

Quantity or Quality? Value creation in two-sided platforms

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Abstract

Two-sided platforms emerged as a more common business model, mainly due to the spread of digital technologies. Economic literature suggests a "quantity"-driven strategy to enhance the cross-side network externalities at the basis of the system. Nevertheless, the widespread of this business model lets emerge different peculiarities worth exploring. This research aims to examine the role of a "quality"-driven strategy in welcoming players on the platforms' sides in the value perceived by the other side. The research is based on a qualitative study developed through eight case studies based on primary and secondary sources. Five of them let emerge a "quantity"-driven strategy, while three of them a "quality"-driven strategy, which is presented and discussed regarding the type of platforms. From a theoretical perspective, it distinguishes "quantity"-driven from "quality"-driven strategies in bringing players onboard on the platform, expanding the literature that considered quality as a main characteristic of the platform provider, rather than the players on it. Moreover, it suggests a strong link with the lifecycle phase. From a managerial perspective, it highlights operational tactics for both "quantity"-driven and "quality"-driven strategies and – more importantly – it suggests a possible integration of the two strategies.

1. Introduction

Leveraging on digital technologies, several start-ups have lately been able to challenge entire markets' status quo. Companies like Uber, Airbnb, or Coursera leverage a digital platform to connect two different typologies of customers – i.e., users and drivers or hosts and guests – changing the competition rules. This type of companies is endlessly scalable due to their nature, since they offer services based on assets owned by one of the sets of customers (e.g., the houses of the hosts for Airbnb).

This is making their impact extremely unpredictable and diffused for established companies based on traditional linear value chains (Choudary et al., 2016; Urbinati et al. 2018).

The business model that underpins these companies has been highly studied and defined as a two-sided platform (Amit and Han, 2017). Only specific types of businesses can be defined as “two-sided”. Rochet and Tirole (2006) defined Two-sided Platforms as “*markets in which one or several platforms enable interactions between end-users and try to get the two (or multiple) sides “on board” by appropriately charging each side*” (Rochet and Tirole, 2006, p. 645). They studied examples like credit cards or newspapers. These businesses are characterized by indirect (or cross-side) network externalities, defined as the increase in the number of users generates an increase in the offer of complementary goods (Katz & Shapiro, 1985). The value of the entire system for the customers on the first side (e.g., cardholders) depends on the customers of the second side (e.g., merchants) and vice-versa. Traditional economics theories support that an increase in the number of players on one side directly leads to an increased value in getting on board for the players on the second and vice-versa, generative a virtuous circle (Evans, 2003; Rochet and Tirole, 2006).

The concept of “quantity” has often been considered the key enabler of this kind of externalities (Tucker and Zhang, 2010). This was extremely relevant from an economic perspective (Parker and Van Alstyne, 2005), and there are cases in which this underpinning assumption is valid. Consider, for example, a service like Skyscanner that compares flight fares. In this case, users want to know that all the possible flights are on the platform to select the best option. The choice is based on pre-defined criteria that help the customer handling the number of propositions.

Nevertheless, there is evidence suggesting the quantity may not be enough or even be negative in terms of value. Customers are getting used to receiving many inputs by several competing companies, proposing similar products and services, making the final decision more difficult. In a world awash of opportunities (Verganti, 2017), where the final user is affected by the so-called “paradox of choice” (Schwartz, 2004), the problem of the extreme choice is not marginal at all.

There are cases in which the decision is much more complicated, and a “wrong” match or a “wrong” selection may be too “expensive”, and users may leave the platform, creating a vicious circle.

Coherently, some researchers paid attention to the role of “quality”, rather than quantity, in two-sided platforms, mainly focusing on the platform provider (Gonzalez-Maestre and Martinez-Sánchez, 2015), or the link with profitability (Zenny, 2016). Due to the increase relevance of two-sided platforms as an innovative business model (Amit and Han, 2017) and their spreading due to digital diffusion (Täuscher and Laudien, 2018), exploring strategies that go beyond quantity may be relevant to expand the knowledge on the value creation process of two-sided platforms.

Given that the traditional theories in the field have been developed leveraging mainly the quantity of players on both sides, this research aims to answer the following question: how can companies feed cross-side network externalities to sustain Two-sided Platforms? In other words, what may be the drivers that bring one side to see a higher value in the platform thanks to who is onboard on the other side? There is initial evidence that the quality of the players on a side may eventually enhance traditional externalities based on quantity (Kim et al., 2014; Molina Castillo et al., 2011), are there specific conditions that would let emerge quality over quantity?

