**Internationalization of innovation practices: Actors and linkages in crowdfunding ecosystems**

Quero, Maria J.; Ruiz-Alba, Jose L.; Mele, Cristina; Tronvoll Bård; Ventura, Rafael.

[Accepted for publication (14/03/2023) in the *European Journal of International Management*]

 (Authors’ version)

***ABSTRACT***

Digitalization has disrupted society and academia, especially in international management with respect to resource exchange, value propositions, and innovation processes. The connection among actors in open platforms is an example of how this challenge can drive innovation and improve ecosystems’ viability. This research investigates how innovation practices have arisen from connectivity and actor engagement. We use a crowdfunding context to address how the linkages can be strategically designed to join actors and resources in service ecosystems. The paper describes how actors connect in crowdfunding ecosystems by highlighting three kinds of linkages that result in actor engagement, trigger innovation, and impact ecosystem viability. Managers in international settings can facilitate the design of engagement platforms, and craft strategies that increase resource exchange and integration, to engage actors in innovation practices in order to impact the service ecosystem’s viability.

**Keywords**: Actor, network, international management, ecosystem viability, crowdfunding, innovation, collaborative economy

**Paper type:** Research paper

**Declarations of interest:** none

# 1. Introduction

Digitalization and open innovation represent a revolution in mainstream international management scientific research (Caputo et al., 2021; Chesborough, 2020), spurring organizations to “innovate using both internal and external knowledge sources” (Ferraris et al., 2017, p.452). Disruptive innovation has fueled the funding of ideas, new projects, and businesses due to new social practices with respect to collaborative consumption, crowdfunding, and engagement platforms. Of these, the crowdfunding phenomenon has expanded to several contexts, financing projects from research to hospitals and entrepreneurial endeavors. Crowdfunding platforms are digital solutions that facilitate an open connection between backers (investors) and projects/initiatives that are seeking funding. In addition, crowdfunding offers more than just financial benefits; it also gives actors access to many people who may be able to offer knowledge or useful information for the project at hand. Previous studies have addressed crowdfunding in relation to service ecosystems (Match and Chapman, 2019; Quero and Ventura, 2017, 2019), open network structures (Quero and Mele, 2022; Fehrer et al., 2018a), and open multisided markets (Fehrer and Nenonen, 2020). However, as Fehrer and Nenonen (2020, p. 1) posit, “research investigating the characteristics of these open and highly dynamic network structures is in its infancy.”

A growing branch of literature highlights the role of service ecosystems as a context to stimulate innovation to arise from open structures (Brem et al., 2019; Chandler et al., 2019; Chesborough and Bogers, 2014), but little attention has been paid to the linkages between actors (Fehrer et al., 2018a; Tronvoll, 2017; Ventura et al., 2020). Helkkula et al. (2018) refer to linkages to connect actors and resources for innovation, and Nenonen et al. (2019, p. 617) emphasize the dynamic aspect of actors and highlight the need to “foster new resource linkages within and across stakeholders.” The linkages among networks of actors thus seem to provide the basis to organize and co-create benefits for the actors engaged in the service ecosystem. Networks of actors and linkages offer a context in which innovation arises as a result of collaborative relationships (Brem et al., 2019; Chandler et al., 2019; Helkkula et al., 2018; Mele et al., 2018; Patricio et al., 2018; Polese et al., 2017a, 2017b). However, the mechanism by which this happens is unclear; previous literature has seldom adopted a perspective that allows for identifying how service innovation arises through the analysis of linkages in collaborative platforms such as those designed around crowdfunding (Chandler et al., 2019; Mele et al., 2018; Quero et al., 2020; Skalen et al., 2015; Troise et al., 2021).

