

Digital Entrepreneurship in Two-sided Markets. Insights from Real Estate Crowdfunding Platforms.

Stanislav Mamonov
Montclair State University
stanislav.mamonov@montclair.edu

Abstract

While there is a growing body of research on the success factors in crowdfunding campaigns, much less is known about the factors that influence the success of crowdfunding platforms. We begin to address this gap in research by examining real estate crowdfunding platforms (RECPs) which connect real estate investors with real estate capital seekers. To understand how entrepreneurs leverage technology in this context, we drew on resource orchestration theory and we conducted a multi-case analysis across seven RECPs in the United States. We discovered that RECP founders and executives view technology as a focal resource orchestration mechanism that is critical for platform success. We identified five higher-order themes that describe entrepreneurial goals in leveraging technology: efficiency, agility, scalability, reach and personalization. We also examined how different platforms solved the two-sided market launch challenge and we found that entrepreneurs developed a number of different strategies.

1. Introduction

Continuous evolution of information and communication technologies (ICTs) provides a fertile foundation for new forms of entrepreneurship. In this study, we address the recent call for research on questions arising at the intersection of technology and entrepreneurship [33] and we examine the role of technology in entrepreneurial venture development across seven real estate crowdfunding platforms in the United States. In this context, we evaluate how individual entrepreneurial ventures leverage technology to acquire and orchestrate resources in response to regulatory changes that afforded novel entrepreneurial venture fundraising opportunities.

The emergent real estate crowdfunding platforms represent a rapidly evolving domain within the broader crowdfunding phenomenon. The platforms that are the subject of our study collectively facilitated over \$7.2 billion in real estate transactions over a period of just

a few years. Despite the growing practical importance of real estate crowdfunding, there is little in the way of holistic theory on the factors that contribute to the success of the real estate crowdfunding platforms. This is in part due to the unique context in which the platforms evolved.

Real estate crowdfunding platforms connect real estate investors with real estate capital seekers, referred to as *sponsors* in the industry. Prior to 2012, general public solicitation of investments was prohibited in the United States. The JOBS Act, which was passed in 2012, afforded several new exemptions for public investment solicitations that facilitated the emergence of new types of crowdfunding platforms [12, 47]. The changes in regulation represent an important environmental consideration in our study. However, we find that changes in regulation had differing effects across the platforms that we examined. While the regulatory changes enabled market entry for several platforms, the indirect effects that legitimized online crowdfunding as a more general practice proved more important than the direct regulatory effects for a number of platforms in our study.

A further distinguishing characteristic of our study is that we focus on the successful launch of technology-enabled entrepreneurial businesses that are two-sided markets. Two-sided markets pose a double challenge for entrepreneurs in that they must solve the parallel tasks of bringing each side of the market to the platform. Real estate investors would only want to join a platform that already has real estate sponsors and vice versa. In this context, bringing the two sides together when neither is already on the platform poses a significant challenge. We examine how different entrepreneurial ventures solved the two-sided market challenge and we find that real estate crowdfunding entrepreneurs developed a number of different strategies.

To structure our analysis, we draw on the resource orchestration theory [5, 46], which posits that understanding *how* business ventures acquire, recombine and leverage resources is central to understanding how they achieve success. We examine

the role of technology as the key resource orchestration mechanism in platform-based ventures. The following research questions guide our study: 1) How do entrepreneurs leverage technology to orchestrate resources to launch new platform-based ventures? 2) How do entrepreneurs solve the two-sided market challenge? To develop a holistic theoretical perspective, we follow the recommendations for theory development in emergent contexts [16, 17] and we conduct multiple case study analysis [57]. Interviews with the company founders and executives as well as secondary data comprising publicly available information about the individual companies serve as the sources of data underlying our analysis.

We found that the entrepreneurs in our study recognized the transformative nature of ICT innovations in real estate financing and they built technology-based platforms to enable innovative real estate fundraising practices. The entrepreneurs see the respective platforms that they developed as a critical source of competitive advantage through encapsulation of innovative business practices within the systems and achievement of efficiencies that would not be otherwise possible. The entrepreneurs continually invest in platform development to sustain the initial advantage. In terms of the key factors for launching two-sided platforms, we find that entrepreneurs developed several different strategies for successful launch. While some platforms chose to internalize one side of the market, others seeded their platforms by bringing either investors or sponsors onto the platform first. These results contribute to the ongoing discussion of effective seeding strategies in multi-sided markets [14, 34].

