BALANCING USER BASE AND USER STICKINESS IN PLATFORM SCALING

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Abstract

Rapid user base scaling is imperative for a nascent platform venture to generate value and stand out from its competitors. However, even with rapid growth of the user base, there is no guarantee that it will come with user stickiness, that is, a capacity to stimulate extended user interactions and engagement on the platform. We refer to the risk to focus too much on the user scaling at the expense of the user stickiness as the platform scaling trap. To understand how a nascent platform business can overcome the platform scaling trap, we conducted a longitudinal multiple-case study on five short video platforms in China. In this paper, we present our research-in-progress and our anticipated contributions. Our initial findings show that the way that platforms combine digital resources impacts both the growth of the user base and user stickiness. Upon the completion of the research, this study is expected to make a contribution to the platform literature by unpacking the mechanisms of platform scaling through examining digital resource recombination strategies.

Keywords: Digital Business Strategy, User Base Scaling, User Stickiness Growing, Case Study

1 Introduction

The idea of winner-take-all markets has a prominent place in the discussion of competitive strategy in the digital platform context. Benefiting from positive network effects, it posits that a platform with the largest active user base will generate the highest value for each participant, endowing the business with unparalleled competitive advantage in markets (Eisenmann et al., 2006; Parker et al., 2016). In this regard, it implies that early entry of a new technology is essential for its future path as the dominant design (Schilling, 2002). Indeed, a platform provider with early advantage is hard to catch up, even for those competitors with superior performance or technology. As a result, it has become a key topic in digital business strategy domain to understand how a platform business can trigger off and expand positive network effects quickly in nascent markets.

Given the seemingly straightforward relation between user base scaling and positive network effects, the dominant sentiment among platform business is a sense of urgency to scale the platform user base rapidly. Relevant strategies include the platform envelopment strategy (Eisenmann et al., 2011), piggy-back strategy (Parker et al., 2016), instant release (Huang et al., 2017), and path channeling strategy (Henfridsson et al., 2018). From the lens of digital resources which serve as the building blocks in creating and capturing value in digital innovation (Henfridsson et al., 2018), those scaling strategies can be integrated into diverse digital resource recombination patterns on platform. Furthermore, rapid scaling of user base is highlighted as the main driver of positive network effects and the key strategic dynamic capability for a firm to stand out from the digital marketplace (Bharadwaj et al., 2013; Nambisan et al., 2017; Constantinides et al., 2018).
However, given anecdotal evidence that rapidly scaling platforms not always manage to sustain its success, the winner-take-all assumption needs further scrutiny. Consider, for instance, that platform offerings are not automatically embedded with value (Lusch and Nambisan, 2015). Rather, value is largely created as actors actively participate into platform interaction process. As a result, user base growth will drive stronger positive network effects only as it goes hand-in-hand with increased user commitment on the platform. Therefore, in addition to the capacity to acquire new users on platform, a successful platform scaling also requires the capacity to transform those sign-ups into active users who engage and interact on platform frequently—that is, user stickiness.

In sum, there is a tendency to over-emphasize user growth at the expense of the user stickiness during platform development. We refer to this as the platform scaling trap. Yet, we know little about why nascent platforms may easily become caught in the scaling trap during development and its consequence; and how to break through the trap via effective scaling strategies. We therefore pose the following research question: What are the mechanisms of platform scaling and the drivers of effective scaling strategies?