2. Theoretical Background

2.1 Defining two-sided platforms and cross-side network externalities

As previously mentioned, Rochet and Tirole (2006) proposed one of the firsts structured definitions of Two-sided Platforms, posing the attention on the double groups of customers on the necessity of appropriately charging each side. Three necessary conditions have been proposed by Evans (2003), giving a much more detailed view of what is considered a Two-Sided Platform. In particular, there is the need of i) two or more distinct groups of customers; ii) cross-side network externalities among the groups of customers; and iii) an intermediary – the platform provider – able to internalize the externalities.

Usually, the two sides represent a "demand" and a "supply" side. Still, they are both customers in the eyes of the platform provider; both sides may be "Business-Sides" (companies join the side) or "Consumers-Side" (individuals join the side) (Täuscher & Laudien, 2018).

The basic value proposition of two-sided platforms has been identified around the concept of the match-making (Choudary et al., 2016). This means that a two-sided platform should exist when it reduces a friction on the market, enabling the meeting process of two different players searching for the other and reducing the transaction costs for the sides to meet (Williamson, 1981). Early research in the field highlighted how these systems could reduce costs related to the identification of the players on the other side, but also to the chance to rely on a billing system and to the chance to record and monitor the transactions (Rochet and Tirole, 2006). These costs represent different kinds of transaction costs, belonging to the different categories highlighted in the literature, such as search and information costs and bargaining costs (Dahlman, 1979).

As previously mentioned, the value of the platform directly depends on the presence of players on both sides, according to the creation of network effects. These specific externalities expand the original concept of direct network externalities, according to which the value of a good depends on the number of users and, therefore, its diffusion (as in the case of the telephone) (Katz and Shapiro, 1985). In two-sided platforms, this is more complex, since the value for one side depends on the other and vice-versa (Evans, 2003).

Cross-side network externalities have been highly studied in the product development literature focusing on their impact on product attributes (e.g., Basu et al., 2003) and on the consequent diffusion of products on the market (Parry and Kawakami, 2017) and technology acceptance (Song et al., 2009). In the platform literature, they have been considered one of the main factors in retaining users over time (Zhang et al., 2017) and in enhancing the diffusion on the market (Urbinati et al., 2019).

2.2 Opportunities, challenges and peculiarities of two-sided platforms

Scholars studied two-sided platforms, mainly taking a business model perspective (Amit and Hen, 2017). Indeed, two-sided platforms are based on an unusual configuration of resources that enhance peculiar flows of value creation and capture. Therefore, specific opportunities and challenges emerged over time.

Among the opportunities, two-sided platforms tend to scale up quickly and spread once they reach the critical mass (Choudary et al., 2016), reaching relevant positions in an industry (Iansiti and Lakhani, 2017). Moreover, their natural modular structure enables innovation processes that bring them from two to multi-sided platforms (Hagiu and Wright, 2015; Trabucchi and Buganza, 2020), leveraging both same-side and cross-side innovations (Zhang and Tang, 2019), defining the long-term viability of these platforms (Laczko et al., 2019).

Notwithstanding, two-sided platforms must also face severe challenges in comparison to traditional linear value chain businesses. The first is related to the chance to overcome the chicken-and-egg paradox that affects this kind of platform in the early phases of the development (Caillaud and Jullien, 2003). Various ways to solve the paradox emerged (Trabucchi, 2020), but it is still one of the major drivers of failure. The paradox is linked with the chance to convince two sides to join a service where they are complementary, and this links with the need to design a double value proposition (Muzellec et al., 2015). In doing so, there is the need to build an environment where both sides can trust the other and the platform simultaneously, and this represents a significant source of resistance in the early phases (Ert et al., 2016). Considering that the sides may have different value drivers, this may not be an easy task (Clauss et al., 2019).

2.3 Quantity VS Quality dealing with Two-Sided Platforms

The key success driver for two-sided platforms is their ability to scale and to become sustainable through a high number of transactions that enhance the value of the externalities on the two sides (Libert et al., 2016).

Scholars faced this issue, giving birth to the "Quantity VS Quality" dilemma that this paper aims to explore. The vast majority of papers focused on the "quantity" side proposing strategies to enhance the number of players on both sides. For example, the chance to advertise the number of customers on one of the two sides, to increase the attractiveness on the other side, has been successfully considered (Tucker and Zhang, 2010). Finally, the role of Value Added Services (VAS) has been considered as a strategy to increase participation and profit for the entire platform (Dou et al., 2016). In the same line, trying to enhance the participation on both sides in a "quantity-drive" perspective, scholars also considered the players' view, in terms of motivational drivers (Boudreau and Jeppesen, 2015) or in terms of rating systems and reviews cross sides to enhance the trust towards the other side (e.g., Gonzales-Maestre and Martinez-Sanchez, 2015).