2. Literature review and theoretical foundations

There are several research areas that provide the theoretical background for our work. First, real estate crowdfunding is an emergent area within the broader crowdfunding phenomenon. Second, real estate crowdfunding platforms are important examples of digital entrepreneurship uniquely affected by the focal role of technology in these businesses. Third, real estate crowdfunding platforms are two-sided markets connecting capital seekers with capital providers. We also review prior research on resource orchestration that provides the overarching theoretical lens for our study. In the following sections, we review and synthesize the key studies on crowdfunding, digital entrepreneurship, two-sided markets, and resource orchestration theory.

2.1. Crowdfunding

Real estate crowdfunding platforms are a part of a broader crowdfunding phenomenon. Crowdfunding refers to many different types of activities whereby individuals or companies solicit funding from a broad audience, typically via the internet [3]. Four distinct types of crowdfunding are commonly recognized. Reward-based crowdfunding, exemplified by Kickstarter, allows entrepreneurs as well as artists to raise required funding for their projects [31]. Project backers typically commit relatively small amounts and they are commonly offered a reward in exchange for the contribution. The rewards range from a discount on the planned product or service to attendance of the premiere for artistic performances. Project backers receive no equity in the projects that they fund. There are also platforms that enable purely altruistic donations to different causes, e.g. GoFundMe.org. These platforms exemplify donation-based crowdfunding activities [25].

Debt and equity-based crowdfunding platforms broker connections between capital seekers and capital providers who are primarily motivated by the expected financial returns on their investment [1]. Individuals and companies can participate on both sides of the market. For example, LendingClub began as a peer-to-peer (P2P) unsecured personal loan marketplace, but evolved to include institutional investors as an important group of participants on the platform [18]. Similarly, OnDeck began as a business-to-business (B2B) marketplace for business loans and evolved to include individual investors as an important source of capital on the platform [29]. There are two important distinctions between debt and equity-based crowdfunding platforms in terms of the investor risk/reward profile [27]. Debt-based crowdfunding platforms typically offer a fixed interest rate and repayment term (commonly 6-18 months), whereas equity-based crowdfunding generally offers little certainty for potential investors because new ventures typically take 5-7 years to return capital to investors and many entrepreneurial ventures lead to partial or complete loss of the investment [56].

Real estate crowdfunding can involve different legal structures that govern investor/platform/sponsor relationships. While some platforms facilitate direct investments in real estate loans that offer fixed interest rates and repayment terms at origination, others offer equity position in real estate investments that carry much more uncertainty in terms of the potential appreciation (or loss) and liquidity (ability to exit the investment). Therefore, the investor risk/reward profile varies significantly across the real estate crowdfunding platform and that will be an important

consideration in the evaluation of resource orchestration that supported the launch of the innovative product/service offerings across the platforms.

2.2. Digital entrepreneurship

Online real estate crowdfunding platforms leverage technology to offer innovative services to both sides of the market. On one side, the platforms provide real estate investment opportunities for potential investors. On the other, by establishing a more direct route to financing, the platforms provide access to capital at a lower cost to the real estate sponsors. Because technology plays a central role in this context, real estate crowdfunding platforms exemplify a case of digital entrepreneurship that emerges at the intersection of entrepreneurship and digital technologies [33].

While digital entrepreneurship is only beginning to emerge as a focal point for research in information systems, questions concerning the role of technology in entrepreneurial ventures have been examined in the past. For example, Kelley and Rice [24] examined the role of alliances in successful technology commercialization. The authors analyzed the performance of 67 computer and telecom firms in the United States and concluded that alliances helped the ventures in this space to develop and commercialize a broader base of intellectual property. Recognizing that technology adoption is a complex social phenomenon that involves a network of actors including regulators and local governments, Garud and Karnoe [21] compared the adoption of wind turbines in the United States and Denmark. The authors concluded that the broad adoption of novel technologies can proceed through different routes, in part due to action from different agents involved. Further, the authors discovered that while breakthrough innovation adoption does happen, more commonly, bricolage through multi-agent involvement plays a key role in the adoption of new technologies.