In order to address this question, we carried out a longitudinal research in China’s short video industry. Given the fivefold growing of the monthly user base to five-hundred millions just within two years and diverse platform scaling trajectories in this industry, this context provides a unique empirical setting to study the scaling trap phenomenon in nascent market and the feasible strategic solutions to overcome it. We collected data from third-party statistic providers of app market data in China and online archive sources including corporate financial report, third-party analysis blog and report, manager interview, and media news and report. We developed our theory from multiple-case studies (Eisenhardt and Graebner, 2007) through a three-step, grounded, iterative process including case narrative construction, within-case analysis, and cross-case analysis. Our initial findings reveal that platform scaling trap is a non-discretionary result of the imbalance between user base scaling and user stickiness growth, systematically influenced by the interaction between scaling strategies, development stage and platform context. In particular, three mechanisms of platform scaling emerge from the preliminary data analysis: 1) some platform scaling strategies are unable to balance user base and user stickiness inherently due to the underlying operation mechanisms; 2) at different development stage, platforms make specific strategic priority in scaling user base or user stickiness based on current internal context; 3) such trade-off between user base and user stickiness becomes more complex when considering external environment such as existing and potential competitors. Therefore, it is necessary to continuously tune on different scaling strategies based on specific development stage and platform context. At the end, our study seeks to expand current understanding of positive network effect and platform development in nascent market by emphasizing the necessity to structure effective scaling strategies over time in balancing user stickiness growth when scaling user base, in order to gain a sustainable positive network effect and competitive advantage.

2 Literature Review

2.1 Platform Scaling Challenges

Nascent platform scaling is still a challenging topic both in academic and practice in terms of three aspects. First, although multiple literature domains (e.g. Information system, management, economy) have recognized the key role of positive network effects in driving value creation and competitive advantage in platform context (Economides, 1996; Eisenmann et al., 2006; Bharadwaj et al., 2013), it cannot be the explanation of how such platforms emerge, that is, ‘chicken-or-egg’ problem (Parker et al., 2005; de Reuver et al., 2018). With strong positive network effect, users will converge on fewer platforms which create most value for each participant, leading to platform dominance and winner-take-all at the end. It operates most strongly when the number of platform users is high. However, positive network effect cannot explain the initial growth of user base when there is no network on platform. As a result, one key challenging for nascent platform scaling is to build and grow initial user base in order to trigger off positive network effects.
Further, even though scalable user base is the fundamental condition for positive network effect, there is no guarantee that it will come with strong positive network effect. What really matters here is activity—the number of users who interact and engage on platform (Parker et al., 2016). In other words, user commitment is more important than user acquisition for platform development. Users who only register rather than engage in platform interaction cannot generate value and positive network effects for platform. As a result, platform businesses need to carefully choose the metrics to measure platform scaling, which are able to track the network effects on platform accurately. Otherwise, a nascent platform with rapid scaling will also implode quickly at the end. A typical example is BranchOut which both scales and collapses quickly within one year due to the wrong metric measurement on membership list.

Lastly, platform scaling becomes even more challenging due to the fluid and dynamic boundary of innovation space. Empowered by digital technology, the feature, scope and value of a digital product are open to new meanings and continually evolve even after design and launch, leading to an uncompleted and unstable status for most digital designs (Henfridsson et al., 2014; Lytyinen et al., 2016). In addition, a layered modular architecture of platform results that the relationship between the product and its components are only contingently obligatory and can be dynamically framed as different offerings for users through recombination of components at or across different layers (Delanda, 2006; Um, 2016). As a result, there are no defined target users that a platform business can specialize in permanently. Instead, platform businesses need to continuously identify and satisfy new latent users in order to expand positive network effects. Further, this on-going user reorientation leads to a porous competition boundary which makes the existing positive network effects on a platform fragile in the sense that it could also be grabbed by other potential competitors. Therefore, platform scaling should be considered as a dynamic process and there is no unique and fixed scaling strategy once and for all.

Current literature highlights the role of recombination strategies in solving this challenge. For example, Nambisan et al. (2017) emphasize that a digital platform needs to continuously recombine digital technologies with original market offerings in new way. Similarly, Bharadwaj et al. (2013) stress the plug-and-play capabilities for abundantly linked digital assets in powering platform scaling. By continually redrawing business boundaries through recombination strategies, platform owners can reach to new potential users and even redefine the competition landscape in a market (Constantinides et al., 2018). Yet, the effectiveness of different recombination strategies in platform scaling is still un-known, leading to the difficulty in on-going strategy reorientation during platform scaling process.

2.2 Current Approaches

The three challenges presented above interlock with each other and constitute one main platform scaling issue: How does a nascent platform trigger off and expand positive network effect through effective scaling strategies over time? Existing literature in information system and strategy contributes to this challenge by proposing several scaling strategies that nascent platform business can rely on, such as platform envelopment strategy (Eisenmann et al., 2011), Parker et al. (2016) ’s eight strategies to launch a new platform (e.g. piggyback strategy), three mechanisms underpinning rapid scaling (e.g. instant release) (Huang et al., 2017), and path channeling strategy (Henfridsson et al., 2018).