At the same time, researchers also start analyzing the potential impact of a "quality"-driven" strategy. Some scholars began questioning that cross-side network effects may not be enough for the diffusion of these platforms, at least relying only on the number of players on the two sides (Wang et al., 2016). Studying the impact of indirect network effects in new product growth, Stremersch and colleagues suggest that the consideration of quality instead of quantity may be pursuable research with a meaningful impact (Stremersch et al., 2007). Research has been done questioning the quality of the platform itself and the platform provider (Gonzalez-Maestre and Matinez-Sánchez, 2015), eventually even considering it as a driver to measure the profitability (Zenny, 2016).

Interestingly, Urbinati and colleagues (2019) provide a study highlighting the role of cross-side network externalities in enhancing the diffusion. They identify two labels: "Larger Partner Ecosystems", suggesting a "quantity"-driven strategy, and a "quality"-driven approach for what they label as "Smaller Partner Ecosystems", where the diffusion is slower but still having great appreciation in terms of the market evaluation.

Building on this evidence, the study aims to dig in "quantity" and "quality" driven strategies to enhance cross-side network externalities in two-sided platforms.

3. Methodology

A qualitative approach is considered suitable for this kind of research; it enables researchers to get closer to informants unveiling latent variables that may better explain the phenomenon under observation (Strauss and Corbin, 2008).

A multiple case study method has been selected, aiming to answer "how" questions (Yin, 2013). Through this research approach is possible to develop a holistic and contextualized analysis.

3.1 Sampling

The sampling procedure is based first on a theoretical replication logic (Yin, 2013). It relies upon different kinds of players that can represent the two sides of the platform (i.e., consumers or businesses), since it is considered a relevant variable that let emerge significantly different strategies and implication for two-sided platforms (Täuscher and Laudien, 2018).

Therefore, there are different configurations of two-sided platforms, such as C2C (which means having Consumers on both the demand side and the supply side), B2C (Businesses on the demand side and Consumers on the supply side) and C2B (Consumers on the demand side and Businesses on the supply side). The chance to observe different kinds of players on the two sides enables for theoretical replication (Täuscher and Laudien, 2018; Trabucchi, 2020), expecting different dynamics – in terms of reaction to "quality" or "quantity" driven strategies regarding the other side. Based on the literature on two-sided platforms, having Consumers or Businesses on the demand or the supply side may let emerge differences regarding the impact of "quantity" or "quality" driven strategies. Moreover, a literal replication logic (Yin, 2013) has been applied as well, aiming to increase external validity. Indeed, the chance to have more cases related to the single rationale for the theoretical replication helps establish the domain for generalization.

Table 1 shows the eight companies included in the sample, aiming to show the significant heterogeneity regarding transaction enabled, platform structure industry, number of employees,

revenues range and country of origin. Data collection lasted more than two years, from July 2016 to July 2019. The research is based on both on primary and secondary sources.

Company	Brief description	Side 1 (Demand)	Side 2 (Supply)	Kind of platform	Country of foundation	Year of foundations	Respondents	Employees range	Revenues range	Number of interviews	Other Secondary Sources (# of articles)
Alpha	People can give and/or receive rides through carpooling	Riders	Drivers		France	2006	Co-Founder Country Manager	251-500	\$10M - \$50M	2	25
Beta	Parents can search for people willing to work as babysitters	Parents	Babysitters		Italy	2013	Co-Founder	1-10	\$1M- \$10M	1	12
Gamma	People can search and/or offer houses and apartments for sales	Buyers	Sellers	C2C	Italy	2015	Co-Founder	11-50	\$1M- \$10M	1	18
Delta	People can give and/or receive the chance to rent a private room for medium period stays	End-Users	Hosts		Netherlands	2009	Business Developer Manager	51-100	\$1M- \$10M	1	10
Epsilon	Students can search for job positions from companies searching for new hires	Students (through business schools)	Companies	C2B	France	2008	Co-Founder	101-250	\$1M- \$10M	1	7
Zeta	End-users can order from many nearby restaurants and receive a home delivery	End-Users	Restaurants		UK	2013	Country Manager Operations Manager	1000+	\$100M- \$500M	3	31
Eta	Companies can ask end-users to perceive simple tasks around the city (e.g., mystery clients)	Companies	End-Users	B2C	Italy	2011	Co-Founder	51-100	\$1M- \$10M	2	19
Theta	People can take pictures to act as influencers for brands	Brands	End-Users		Italy	2015	Co-Founder Community Manager	11-50	\$1M- \$10M	3	54

Table 1–The sample3.2 *Data gathering and data analysis*

The respondents were selected according to their ability to have a longitudinal view of the platform's evolution. They are one of the founders or managers with a long history within the firm. A semi-structured interview protocol has been designed, coherently with the exploratory nature of this research (Yin, 2013).