Universities often play a key role in the development of new technologies. Markman et al. [30] examined the structure of different University Technology Transfer Offices (UTTOs) that are typically tasked with commercializing new technologies developed by universities and concluded that a greater degree of independence of the UTTOs was associated with the greater success in new technology commercialization. More recent research on technology commercialization examined how network externalities affect the success of different entrepreneurial strategies and found that the presence of network externalities produced a complex set of outcomes through interaction with the business

strategy choice [36]. Symeonidou et al. [48] examined the effects of international technology commercialization strategy and concluded that intellectual property (IP) licensing produced the best commercialization option for technology-based ventures.

Focusing on the entrepreneurial process, Doganova & Eyquem-Renault [13] explored how technology entrepreneurs socialize their ventures with the broader audience and found that entrepreneurs commonly discuss their “business models” in order to gauge interest among potential customers and potential investors, thus revealing a unique role of business models as a narrative tool in the entrepreneurial process.

The extant research on technology commercialization suggests that the evaluation of the business model narratives that are being used by the individual real estate crowdfunding platforms affords an opportunity to gain insight on how entrepreneurial ventures acquire, orchestrate and leverage the resources across different real estate crowdfunding platforms.

The recent call for digital entrepreneurship research [33] noted that because the nature of technology makes traditional firm boundaries more “porous and fluid”, digital entrepreneurship is characterized by less bounded forms that have an evolving set of actors and less pre-defined outcomes. Digital platforms, defined as “a shared set of services and architecture that serves to host complementary offering” [35], provide a particularly important construct in the examination of the role of technology in entrepreneurship because of the technology capacity to produce unprompted change. Digital platforms are typically multi-sided markets. In the next section, we review prior research on two-sided markets.

2.3. Two-sided markets

Two-sided markets are defined as “a platform providing goods or services to two distinct end-users where the platform attempts to set the price for each type of end-user to get both sides on board” [40, 41]. Two-sided platforms create value by enabling interactions among the agents. Network externalities, i.e. the exponential relationship between the number of participants and the platform value, have been a focal point for research in economics that aims to address the question of the optimal platform size [40, 41].

Cross-side network effects play an important role in the success of two-sided markets. Platforms that enjoy cross-side network effects often grow to the

position of market dominance [32]. For example, credit card payment processing platforms enjoy cross-side network effects. A greater number of credit card users incentivizes more merchants to accept specific credit cards and, in turn, a broader acceptance of a specific type of credit card by a greater number of merchants leads to a greater value of a specific credit card for the consumers. Because two-sided platforms often enjoy cross-side network effects and consequently grow to a position of dominance, there is a growing body of research on the regulatory implications of two-sided markets [55].

A parallel stream of research on two-sided markets in economics focuses on the question of optimal pricing by the platform providers [23, 43]. The optimal strategy depends on the specific context, but it is not uncommon for platforms to make the use of the platform free for one side of the market, subsidized by charging the participants on the other side. For example, Kickstarter does not charge project backers, but the company does charge funding requestors.

There has also been some research on the key factors that enable market entry by a competing two-sided platform. The key consideration in the competition among two-sided market platforms is the market participant multi-homing, i.e. participation on multiple platforms. Econometric models suggest that limited degree of market participant lock-in exposes incumbent platforms to competition from new entrants [58]. Analysis of the effects of regulation on two-sided markets suggests counterintuitive results, in that regulation may benefit incumbent platforms by erecting barriers to entry for new platforms [15].

2.5. Resource orchestration

Resource orchestration theory [8, 46] is an extension of the resource based view (RBV) theory [52, 53, 54] and it emphasizes the critical role of management activities in resource orchestration as a key factor in a company's success. Resource orchestration theory has been applied in a number of studies focusing on entrepreneurial success. A study of family firms in Switzerland suggested that intergenerational involvement through participative strategy plays a key role in the success of the family firms [8]. A study of entrepreneurial firms in Sweden suggested that resource orchestration through managerial action had an amplifying effect on the success of the firms [51]. Chadwick et al. [7] showed that human resource orchestration through executive commitment to human resource management systems had a positive relationship with the firms' financial performance. Baert et al. [2] explored the key activities among portfolio investors in startups and

suggested that harmonization of investment themes was important to realizing positive returns. Carnes et al. [6] offered a theoretical argument that new firms must focus on resource acquisition. However, Symeonidou and Nicolau [49] examined the effects of investment in human capital by new ventures and concluded that different industries have different optimal human resource investment profiles. Over- and under-investment in human resources is associated with firm underperformance. Focusing on the role of technology in resource orchestration, Liu et al. [26] showed that technology alignment with the business needs plays a key role in business performance.