However, when those strategies are explained in terms of their contribution to positive network effects literature either emphasizes too much on user acquisition or pays less attention to user commitment intentionally or unintentionally. For example, the big-bang adoption strategy tends to overstate the role of acquiring large amount of attention to platform in triggering off positive network effects (Parker et al., 2016). Similarly, platform envelopment and path channeling are explained as successful scaling strategies in terms of their role in exploring and leveraging overlapping user bases between platforms (Bharadwaj et al., 2013; Constantinides et al., 2018). Therefore, platform scaling literature tends to dim network effects theory by over-tilting the importance of user base scaling and omitting the further clarification between user acquisition and user commitment.

In addition, even for the strategies which clarified those two concepts, there is still a lack of sufficient attention in user commitment. Existing literature tends to only distinguish between sign-ups who do not contribute to platform interaction and customer adopters who commit to the usage of platform (Parker et al., 2016).
al., 2016). Through this dichotomy, new users will be classified as ‘active users’ once they participate into platform interaction. However, not only does user commitment matter, the degree and frequency of their engagement and interaction on platform matter more for positive network effect. Consider the different contribution on platform value between one who only engage on an app once and the other who engage on the app every day. As a result, it is not enough for a metric only measuring the number of active users when evaluating a scaling strategy (Huang et al., 2017). Such platform scaling and corresponding positive network effects will be unsustainable if the level of user engagement is not high. Further, the open-ended value landscape proposed by Henfridsson et al. (2018) provides a framework to integrate those scaling strategies into the umbrella of recombination strategies which offers a uniform unit to analyze different strategies. From the lens of digital resources, each scaling strategy can be thought as one digital resource recombination pattern on four-layered platform value space. A specific digital resource can be redefined in the combination with different digital resources and has the potential to be part of multiple value paths concurrently. Although this framework is only used to elaborate path channeling strategy, we argue there is more potential to apply it in comparing the efficiency of different strategies in platform scaling over time and understanding the underlying mechanisms.

3 Research Design

To address the research question, we adopt a multiple-case study to build theory (Eisenhardt, 1989). Based on replication logic, theoretical constructs and propositions are created from case-based and empirical evidence, with each case serving to replicate, contrast and extend the emerging theory (Yin, 2017). The developed theory is emergent in the sense that “it is situated in recognizing patterns of relationships among constructs within and across cases and their underlying logical arguments.” (Eisenhardt and Graebner, 2007) Grounded in abundant digital-traced data, our research aims at revealing digital resource recombination strategies used by nascent platforms, their patterns and relationship with user base scaling and user stickiness growth over time.

To ensure both depth and breadth of the study insight, we currently select and trace five typical nascent platforms in China’s short video industry, based on their rapid scaling capacity at start-up stage but different development status later. By definition, short video (or instant music video) is a new communication form of user generated content, which always refer to the video diffused on digital media less than 5 minutes. Typical examples are Snapchat, Instagram Stories and Houseparty. Short video industry in China can be traced back to 2011. However, it is still an emerging industry and truly begins to develop rapidly from 2016. Just within two years, the total monthly active user base already climbs from less than one hundred million to five-hundred millions.

3.1 Data Collection

This theory-building research combines qualitative data with quantitative evidence. Firstly, platform evolution data in terms of user base and user stickiness is collected from a third-party app statistics platform in China, which acquires user data and does independent data mining through the cooperation with more than 1200 mobile internet firms and institutions. The richness of data sources and adoption of numerous platform businesses ensure the reliability of dataset. With more than fifty app indicators (e.g. active user base, average use time per user, average open frequency per user, user retention rate, active user overlap between two platforms, user portrait) across daily, weekly and monthly time dimensions, those quantitative data indicate the relationship between user base scaling and user stickiness growth visually. They also bolster findings when they corroborate with the findings from qualitative evidence.