Fifteen interviews, lasting between 45 and 100 minutes, equivalent to 114 double space pages of transcripts, the interview protocol is in the Appendix. Three out of the eight cases showed peculiar characteristics regarding how they deal with the externalities; therefore, one or more follow-up interviews have been scheduled and performed, to deal with their peculiar strategies. In all the cases, secondary sources have been used as well, mainly to triangulate information increasing the reliability

and the robustness of the findings (Miles and Huberman, 1984). Secondary data have been used to reinforce the data derived from the interview, searching for evidence of the declared strategies or to assess the impact removing the respondents' biases.

An inductive and iterative approach has been adopted to analyze the rich body of data collected (Strauss and Corbin, 2008). In particular, all the interviews have been transcribed and coded and has been analyzed through three main phases: reading, coding, and interpreting (Saldaña, 2015). Relying on the suggestions from Strauss and Corbin (2008), an open coding process based on the identification of key sentences from the documents and sorting them into first-order categories (such as “Reaching the critical mass”, “Minimum quality”, “Personalization of the matchmaking”, “Selection of the players”, “Heterogeneity of the players”) has been used. It has been later combined through axial coding into higher level categories (such as “Quantity-driven strategy based on feedbacks”, “Quantity-driven strategy based on initial filtering”, “Quality-driven strategy based on the heterogeneity”, “Quality-driven strategy based on the selection” and “Quality-driven strategy based on the evolution process”,) which have later been linked to previous literature and formalized in the strategies and tactics in the discussion. Through this process, the main dimensions presented in the result sections emerged.

4. Empirical Results

4.1 “Quantity”-driven strategy

Five out of the eight cases (Cases Alpha, Beta, Gamma, Delta, Epsilon) let emerge a clear coherence with the greatest tendency that is discussed in the literature: the willingness to push quantity on both sides to foster the cross-side network externalities.

The founders of all these companies stressed the mission of their companies: to link and match people offering and searching the same/a complementary goods, seeing in a significant mass of players on each side a good value proxy for the other side. Nevertheless, some peculiar characteristics of how

these companies implement their "Quantity"-driven strategy emerged, posing some necessary conditions or particular situations they highlighted.

The founder Gamma stated that *"Before talking about quality, it is necessary to reach a quantity threshold. We need to tackle all the market, to assess many places,"* highlighting a double critical variable: the phase of the lifecycle of the platform and the variety of the offering, which is highly correlated with the quantity.

The founders of Delta and Epsilon shared similar approaches. The founder of Epsilon stated, *"We have to guarantee the quality of the job advertising because we guarantee the type of companies that are our clients. We provide content, and we have to be sure that the contents are of high quality. We do a screening of who enters the platform"*. Similarly, the founder of Delta stated that, even if they do not have the chance to apply a screening procedure directly, they implement activities on the platform to guarantee a level a certain level of service. He said, *"Transactions are not direct to guarantee the quality; in this way, if the students do not find the room as it was described, we still have the money"*. Interestingly, in both cases, the main focus is related to a basic level of quality needed to enter the platform, even if managed in different ways. However, in both cases, nothing is done to reduce the quantity, which is still very welcomed.

The founder of Beta clearly states that they would have no reason to not search for quantity: *"We have a feedback system, if someone has negative feedback the system will exclude him/her, no one will choose him/her"*. The same for company Alpha: *"We built trust in a side by side. First, we built trust for the drivers through the rating system. Then we built trust or reliability of the engagement for the passengers through the payment system. So, it was two steps."*, and as company Delta, they also managed the payment system. Still, even in this quantity, it is very welcomed and even considered part of the value proposition, since a more personalized service can be offered through quantity.

This overview let emerge different cases, both having only consumers on both sides and having both consumers and businesses, where the platform provider directly search for quantity on both sides. Even if they implement some precaution when dealing with it, in particular, they might be: i) feedback

systems to let emerge quality among quantity and, ii) initial filtering defining necessary conditions to join the platform.