We draw on resource orchestration theory as the overarching framework in our study. While the resource orchestration theory emphasizes managerial activity as the key success factor in entrepreneurial ventures, it does not provide prescriptive guidance on the types of activities that affect the entrepreneurial firm success across different contexts. Given the relative novelty of the real estate crowdfunding phenomenon, the absence of an established dominant theory in this domain, and the complexity of the context—real estate platforms are two-sided markets—we follow recommendations on theory building in emergent contexts [16, 17] and we employ multiple case study methodology [57] to gain insights on the research questions motivating our study.

3. Methodology

We relied on inductive theory development from multiple case analysis [16, 17] to identify themes that describe entrepreneurial resource orchestration efforts in the context of real estate crowdfunding platforms. Case studies are acknowledged as a valuable methodology for evidence-based theory development because case studies can inspire new ideas and new constructs [38]. Synthesis of insights across multiple cases affords the opportunity to develop a level of understanding that transcends individual cases [4, 42]. Integration of evidence across cases allows for development of more generalizable evidence-based theory [9].

3.1. Research context

Real estate crowdfunding platform operate within the larger real estate markets. Real estate is the single largest asset class globally. The value of real estate in the United States is estimated at \$70 trillion. Colliers International estimates that \$492 billion worth of transactions for commercial and residential properties

valued over \$2.5 million were completed in the United States in 2016 [10]. The “fix and flip” residential market is estimated to have generated a further \$45 billion in transactions [20].

Focusing on the typical agents involved in real estate transactions, high value real estate asset transactions are dominated by institutional investors and sponsors, and there are typically multiple intermediaries involved in the transactions. For example, individual savings in a diversified retirement account may include real estate investment trust (REIT) holdings as a part of the individual investment portfolio. REITs typically raise money from investment management companies, perform due diligence, invest and operate properties in which they invest.

Prior to the passage of the JOBS Act, public solicitation of investments was prohibited in the United States. However, real estate sponsors could still raise money from institutional and accredited investors (individuals with income in excess of \$200,000 per year for two most recent years or assets excluding the primary residence valued over \$1 million) [45]. These, so called, *private placements* could be done under Rule 506(b) of Regulation D (Reg D) that provides a safe harbor exemption [45]. Solicitation of investment under Rule 506(b) still requires the party raising funds to register the offering with SEC.

Regulation A (Reg A), which was available to companies prior to the passage of the JOBS Act, limited the amount of funding that could be raised from non-accredited investors to just \$5 million and it generally proved to be ineffective because of the low cap on the funds that could be raised in relation to the associated regulatory filing requirements [39]. The JOBS Act contains several provisions which expanded the exemptions for public investment solicitations [44]. Title IV under the JOBS act afforded fundraising of up to \$20 million (Tier 1) or \$50 million (Tier 2) with simplified regulatory filing requirements. These exemptions are known as Regulation A+ (Reg A+).

3.2. Case study selection

We sought to obtain the broadest possible sample of real estate crowdfunding platforms for our analysis. We identified nine real estate crowdfunding platforms that were in operation at the beginning of the study in August 2017. We solicited participation in the study from the founders and executives from all nine platforms. We were successful in getting founders and/or executives from seven of the nine platforms to participate in semi-structured interviews. Table 1

below provides a summary of the key differences among the respective platforms included in our study.

One of the remaining two platforms that did not respond to our invitations to participate in the study ceased operations during our interview collection period between September and October 2017.