This research investigates how innovation practices arise from linkages and actor engagement (AE). We use a crowdfunding context to address how actors become connected and how resources are integrated in ecosystems (Brodie et al., 2019; Helkkula et al., 2018; Tronvoll, 2017). The study adopts an abductive approach (Dubois and Gadde, 2014; Nenonen et al., 2017; Tavory and Timmermans, 2014), as this methodology overcomes the mismatch between the existing literature and operative practices in the crowdfunding ecosystem. The empirical approach represents a contribution to midrange theory, which is “context-specific […] and provides frameworks that can be used to undertake empirical observation and models to guide managerial practices.” (Brodie and Peters, 2020, p. 2). This perspective builds on the theory–practice gap (Fend et al., 2008; Gummesson, 2017; Nenonen et al., 2017) to provide theoretical and empirical support to connect the role of linkages with the actors’ interaction as a source for innovation. In detail, the empirical research is based on five reward crowdfunding contexts (Patreon, Indiegogo, Crowdfunder UK, Produzioni dal Basso [PDB], and Lánzanos) from four countries (US, UK, Italy, and Spain). The remainder of this paper is structured as follows. First, literature on the role of linkages in crowdfunding configurations is described. Next, linkages are discussed in relation to AE in networks and practices. The method is then described, followed by the findings. Finally, the theoretical and managerial implications are discussed, and limitations and future actions derived from the research are outlined.

# 2. Theoretical background

*2.1. Actor engagement*

Vargo (2011, p. 220) posits that service-dominant (S-D) logic is “essentially a value co-creation model that sees all actors as resource integrators, tied together in shared systems of exchange –service ecosystems or markets. In this way, markets are characterized by mutual value propositions and service provision, governed by socially constructed institutions”. Building on this, Storbacka et al. (2016) conceptualize AE as a micro-foundation of value co-creation within a service ecosystem, while Brodie et al. (2019, p. 174) see AE as a “dynamic and iterative process, reflecting actors’ dispositions to invest resources in their interactions with other connected actors in a service system.” Brodie et al. (2019, p. 183) drew a theoretical connection between S-D logic and AE in networks that result in system self-adjustment and emergence, commenting that “identifying and mapping actors and their interactions and connections withing those settings will advance our knowledge of AE.”

Actors’ engagement in service ecosystems differ from traditional customer–firm roles, placing the engagement at a meso level (Brodie et al., 2019; Fehrer et al., 2018b; Jepperson and Meyer, 2011; Storbacka et al., 2016). This reflects a dynamic network structure that emphasizes the reciprocal, social, and collective nature of engagement and involves multiple kinds of actors (Alexander et al., 2018; Bowden et al., 2016; Brodie et al., 2019; Reinartz and Berkman, 2018; Storbacka et al., 2016). Tronvoll (2017, p. 38) argues that “a system’s dynamics and complexity are mainly caused by its actors (e.g., customers, employees or managers) and their social and market action.” From this perspective, dynamic changes require an ecosystem perspective that bridges actors, contexts, and platforms (Storbacka et al., 2016; Koskela-Huotari and Vargo, 2016). Platforms offer a space to “share engagement practices that result in enhanced efficiency, positive network effects, and growth in service ecosystems” (Brodie et al., 2019, p. 183).

The literature identifies seven different kinds of actors in the crowdfunding context (Belleflamme et al., 2012; Brown et al., 2019; Burtch et al., 2013; Ordiani et al., 2011; Quero and Ventura, 2017, 2019). Table 1 briefly describes the crowdfunding actors (CFA) involved in reward crowdfunding ecosystems, their connection with other actors, and the value co-creation resulting from their connection (Russo Spena and Mele, 2012).