4.2 “Quality”-driven strategies

Cases Zeta, Eta, and Theta presented different attitudes towards the management and the enhancing process of cross-side network externalities.

Zeta is based on a digital platform that aims to change the final perception of food delivery services. The service is based on the interaction between two different sides: the end-users and the restaurants, matched through a mobile app. From the restaurant side they are open to evaluating all the candidacies, but as the General Manager said *“They can write us, then we evaluate them, and we try them all, since the selection we made is essential: users need to know that all the restaurants they choose on our platform are a great restaurant even if they never heard of it. [...] We said several no.”* they pointed out they do not search for quantity, but rather prefers to check the right mix of restaurants in each area, to answer to the different needs of the other sides. For them, quality is represented by a proper mix.

Eta leverages the mechanism of mobile crowdsourcing to create a platform that links companies and citizens that occasionally accept to be part of mystery shopping activities. The founder said: *“Companies pay to do promotions, pay to have their products at the eyes level and not at the feet level. If all this effort to gain visibility does not take place [...] they are losing sales. Basically, their investment in promotion has lower profitability than the one that could have, ”* leveraging this observation he launched the service.

The platform aims to ensure to their business customers that their promotions are implemented within physical stores, leveraging thousands of end-users that go physically in the store and – sending pictures, answering to questions, and so on the evidence of the actual implementation. The end-users are *“people, citizens, that on a voluntary base see on the map some mission requests and decide if they want to do or not those activities that may even be quite different among them”*.

The business customers set the requirements for mystery shopping activities and leveraging the previous experience. The platform can foresee the price needed to make the jobs done by the end-users. To solve the chicken-and-egg paradox, they start posting fake jobs to get the Eyes on board: *"when there was nothing we started posting fake jobs, to solve the chicken-and-egg paradox and to fine-tuning the tool."* In less than four years the company spread in Europe (e.g., UK, France, Spain, Germany), getting more than 400.000 end-users.

One of the main issues that the platform provider faces is related to those missions that are not in big cities, where the density of end-users is higher. *"What we can do is let the end-users pop up where we need them, we can solicit the already existing End-users with different communication techniques and last – but not least – with the price we paid them. [...] We try to reach the goal we set with our customer of providing a certain percentage of visits in a certain number of weeks"*. This situation led to a particular management of the second side: *"we need to find new End-users, in those cases we used geo-localized insertions on Facebook, we are a strange app somehow, we would not be happy if tomorrow morning we get 1 million downloads, they are our suppliers, [...] we would not have something for them [...] we need an equilibrium between bids and asks. The difficult part is that such equilibrium must be kept at a geographical level in every area we serve!"*.

To do this, they leverage the power of social networks: *"We leverage a lot on Facebook as a recruiting tool. We build a method to turn on and off the insertions in a dynamic way on the single municipality. [...] The singularity is that in this way, we get on board also the other side. Many customers found our company in this way"*. In this case, quality means having the "right" people, where the right is related to the geographical distribution and the relative frequency.

Theta is a community-based platform that links end-users and brands. Brands create briefs asking end-users to take pictures and to share them on social media, relying on micro-influencing mechanisms. Brands pay the platform to co-design the brief and reach end-users, while the platform rewards the end-users taking pictures with credits that can be used to buy different vouchers.

To engage the end-users, the platform creates many non-branded campaigns, aiming to keep the community working. Nevertheless, since the community is pretty big, not all of them have got the chance to participate in the branded campaigns. As the founder said, *"We decided to insert the concept of quality, when an end-users post a photo it is checked by many specialized users that validate each photo. Their evaluation first and the peers' rating then go in a KPI which measures the quality of the content produced". They decided to create this filter because "Companies pay huge attention to the quality level because they use our tool to create value for their brand; therefore, it needs to be at least comparable with other marketing tools"*. Over time the system became more complex. They created an overall index that rearranges the quality of the single end-users (and of the single picture) to assess the chance to get access or not to a certain campaign (*"End users need to reach a minimum level of the index that we set according to the single campaign. The more the campaign is difficult the more advanced you need to be"*). All of this has been made possible through gamification mechanisms *"The entire gamified system is there to teach people how to reach minimum quality level. It is working very well, the pictures have a very high quality, and brands highly appreciate our efforts and our role in creating it"*. In this case, quality is a built-in mechanism that can be reached through a journey.

Table 2 summarizes the previous cases, highlighting the commonalities and, therefore, the differences in the management's approaches in the tension between quantity and quality.