Table 1. Platforms included in the analysis

Platform / Model	Sources of capital	Sources of deal flow	Regulatory compliance
Platform A Sponsor led platform \$1.4 billion in the portfolio of investments	Started with accredited investors, expanded to include non-accredited. Raised own investment fund.	Developers	Reg A, Reg A+, Tier II, Tier III
Platform B Whole loan platform	Accredited and non-accredited investors	Fix and flip sponsors	Started with Reg A, expanded to Reg A+, Tier II, Tier III
Platform C Whole loan platform \$489 mil in originated loans	Institutional investors, accredited and non-accredited investors	Sponsors, developers	Reg A, Reg A+
Platform D Sponsor led platform \$875 million raised	Wealthy foreign investors	The company is a co-developer in the projects.	Reg A
Platform E Listing platform \$3.75 billion in funded projects	Wealthy individuals	Sponsors, developers	Not affected because provides services to sponsors.
Platform F Sponsor-led platform Broker-dealer	Accredited investors	Sponsors, developers	Reg A+, Tier II
Platform G Listing platform \$700 million in investments	Accredited and non-accredited investors	Sponsors, developers	Reg A+, Tier II and Tier III

We sought to obtain input from multiple founders/executives at each company, however we

were only successful at obtaining multiple interview informants from two of the seven platforms. To achieve validation of information across sources, in addition to the primary interview data, we collected all available information on the respective platform web sites and triangulated our analysis across the data sources to confirm information consistency. Table 2 summarizes the data sources underlying our analysis.

Table 2. Data sources

Platform A	Primary data: Co-founder interview: 36 minutes, co-founder interview, 34 minutes. Secondary data: 67 pages of documents
Platform B	Primary: Executive interview, 25 minutes Secondary data: 53 pages of documents
Platform C	Primary data: Co-founder interview: 54 minutes. Secondary data: 44 pages of documents
Platform D	Primary data: Executive interview: 23 minutes. Secondary data: 40 pages of documents
Platform E	Primary data: Co-founder interview: 39 minutes. Secondary data: 46 pages of documents
Platform F	Primary data: Co-founder interview: 54 minutes Secondary data: 47 pages of documents
Platform G	Primary data: Co-founder interview: 22 minutes, Executive interview: 26 minutes Secondary data: 33 pages of documents

3.3. Analytical approach

In our analysis, we followed the recommendations for grounded theory development [11]. Grounded theory development proceeds through iterative data coding and inductive theory building steps [11]. In coding the events, we focused on resource orchestration, the role of technology in platform development and the effects of regulatory changes on the development of entrepreneurial ventures.

4. Results

4.1. Solving the two-sided market challenge

Focusing on the question of how the real estate crowdfunding platforms which are the subject of our study solved the two-sided market challenge, we find that the companies executed a number of different strategies. Platform F founders leveraged their friends and family connections to guarantee funding to the sponsors who were brought onto the platform first. Platform C founders secured a commitment from an external investor in the company to guarantee funding

for the first sponsor who offered an investment opportunity on the platform and engaged in active promotion prior to the platform launch to attract potential investors. Rapid success of the first project that was offered to investors on the platform led to a flood of investor interest and jumpstarted the platform's growth.

Platform B, E and G founders leveraged their connections within the real estate investor community to recruit potential investors onto the respective platforms so that the platforms would offer an attractive source of financing to the sponsors that followed the investors onto the platforms. Platform D founders developed the platform to support the fundraising for their own real estate projects. Platform A founders initially used the deal flow from their own real estate ventures to attract investor participation on the platform. They subsequently expanded the list of available investment opportunities to include independently sponsored projects.

4.2. The role of technology in platform development

In examining the role of technology as the key resource orchestration mechanism across the platforms in our study, we find that founders and executives nearly uniformly recognize that the technology enabling the platforms is the core asset in their business. Importantly, the founders and executives recognize the need to develop systems that uniquely support the coordination functions specific to their business. For example, Executive, Platform D stated the following:

We have recently made a huge investment in terms of time and resources in technology. We brought along an in-house team, people that used to work in open innovation at a large bank, and we propped these people to develop internally an investment platform. And that doesn't mean simply having a website like any other crowdfunding platform. That means actually typing the entire process. Meaning from the moment in which a new investor comes along and they check the investment on the website. They can do every single part of the investment online, and we do also background checks and all the back of it in automatically. And we control that entire process which is something that no real estate crowdfunding platform is doing so far.

