al., 2019; Furman, 2019; Jacobides, 2021; Stigler report, 2019; US House of Representatives, 2020).

From “Wild West” to “Window Dressing”? Making use of the “Decoupling” concept from Organizational Theory

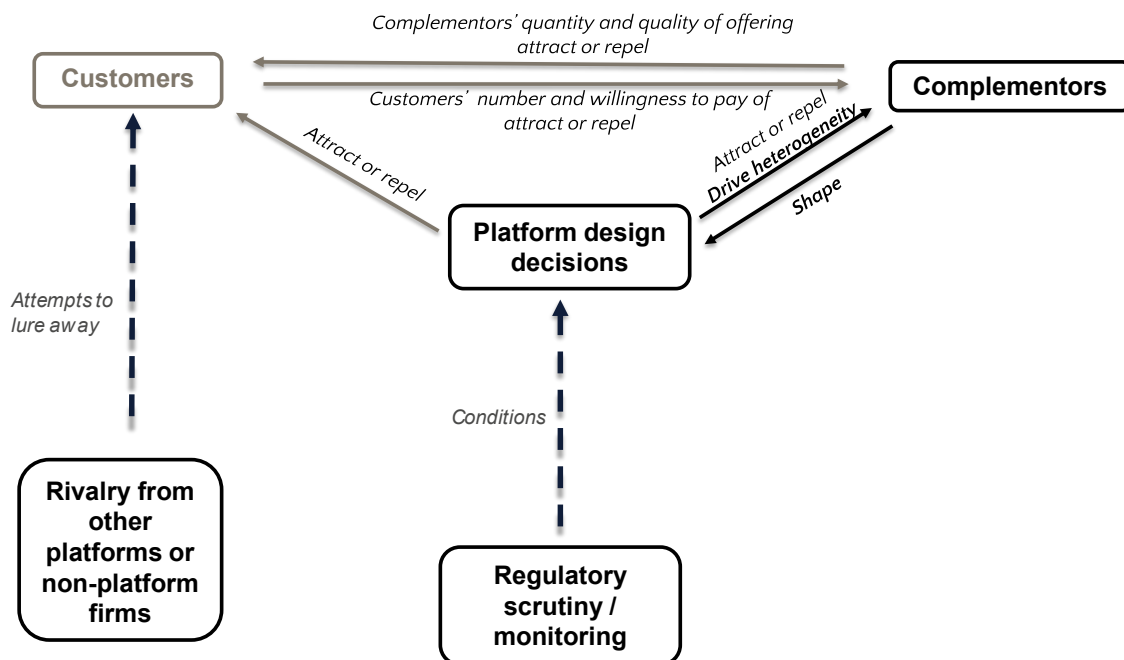
In the 1960s - 70s, the "open systems" (Salancik & Pfeffer, 1978; Weick, 1976) view of organizations directed attention to the role of external influences and pressure, and the organizational response to them. Decoupling was identified as one organizational response to this pressure, through the creation of a buffer between practices and inspection (external monitoring / control) (Meyer & Rowan, 1977). Organizations adopt policies to conform expectations regarding formally stated goals and operational practices, but do not change their behaviour (Scott, 2008). Decoupling might be deliberate (i.e., to protect internal activities from monitoring, “window dressing”), but organizational scholars have also identified instances of decoupling emerging as unintended consequences (driven by cultural and institutional factors, problems in execution, etc.). Further, Bromley and Powell (2012) distinguish between policy-practice decoupling (when rules are unimplemented or routinely violated) and means-ends decoupling (when policies are implemented, but the link between formal policies and the intended outcome is opaque)

The organizational theory on decoupling offers an intriguing set of concepts that seem to illuminate observed behaviours. In the context of our study of Amazon Marketplace, the decoupling appears to be a policy-practice kind of decoupling, and a deliberate one. The “unofficial” practices of discretionary policing and competing with complementors tend to a) favour on customer satisfaction rather than protect sellers' interests; and b) protect platform's opportunistic operational manoeuvrability. But what we observe does not seem to correspond to traditional “*window-dressing*”: Interviewees refer to “*wild west*”, in that the external regulations and rules have not been so clear-cut. However, the regulatory environment is changing and there will be more incoming government external scrutiny, monitoring, as new rules for example against self-preferencing become applicable.

The empirical setting is changing

In addition to the endogenous dynamics created by the ecosystem, a number of contextual factors in the ecosystem are changing. On the one hand, traditional retailers such as Walmart are quickly expanding their own online marketplaces, creating alternative selling channels for traditional Amazon third-part sellers. In addition, the regulatory environment is changing, with increased scrutiny and regulatory tools such as the Digital Markets Act, or the package of bills currently in discussion in the USA to curve monopoly power in digital markets. How would these changes affect our findings? Can this lead to a shift in the current balance of power (towards 3PS & Aggregators)? Favour the entry of other large players to the ecosystem (driven by interoperability)? Fragment the ecosystem as a consequence of Amazon vertical structural separation?

Figure 4. Possible changes in the empirical setting



Conclusions

Our study shows evidence of a mutual interaction between platform's design decisions and complementors' response through the shaping of the ecosystem's competitive environment. We also find evidence of a duality in design decisions (official and unofficial), creating "unwritten rules" of competition. These dynamics seem to be driving complementors' heterogeneity

Our findings illuminate new aspects of how platforms govern ecosystems; and also how, to some extent, platforms are also subject to ecosystem members' responses. Consequently, this can spark new views on how competition operates in platform ecosystems and offers insights for regulatory design. They also raise further questions on platform ecosystem governance.

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