Table 1. Actors in reward crowdfunding ecosystems.

|  |  |  |  |
| --- | --- | --- | --- |
| CFA | Type of value co-creation | Network connection | Actor actions |
| Creative core (A1) | Co-launchCo-ideationCo-testingCo-evaluation of ideasCo-financing | A1, A2, A3, A4, A5, A6 | Proposes ideas and/or projects to be funded. Wants their project to be financed |
| Platform (A2) | Co-launchCo-evaluation of ideas | A1, A3, A5, A7 | Brings together those who want to deliver projects with those who can provide financing, receiving a benefit from their mediation |
| Financing customers (A3) | Co-ideationCo-investmentCo-testingCo-launchCo-evaluation of ideasCo-consumptionCo-design | A1, A2 | Pay to finance projects of interest |
| Non-financing customers (A4) | Co-consumptionCo-launch | A1, A3 | Do not contribute financially but promote the project and support its success |
| Investors (A5) | Co-financingCo-investment | A1, A2, A3, A4 | Fund the project in return for potential financial reward |
| Experts (A6) | Co-ideationCo-designCo-evaluation of ideasCo-testCo-launch | A1, A2, A3 | Have a particular interest in the field of the project  |
| Crowdfunding associations (A7) | Collaboration to improve value co-creation | A1 | Work to improve crowdfunding processes and create links among actors (mainly platforms) |

 When the actors interact, meeting the conditions for becoming an ecosystem (Vargo and Lusch, 2016), they exchange resources through their engagement platforms. Brown et al. (2019, p. 124) use the equity crowdfunding context to highlight the importance of studying the changing roles of actors, concluding that “static approaches that look at fixed sequences fail to capture this rapidly evolving transitive picture”, and calling for research to shed light on the complex resource assembly process. This suggests that AE can be defined as (i) actors’ disposition to engage and (ii) the activity of becoming involved in an interactive process of resource integration within a service ecosystem (Storbacka et al., 2016). This perspective makes it essential to validate the collective agency on value co-creation (Fehrer and Nenonen, 2020).

Since multiple actors are engaged in crowdfunding, Fehrer et al. (2018a, p. 552) refer to crowdfunding platforms (using the example of Kickstarter) as open networks or multisided platforms, where “platforms function as market intermediaries and enable connection of various user groups which provide each other with network benefits.” Other studies frame crowdfunding as an ecosystem (Fehrer and Nenonen, 2020; Fehrer et al., 2018a; Mollick, 2014; Quero and Ventura, 2019; Quero et al., 2017). Within this perspective, we conceptualize crowdfunding platforms as engagement platforms, as they *provide structural support for resource investments and shared engagement through informal and non-hierarchical linkages that result in the growth of the service ecosystem viability*.

*2.2. Linkages in the crowdfunding context*

In a collaborative or sharing economy (Osburg and Lohrmann, 2017; Cusamano, 2015; Hamari et al., 2015), the way actors connect in a network are considered a fundamental component when exchanging resources, and hence to enable value co-creation (Breidbach and Brodie, 2017; Dagnino et al., 2016; Storbacka et al., 2016; Ventura et al., 2020). We refer to these connections that allow for building relations among the components in the network as “linkage”, and the present paper sheds light on its relational nature, which determine how actors get tied to each other in a network.

In the actor-to-actor perspective, the linkages among actors represent a critical factor in making it possible for resources to be exchanged to benefit the service ecosystem (Vargo and Lusch, 2011, 2017). From a systems perspective, Tronvoll (2017) identifies linkages, actors, and context as the three elements that configure the network. From a similar perspective, Helkkula et al. (2018, p. 289) posit that “firms must design resource integration mechanisms to link resources, actors and institutional arrangements,” and frame a systemic archetype of service innovation in the S-D logic perspective. The service ecosystem perspective sheds light on how innovation arises as a social construction process (Mele et al*.*, 2018), emphasizing its interconnected and dynamic social and economic practices (Mele and Russo-Spena, 2017).