We find that efforts across platforms have focused on developing technology to streamline processes that serve the key function of coordinating the interactions between the investors and the sponsors as well as the reporting functions provided by the platform to each

side. Co-founder, Platform A, shared the following with us:

Being able to basically distribute directly over the internet to the investor, reach out to the investor and transact, that's a critical one. The ability to essentially maintain an extremely large investor base, servicing assets, servicing investors and all those, essentially require tougher technology. We can't have tens of thousands of investors, individual investors and essentially maintain them through manual methods, we need software systems that can basically track every dollar and every dollar out exactly what someone has owed and it would not be possible living without technology.

This is echoed by a co-founder from Platform A:

We now have over 200,000 users on the site. I think we have around 20,000 investors and we only have two people now who are answering all of those questions. The reason why we've been able to do that is because every time someone writes in, we record exactly what it is that they're asking about and we categorize it basically according to a code and that becomes a data point that we're then able to use to help drive future iterations of the website, future communications, ways that we can improve.

We also find that the founders and executive in real estate crowdfunding platforms focus less on the technology itself, but rather on the key benefits of leveraging technology as a resource coordination mechanism to support innovation. We identified five second order themes that were mentioned by the participants in our study. Due to the manuscript length limitations, we are only able to present the summary information about the identified themes here.

Efficiency:

- Cost savings through disintermediation – platforms are able to offer better financing terms to real estate sponsors.
- Encapsulation of business processes within technology – platform investments in systems that support the entire business process end-to-end.
- Rapid regulatory reporting – simplification of the reporting function.
- Lowering customer acquisition costs.

Agility:

- Fast response to investment opportunities – fast underwriting for sponsor-led projects.
- Rapid response to regulatory changes – adoption of Reg A+.

Scalability:

- Ability to serve large groups of investors.
- Replication of expert knowledge in customer service management.

Reach:

- Move beyond traditional real estate investment practices which are typically geographically bounded
- Expose market participants to new opportunities

Personalization:

- Developing individual investment products
- Developing individual recommendations

5. Discussion

5.1. The role of technology in resource orchestration in entrepreneurial ventures

The key result of our analysis is that entrepreneurs and executives in real estate crowdfunding platforms are keenly aware of the transformative role of technology in digital entrepreneurship. However, they do not see technology as a static artifact, but rather perceive the technology as a coordinating mechanism that unlocks opportunities for innovative business practices. Cross-case analysis suggests that the coordinating functions of technology can be distilled to five distinct themes.

First, the entrepreneurs leverage technology to achieve operating *efficiencies* in resource orchestration. Real estate crowdfunding platforms enable more direct interactions between real estate sponsors and real estate investors. By the virtue of disintermediating many stages in the traditional institutional real estate investment process, real estate crowdfunding platforms offer more attractive financing terms to real estate sponsors and at the same time the platforms open access to previously inaccessible opportunities for real estate investors.

Second, because real estate crowdfunding platforms encapsulate novel business practices within the platforms, they are able to offer faster investment decisions to the real estate sponsors and achieve extreme efficiencies in acquiring and servicing their clientele on both sides of the market. For example, Platform A is able to service over 20,000 investors with just two representatives because the platform efficiently codifies new knowledge. The combination of faster decision making and automation contributes to the platform's *agility* and *scalability*.

We also found that Internet-based platforms offer benefits of *reach* and *personalization*. Real estate investments have traditionally been geographically limited, with both investors and sponsors having a geographic focus. The real estate crowdfunding platforms significantly expand the geographical reach of investors and sponsors, offering new liquidity in the real estate markets. The flexible nature of the platform

technology enables each investor to enjoy a highly personalized experience. Most of the real estate crowdfunding platforms afford the investors an opportunity to select the projects that they choose to participate in, thus creating a highly personalized investor experience on the respective platforms. Platform A is the exception because it structures all investments through a REIT structure, wherein all investors effectively hold the same real estate asset portfolio.

5.2. Solving the two-sided market challenge

The typical challenges of starting a new venture (developing the product/service offering, achieving market traction, scaling, etc.) are amplified in two-sided platforms because the platforms have to simultaneously solve the product/market fit for two distinct groups of customers [19, 22]. However, we observe that the founders of real estate platforms have generally succeeded in solving this challenge and they developed different solutions to the two-sided platform challenge. While some platforms chose to internalize the sponsor side of the market, thereby simplifying the platform launch challenge to investor recruitment, we find that the majority of the platforms brought investors onto the platform first, effectively guaranteeing funding for the first sponsor offerings. It would be of interest to evaluate the generalizability of this observation in other contexts.