We currently collected those app indicators for five platforms, beginning from their start-up. Those platforms are 1) Douyin which scales up its weekly active user base from zero to twenty millions within half a year; 2) Volcano Short Video which scales up its weekly active user base from zero to ten millions within three months; 3) Xigua Video which scales up its weekly active user base from zero to twenty millions within one year; 4) Weishi which scales up its daily active user base from zero to five millions within three months; and 5) Miaopai which scales up its weekly active user base from zero to seven
millions within one year. The selection of cases relies on theoretical sampling (Eisenhardt, 1989). We selected platforms with similar growth trend to ensure the replication between cases. We also selected platforms with different growth trend to enable the extension of emerging theory. We sampled the cases with diverse firm size, establishing time and management style to enhance the generalizability. As both user base and user stickiness can be represented by more than one indicators on the app statistics platform, more indicator dimensions will be collected further to crosscheck against with the weekly-based indicators and derived analysis.

Second, data related to the development and strategy pattern analysis of five platforms are collected from online archive sources through web crawler, including corporate financial report, third-party analysis blog and report, third-party statistics platform (e.g. app update history, historical user comment), manager interview, and media news and report (e.g. web portal, tech media, we media). Those qualitative data are useful for understanding the rationale underlying the relationship revealed in quantitative evidence. Our current database consists of more than 1000 documents for three platforms, including the app update history, platform development and competition movement reported and analyzed by three specific tech medias, several manager interview done by one media news, and quarterly/annual short video industry analysis from 2016 until now done by four third-party statistics institutions. Further data collection on other sources and platforms and data filtration will be done later.

3.2 Preliminary Data Analysis

In line with multiple-case analysis (Eisenhardt, 1989), we firstly synthesize the data for each platform into individual case histories. We mapped platform’s evolution trajectory in user base and user stickiness from start-up phase. This mapping provides a chronological backbone to the case narratives. We then tracked strategy movement structure along the chronological backbone for each platform with a comprehensive, emergent approach which is suited to theory generation and elaboration using case data (Eisenhardt and Graebner, 2007). Specifically, we use open coding approaches (Strauss and Corbin, 1998) to evaluate all activities and events that have possible strategic implication for platform development and/or competition in short video industry such as the date, related digital resources, focal actors, rationale and order of events.

Once we had developed the individual case histories, we used them for two types of analysis. Within-case analysis focuses on uncovering strategy categories and their adoption timing by each platform, in terms of the evolution trajectory mapped before. After we had a good understanding of each case, we then did cross-case analysis. Charts and tables are used to look for the emergence of similar themes (Eisenhardt, 1989). Based on the emerging patterns of strategy adoption and their relationship with user base scaling and user stickiness growth, we form the tentative constructs and propositions. Then, we apply replication logic to refine them, systematically comparing and verifying the occurrence of specific themes within each case through revisiting the data frequently. We are aware of previous literatures on platform strategy types, envelopment typology theory and open-ended value landscape framework, so we examine the data for the emergence of these construct categories and propositions. However, we also seek for unexpected types of strategy pattern and relationships. As a result, we combined both theory elaboration (Fisher and Aguinis, 2017) and theory generation (Lee and Baskerville, 2003) in this analysis. Further, our findings and theoretical arguments were clarified through an iterative process between data and theory. We also introduced related researches such as digital option and digital debt (Rolland et al., 2018), effective use theory (Burton-Jones and Grange, 2013) and staged approach to reconceptualise system usage (Burton-Jones and Straub, 2006) into the iteration in order to sharpen our construct definitions and strengthen the theoretical arguments and internal validity (Eisenhardt and Graebner, 2007). Together, the theoretical framework is created through these activities.