Company	Pursuing Quantity or Quality?	Operational tactic	Main features
Alpha	"Quantity"-driven strategy	Feedbacks	Quantity means that everybody can join the system and that this is highly pushed. To manage it, the platform creates and implement a feedback system to assure that both parties can be satisfied on the platform and to discourage bad behaviors or low quality
Beta			
Gamma		Initial filtering	Quantity means that everybody can join the system and that this is highly pushed. To manage it, necessary conditions are defined and checked before joining the platform; they are a way to assess minimum viable conditions to be part of the system
Delta			
Epsilon			
Zeta	"Quality"-driven strategy	As a good mix	Quality means that requests to be part of the system are considered, but there are no pre-defined conditions. Each case is assessed to understand if it adds or no value to the proposals in that area/sub-sample of players.
Eta		As the right one	Quality means that no actions are done to search for generic end-users. Specific activities are created to target

		those individuals who are needed (for example, on a geographical basis).
Theta	As a journey	Quality means that even if everybody can join the platform, the transaction on the other side is reachable only if the individual prove a certain level of ability in creating content at a certain quality level, otherwise can still be in the system but mainly for fun, without access to the other side.

Table 2–Quantity VS Quality driven strategies

5. Discussion

5.1 The role of “Quality”-driven strategies: taking a transaction costs perspective

As previously mentioned, this paper aims to dig into the strategies that companies may implement to enhance the value of cross-side network externalities. In particular, the paper focuses on understanding if and how “quality”-driven strategies may play a role along the traditional strategies based on quantity.

As shown in Figure 1a, the value of the entire system perceived by each side (vertical axis) depends on the number of players on the other side (horizontal axis). This is easy to be verified in traditional examples of Two-Sided Platforms, such as credit card (Rochet and Tirole, 2006), where each merchant that join the system represent another place where each customer may pay and vice versa. All the analyzed cases confirm this. Nevertheless, pursuing a pure quantity driven strategy may be peculiar. As mentioned in the literature review, two-sided platforms are friction fighters that tend to reduce transaction costs (Rochet and Tirole, 2006; Williamson, 1981).

Nevertheless, the overall transaction costs may not continuously decrease. The empirical pieces of evidence of companies that stop pursuing a quantity-based perspective seem to understand that an excess of quantity may even be a problem. Cases Zeta, Eta, and Theta showed how it might be possible to stop pursuing quantity on both sides, aiming to highly select participants according to their characteristics. This is coherent with the literature on the paradox of choice (Schwartz, 2004), but it is in contrast with the research on two-sided platforms that pushes towards quantity on both sides to enhance the value perceived by the players on the other side (Tucker and Zhang, 2010). These

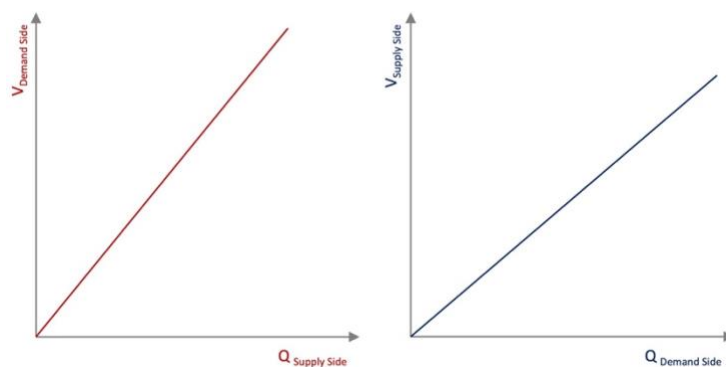
strategies may be read as a reaction to the transaction costs: pursuing a “quantity”-driven strategy search costs reduce, while the screening costs increase, reducing the overall positive effect of quantity (Figure 1b).

This seems to confirm research that discusses an increase in transaction costs in ecosystems (Williamson and De Meyer, 2012) due to the number of mutual relationships. Dealing with two groups (networks) that search one for the other, it gives birth to the U-Shaped curve discussed here.