5.3. Theoretical implications

Our study makes a number of contributions to theory. The study is among the first to address the recent call for digital entrepreneurship research [33]. We focused on the role of technology as a coordinating mechanism for resource orchestration in real estate crowdfunding platforms. In their essence, real estate crowdfunding platforms solve the matching problem between financial resources (investors) and real estate investment opportunities (sponsors) and therefore, the resource coordination task is inherently embedded in the platforms. Consistent with the theoretical predictions [33], the coordination tasks performed by the platforms are dynamic because the resources on both sides of the platforms are very fluid. Both investors and sponsors have a lot of flexibility in terms of their engagement with the individual platforms. In this context, platform founders are keenly aware of the need to balance both sides of the market to assure that both sponsors and investors have a positive experience on the platforms.

Our study also contributes to the growing body of research applying resource orchestration theory as a

helpful theoretical perspective in evidence-based entrepreneurship research [2, 5, 8, 46, 49]. Resource orchestration theory emphasizes that understanding how businesses acquire, recombine and leverage resources is central to understanding business success [8, 46]. While our initial focus on the technology-empowered activities uncovered a diverse set of entrepreneurial activities involved in building two-sided platforms, inductive analysis of the emergent higher-order themes across the activities suggests that there are higher-order goals focused on achieving *efficiency*, *agility*, *scalability*, *reach* and *personalization* that are being pursued by the platforms. These themes provide the foundation for future research that can evaluate the generalizability of these higher-order themes in resource orchestration in technology-enabled platforms in other contexts.

We also make a contribution to the broader crowdfunding literature. While real estate crowdfunding has gained momentum in practice [28], there has been relatively little research in this domain [50]. Our study offers the foundation for further research, by defining the key agents in this area of practice (investors, sponsors and platforms), documenting the diversity of real estate crowdfunding platform types and outlining different governance structures that emerge (direct investments, REITs and listing platforms). The seven platforms in our study target different sets of investors (unaccredited, accredited and institutional) and work with different types of individual and institutional sponsors using different regulatory structures (Reg D, Reg A, Reg A+). The platforms engage in different degrees of investment opportunity vetting, ranging from solicitation of investments in own property development projects, to performing due diligence on investment opportunities listed on the platform, to simply listing the opportunities as a marketing service to sponsors. These observations are consistent with prior theoretical arguments that demand heterogeneity may affect the diversity of the business forms [37]. The explication of the emergent platform configurations affords an opportunity to examine how the configuration choices will affect the development of the respective platforms as the real estate crowdfunding market matures. One of the apparent trends is that lowering the barriers to listing sponsored projects on the platform is associated with significant growth in the volume of transactions. Platform E in our study offers only listing services and it reports having brokered over \$3.75 billion in transactions, far more than any of the other platforms.

Our work also has important implications for the research on multi-sided platforms. Multi-sided platforms are a notoriously challenging type of

entrepreneurial ventures [19, 22]. We find that at least seven entrepreneurial teams have successfully solved the two-sided platform launch challenge in real estate crowdfunding. Notably, the platforms in our study have pursued different strategies in solving the challenge. Two platforms have effectively internalized the demand side of the market to reduce the challenge to just attracting the investors, while four of the remaining five brought the investors onto the platforms first to attract sponsors onto the platforms and one launched the platform with a sponsor as the first entry. These observations suggest that there may not be a single dominant strategy for two-sided platform launch. This is in contrast with prior theoretical research focused on the identification of the optimal platform seeding strategies [14, 34].

Finally, our study also contributes to research on the role of regulation in entrepreneurial entry. We find that four of the seven platforms in our study predate the JOBS Act, which is commonly perceived as the key facilitating event for the emergence of debt and equity based crowdfunding platforms [47]. These findings suggest that in order to understand the potential impact of new regulation on entrepreneurial venture creation, it is important to examine existing business ecosystem to understand how existing businesses may be impacted by the new deregulation efforts and whether the existing firms may be the de facto beneficiaries of deregulation, whereas the intended effect may have been primarily focused on the creation of new ventures.

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