The linkages in AE in the collaborative economy develop a crucial role, providing the frame for the exchange of resources that results in solutions to problems that can be answered by any actor in the system in a collaborative, non-hierarchical, and informal structure. In this way, actors develop, together with the linkages and networks (provided by the crowdfunding platforms), the basis for building a socially dynamic system (Tronvoll, 2017). The linkages among actors account for specific characteristics that give rise to innovation in a more fluid, informal, and unstructured way (Brown et al., 2018; Dagnino et al., 2016). In the crowdfunding context, linkages are transient (Brown et al., 2019; Fehrer and Nenonen, 2020; Möller and Halinen, 2017) and change in nature depending on the phase of crowdfunding. As the process evolves, they become “fluid and dynamic” (Brown et al., 2019, p. 123). Dagnino et al. (2016, p. 366), in an interesting contribution regarding linkages and networks, indicated that crowdfunding platforms are informal and highly scalable, “allowing a more rapid dissemination of ideas, information and of simple and explicit knowledge.” Fehrer and Nenonen (2020, p. 450) highlight the non-hierarchical nature of interactions among peers, which require “low tie-specific investments, and … often form spontaneously and serendipitously.”

Interestingly, serendipity is a concept that arises frequently in the context of networks comprising informal ties (Burt, 2004, 2005; Dagnino et al., 2016; Fehrer and Nenonen, 2020; Ketonen-Oksi et al., 2016) and innovation (Brown et al., 2019; Chandler et al., 2019; Fehrer et al., 2020). This literature review depicts crowdfunding as a context in which the kind of linkage eases the exchange of actors’ resources. This results in a business model that Fehrer et al. (2018a) label “open platforms,” with accessible capabilities. The process organization is non-hierarchical, where resources are integrated in the network, and the governance belongs to the system. As shown in Table 2, the literature has characterized linkages in crowdfunding networks as transient, fluid, informal, highly scalable, non-hierarchical, continuously emerging among peers, and forming spontaneously and serendipitously.

Table 2. Linkages in crowdfunding networks

|  |  |  |
| --- | --- | --- |
| Connections  | Characteristics | Literature |
| Transient | Flexible commitment among actors and network relationships relate to each other to solve a problem and finish or change into another context/project. | Brown et al. (2019)Fehrer and Nenonen (2020)Möller and Halinen (2017) |
| Fluid | Crowdfunding networks are in continuous transformation | Brown et al. (2019) |
| Informal | Actors emerge and connect to each other in a very unstructured way | Dagnino et al. (2016) |
| Highly scalable | Easy changes can occur from one position to another in the network | Dagnino et al. (2016) |
| Non-hierarchical | Any actor can make contributions to other actors, exchange information, etc. | Fehrer and Nenonen (2020) |
| Continuously emerging | Crowdfunding networks are a continuous process of possible change and evolution | Fehrer and Nenonen (2020)Ketonen-Oksi et al. (2016) |
| Among peers | There are no layers between actors | Dagnino et al. (2016)Fehrer and Nenonen (2020)Ketonen-Oksi et al. (2016) |
| Spontaneous and serendipitous | Ideas freely emerge among actors, making innovation arise at the actors’ own convenience | Fehrer and Nenonen (2020)Ketonen-Oksi et al. (2016) |

*2.3. Innovation practices*

Fundamental to an understanding of service ecosystems is the idea that they are “configurations of market actors that engage in practices” (Lusch and Vargo, 2015, p. 167). AE is seen as “coordinated through shared practices that occur within engagement platforms” (Brodie et al., 2019, p. 183). The practice perspective highlights “the creative and knowledgeable work of actors which may or may not achieve its desired ends and which interacts with existing social and technological structures in unintended and unexpected ways” (Lawrence and Suddaby, 2006, p. 219).