4 Preliminary Findings

Although this study is still at preliminary stage, there are several interesting findings based on initial analysis. We firstly look at a successful nascent platform development called Douyin. Combine with the coding data, we found that the strategic priority for this platform at start-up phase emphasizes on scaling
user base rapidly in order to trigger off positive network effect quickly through seed users. (A sample coding for Douyin platform is presented in Appendix A.) Instead of cultivating initial users independently, Douyin mainly drains users from established platforms by actively combining with their resources (e.g. piggyback strategy and seeding strategy), which is explained as the only way to catch up with existing competitors. The effectiveness and efficiency of such strategy pattern in scaling up user base is further verified by literature and Figure 1 (Feb 17-Jun 17). However, this remarkable user growth is at the expense of user stickiness on platform at the same time, as shown in Figure 2 (Jun 17-Aug 17). An identified reason is that such user drainage strategy does not truly change the core engaged platform that users are willing to participate in long term. As a result, platform only relying on this strategy cannot keep high scaling rate (July 17-Aug 17 in Figure 1) and needs to adjust the strategy priority and patterns in later stage.

In order to enhance user stickiness, platform owner needs to focus on recombination innovation on own platform, which attracts new users to keep engagement and create value on platform. In this way, positive network effect can be truly triggered off and stronger, which makes the platform scale up faster (e.g. Douyin begins to add new functions on platform frequently from Sep 17).

This initial finding is further confirmed by another platform case called Miaopai. Comparing with Douyin which scales faster over time, Miaopai is declining from October, 2017. (Figure 3 and Figure 4) Before this time point, Miaopai was ever the top one short video platform in China and achieved rapid user base growth in 2016. However, nearly ninety percentage of its users are drained from another social media platform called Weibo through combining own resources into Weibo platform’s offerings.

On the one hand, Miaopai benefits from Weibo’s large user base in terms of scaling the user base in
short period after initiation. On the other hand, this single strategic orientation makes Miaopai under Weibo’s thumb and vulnerable to Weibo’s strategy movement as the limited recombination innovations on platform do not fully transfer new users’ engagement from Weibo to Miaopai. As a result, although Miaopai achieves rapid user base scaling in 2016, the positive network effects is not truly expanded given the low user stickiness level during that period.

Based on this reason, the user base of Miaopai declines immediately after October of 2017 when Weibo ends the exclusive cooperation relationship with Miaopai and begins to introduce other short video platforms and establish own short video platform at the same time. However, we still observe another interesting phenomenon after this time point when user stickiness does not directly follow the trend of user base. Rather, it increases a lot in short term before decline.

We explain this short-term increasing period as the opportunity that a nascent platform should utilize to adjust its strategy orientation in order to break through the platform scaling trap. Although most of users leave Miaopai during this period, platform can actually figure out the true active users who frequently engage in platform interaction process over time. Those users are attracted by platform’s core resources and value units and therefore will not leave platform in short term, leading to the increase of average user stickiness level per user on platform. Therefore, if the platform could turn its strategy attention to self-recombination innovation and motivate those remaining users to create value for platform, the scaling trap challenge has the potential to be transferred into new scaling opportunity for platform.

However, there is still risk if platform fails to do successful self-recombination innovations, similar to Miaopai. In this case, network effects will be exhausted, which drives away remaining users and leads to the decline of user stickiness later on Miaopai platform. However, it is still too early to conclude the death of this case given that Miaopai is making more effort on recombination innovation in recent months. So it is promising and interesting to see the next development for Miaopai platform.

Figure 3. Monthly active user base growth rate trend for Miaopai platform.

Figure 4. Monthly average use time and open frequency per user trend for Miaopai platform.
5 Discussion and Potential Contributions

As shown above, the analysis so far indicates that the way that platforms combine digital resources impacts both the growth of the user base and user stickiness, which together shape the platform scaling in the long term. Upon completion of the research, this study is expected to make three theoretical contributions. First, the integrative theory framework on digital resource recombination strategies helps break new ground in dealing with the three challenges existed in academic and practice, in terms of nascent platform scaling. Second, much attention has been given to the dominant role of user base scaling in triggering off and enhancing positive network effect. However, by unpacking the mechanisms of nascent platform scaling, this research highlights the potential risk of such strategic orientation and stresses the importance to balance both user base scaling and user stickiness growth during platform development. Finally, we raise three measurement indexes for platform user stickiness based on a theoretical and substantive context, which provides new dimension to measure and understand system usage in academic and practice.
References


Appendix A

Sample coding for Douyin platform at start-up phase