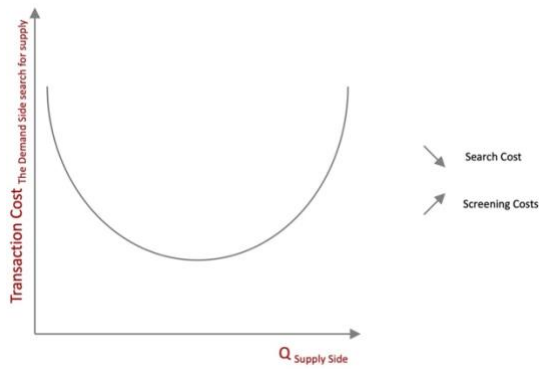
The strategies implemented by these three cases suggest that containing the number of players on one of the two sides may increase the value for the players on the other side. Empirical evidence shows that if a direct relationship exists between the value perceived by supply-side and numerosity of the demand side (increasing the probability to have a higher volume of transactions), this is not always the case looking at the value perceived by the demand side (Figure 1c). After an initial growth of the value of the entire system recognized by the demand side directly related to the supply side's numerosity, it stops growing due to the emergence of the paradox of choice. According to the three strategies, after a certain level necessary to let the match-making process flow, there is not an increased value related to a higher quantity.

Even more, it seems that the chance to rely on “quality”-driven strategies seem to enhance the value perceived in different ways (Figure 1d).

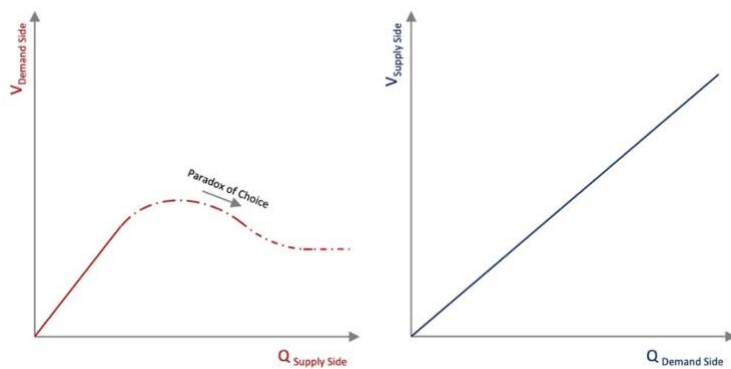
a) Classical view of cross-side network externalities



b) Transaction Costs in Two-Sided Platforms



c) The emergence of a Paradox of Choice in Two-Sided Platforms



d) The role of Quality-Driven Strategies in Two-Sided Platforms

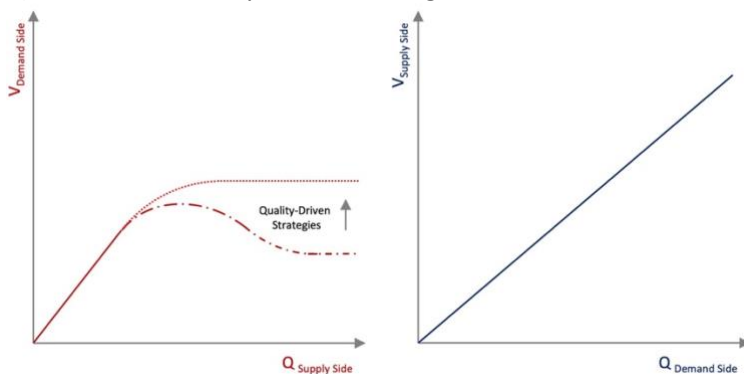


Figure 1–The relationships between Quantity and Value on the two sides

5.2 Quantity and Quality driven strategies in comparison with previous literature

This work builds on previous work in the field of two-sided platforms. First, it enlarges all those works dealing with “quantity”-driven strategy (Libert et al., 2016,; Tucker and Zang, 2010) highlighting two possible tactics – feedbacks and initial filtering – to guarantee an adequate quality to each transaction, enhancing the virtuous cycle at the basis of the cross-side network externalities driven by quantity (Katz and Shapiro, 1985). Moreover, this is highly coherent with the research on two-sided platforms

that highlight the role of the platform provider in creating a trustworthy environment among the parties (Ert et al., 2016).

“Quality”-driven strategies represent the main contribution of this research, they build on previous literature, but they enlarge it. As previously mentioned, there are previous contributions that start highlighting the role of quality (e.g., Wang et al., 2016; Zenny, 2016), but the concept of quality is mainly related to the platform provider or on the usage of flagship high-quality players on one side to attract players on the other. Notwithstanding, this research considers quality a driver of cross-side network externalities since a limit in the number of players on the supply side derives a higher perceived value on the demand side.

Two-sided platforms have been studied from various perspectives, but recent literature highlights that – despite the common basic structure of a platform provider and two or more sides – they may be extremely different in terms of characteristics, for example regarding the types of players on the two sides (Täuscher and Laudien, 2018). The three cases show that “quality”-driven strategies always involved businesses on one side. This is coherent with previous research that considers the business side more difficult to be managed (Muzellec et al., 2015). It seems that C2C platforms are more eager to search for quantity on both sides purely. This might be related to the higher possibility of setting filters that may reduce the quantity artificially and, therefore, the paradox of choice (creating rankings) or, eventually, managing more complex relationships in terms of possible matchings.