Recent studies have viewed practices as loci where innovation arises (Skalen and Gummerus, 2022; Helkkula et al., 2012; Mele and Russo-Spena, 2017; Russo-Spena et al., 2017). Considering the process through which changes take place, innovation can be considered a result of a collective process in which resources, actors, and activities are connected (Hidalgo et al, 2021; Mele and Russo-Spena, 2017, 2018). This process of connection, which results in new innovative practices that rely on previous ones, is referred to as a “texture of practices” by Mele and Russo-Spena (2017). By applying the concept of practical accomplishment, Mele and Russo-Spena (2017) propose that innovating can be regarded as comprising a set of practices performed by a knowledgeable community; an emergent process that arises through negotiation and alignment among actors, resources, activities, and aims. This perspective is theoretically based on the call for research toward the practice-theory-informed service innovation research (Skalen et al., 2015), and the present contribution answers the recent call for research by Skålen and Gummerus (2022).

The focus shifts from the individual to the collective “way of doing” that is embedded in a context of interlinked elements (Meseguer-Martínez et al., 2021; Gherardi, 2012; Korkman et al., 2010), putting the emphasis on social connections among a collective of actors that share a high density of resources, making it possible for innovation to arise. As Mele and Russo-Spena (2019, p.538) state, “changing practices increasingly are infused with social aspects, as well as technologies and other materialities (e.g., places, material artifacts, bodies, infrastructures).” There is a need to shed light on the malleability of service ecosystems (Nenonen et al., 2014) – in our case, crowdfunding contexts – which enables firms to shape them in their favor (Nenonen and Storbacka, 2018) by activating linkages and actors’ engagement.

# 3. Research process

*3.1. Method*

 The research philosophy that drives the research design is interpretivism (Cova, 2008; Gummesson, 2003). When a research topic is underexplored (as is the case for linkages and innovation through AE in crowdfunding ecosystems), it is a good option to use case study (and case theory), framed on the interpretivism branch of the qualitative research is a good option (Baron et al., 2018; Gummesson, 2017; Mele et al., 2022). Additionally, we adopt Nenonen et al.’s (2017) perspective, which highlights the need to include managers in theory-building. The phenomenon under research calls for a qualitative approach capable of providing a thorough understanding of the complex interaction among actors, linkages, and the texture of practices for innovation that affect ecosystem viability. In the first phase, we collected secondary data from crowdfunding platforms’ web pages, internal documents provided by the platforms, and primary data through interviews with platform CEOs. Some of the interviews are freely available on the Internet, and others were obtained via open questionnaires that were conducted in writing through emails. In the second phase, we collected primary data from platform CEOs. The questions were again sent and received through email. In some cases, several emails were needed to collect the in-depth information required.

3.2. Case selection and data analysis

The context of the study is reward crowdfunding platforms. Case selection was carried out based on a review of five cases published on top reward crowdfunding platforms in four countries: the US (Indiegogo and Patreon), Italy (PDB), the UK (Crowdfunder UK), and Spain (Lánzanos) (The respective countries of origin of the original platforms, although each operates internationally). Each case is among the top platform in its respective country in terms of number of backers and volume of investment made by backers. Table 3 provides a brief description of each case.

Table 3. Cases in the research

|  |  |  |
| --- | --- | --- |
| Platform | International backers | Total raised |
| [Indiegogo (US)](https://www.indiegogo.com/) | 9.000.000 | 1,6 billion $ |
| [PDB (Italy)](https://www.produzionidalbasso.com/) | 375,654  | 22 million € |
| [Lánzanos (Spain)](https://www.lanzanos.com/) | 485,000  | 10 million € |
| [Crowdfunder (UK)](https://www.crowdfunder.co.uk/)  | 1.000.000 | 250 million £ |
| [Patreon (US)](https://www.patreon.com/) | 8.000.000 | 3,5 billion $ |

Following Gioia et al. (2012), we open-coded the data manually to discern useful content for the research. We identified three categories (see Figure 1). The first-order concepts come from raw information regarding actors’ connections selected from primary (open questions through the Internet) and secondary (mainly open interviews with platform CEOs available on the Internet) data. The second-order analysis is “firmly in the theoretical realm, asking whether the emerging themes suggest concepts that might help us describe and explain the phenomena we are observing” (Gioia et al., 2012, p. 20). At this stage, we were able to connect theoretical approaches with linkage characterization in the crowdfunding context and the data obtained in the first-order concepts. In coherence with the conceptualization of linkage as connections among the components in a network adopted in the theoretical approach, the last step drove us to develop the second-order themes into three aggregate dimensions: linkages that result in AE, linkages that trigger innovation, and linkages that impact ecosystem viability. Direct exchange of information with managers helped us to enrich our findings.