The three “quality”-driven cases show another type of similarity: the frequency of interaction. In several kinds of two-sided platforms answer to specific needs that the same end-user may have in a discrete time horizon (e.g., booking a room on Airbnb), the three cases (Zeta, Eta, Theta) show the chances to have continuous interactions. Two of them (Eta and Theta) are based on the idea that the supply side (end-users) are there to accomplish missions or taking pictures continuously over time to increase the extrinsic rewards at the basis of the system. Similarly, Zeta is a food delivery service, which, even if a less obvious way, is often based on repeated interactions even in a medium-short

period. This observation may enlarge previous classifications of two-sided platforms (Täuscher and Laudien, 2018), also considering the frequency of the transaction between frequent customers.

Finally, there is no evidence of a correlation with other demographic characteristics of the companies implementing one or the other strategy, note, for example, that one of the three cases that apply "Quality"-driven strategies is also the youngest company in the sample. Similarly, no generalizations regarding the industry are possible, since they are heterogeneous both among the quality and quantity driven strategies.

6. Conclusion

This research digs into the value creation process of two-sided platforms offering theoretical contributions regarding the literature on two-sided platforms. First, it takes a lifecycle perspective in the usage of quantity and "quality"-driven strategies, building on the literature that highlights the evolutionary nature of these platforms. Second, it expensed the literature regarding the role of the type of players involved in the platform. Finally, it enlarges the literature dealing with the concept of "quality" in two-sided platforms.

Indeed, the empirical evidence gathered in this research reveals that the two strategies may not be exclusive but may be integrated at least in a lifecycle perspective. First, to reach the critical mass and solve the Chicken and Egg Paradox, companies need to push for an Initial "quantity"-driven strategy. This seems to be necessary to create value through a two-sided platform needing the basic elements to start reducing frictions and offering the service. In this first phase, quality deals with the chance to provide a minimum viable quality through tactics like feedback loops or initial screening.

"Quality"-driven strategies may play a significant role in enhancing externalities in some kinds of platforms, usually with businesses involved in one of the two sides and with a repetitive type of transactions. In particular, limiting the players on the supply side may enhance the demand side's value, reducing the paradox of choice and enhancing the value proposition of the platform in a specific

direction. This finding is discussed relying on the transaction costs aiming to support this counterintuitive result in comparison to traditional research regarding cross-side network externalities.

Finally, this research complements the traditional view on the value creation process of these platforms challenging the conventional assumptions on quantity and moving the discussion from the quality of the platform itself to quality as a characteristic of the players on the supply side.

From a managerial perspective, this research suggests to entrepreneurs and managers dealing with this kind of companies' "quantity"-driven and "quality"-driven as two different but potentially complementary (in a lifecycle perspective) strategies, that are further developed in tactics to operationalize the two strategies. Peculiarities of kinds of platforms in which the two strategies seem to be more useful are presented as well.

This research does not mean to be exhaustive due to its exploratory intended, and it is not free of limitations. It is based on a small sample, which is strengthened by the heterogeneity of companies considered and the theoretical dimensions reviewed in the building. Still, the generalizability of the results is low, but they provide the first step in a different direction. Avenues for further research may be the chance to explore the drivers that make a quality-oriented strategy more suitable than a quantity-oriented one. Another is the chance to understand the dimensions that may characterize the concept of "quality" in a more detailed perspective and to replicate similar researches in other fields. In particular, further research may focus on the validation of these results in different settings and test the initial evidence regarding the applicability of the different strategies.

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Appendix

Interview protocol:

1. Can you introduce the overall business model of the platform?
2. Can you describe the competitive scenario in which the platform operates?
3. Can you describe the development process of the platform? (History, Early phases)?
4. How did you solve the chicken and egg paradox? Which side did you bring on board first?
5. How do you manage the matchmaking between the two sides?
6. What do you offer – in terms of services – to the two sides?
7. What are the two sides searching in the other side?
8. Have you fostered specific actions to increase the quantity of players on one of the two sides? Which side? Which actions? What were the main impacts?
9. Have you fostered specific actions to contain the quantity of players on one of the two sides? Which one? Which actions? What were the main impacts?
10. Have you fostered specific actions to increase the quality – or more broadly to select – the players on one of the two sides? Which one? Which actions? What were the main impacts?

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