Figure 1. Data structure.



# 4. Findings

 We determine how actors connect in crowdfunding ecosystems by highlighting three kinds of linkages: those that result in AE, those trigger innovation, and those that impact the ecosystem viability, as detailed in the following sections.

1. Linkages that result in actor engagement.

Linkages in open platforms are responsible for the degree of “openness” connecting actors. In crowdfunding ecosystems, theory indicates that the characteristics of linkages (transient, fluid, informal, highly scalable, non-hierarchical, continuously emerging among peers, and forming spontaneously and serendipitously) provide a space in which actors connect easily, resulting in a higher level of engagement and increased volume of resources exchanged, as well as the freedom to exchange. Table 4 contains some quotations that highlight linkages as drivers of AE.

Table 4. Actors and the linkages that connect them

|  |  |
| --- | --- |
| Source | Quotation |
| Indiegogo  | “It’s interesting. It’s a community really on both sides: the entrepreneurs are able to get a lot of feedback from the backers of their projects, in addition, the entrepreneurs are often connecting with other entrepreneurs in Indiegogo to get advice for different stages of their campaign: how do I build awareness for our campaign, who are some of the best people to work with say maybe on digital marketing for the campaign, who’s good on manufacturing and by being on.”“Companies like Honeywell and Bose and Whirlpool and General Electric … are using platforms like Indiegogo to foster innovation inside their companies and act directly with their audiences.”“Nowadays with … social media we have the ability to actually gather a group of people around the cars or a project very quickly.” |
| PDB | “Crowdfunding is a branch of the sharing economy, so it’s useful also sharing the ideas with all the actors.” “It’s important and useful to listen to every suggestion from all … stakeholders.” “The connection among actors is important, of course, and also is ‘natural’ and nonhierarchical.” |
| Crowdfunder UK  | “It’s the perfect union, and the possibilities of crowdfunding are endless.” |
| Lánzanos  | “We aim at being an open platform, where any actor can exchange ideas, money or any other open resource for the benefit of the system. We aim at being a real ecosystem and grow in this direction.” |
| Patreon | “10 years ago, the internet matured, and we got Spotify and Facebook and [YouTube] and iTunes and Google search, and a hundred years of infrastructure and supply chains and distribution systems and monetization schemes are completely bypassed.”“There is a lot of trial and error, some really good ideas [driving] a lot of experimentation. We’re figuring out what works [and] what doesn’t.”“There is a site called You Now. It’s an app. It allows musicians and bloggers to get paid in digital goods from fans. So, I’m also working on the problem.” “Patreon is not the only one working on the problem, even Google [is] starting to work on this. A couple of years ago [Google] launched Fan Funding.” |

*Source:* Field data.

1. Linkages that trigger innovation practices.

We identified a set of actors and a set of innovation practices that show the actors’ work, their engagement, and their linkages in the crowdfunding ecosystem (see Table 5).

The actors were classified, based on the literature, into seven categories: creative core (A1), platform (A2), financing customers (A3), non-financing customers (A4), investors (A5), experts (A6) and crowdfunding associations (A7). Secondary data allowed us to identify characteristics of linkages in crowdfunding networks as transient, fluid, informal, highly scalable, non-hierarchical, continuously emerging among peers, and forming spontaneously and serendipitously. Table 4 describes the innovation practices that arise among actors. By interacting and collaborating, formal and informal linkages spur AE and new practices arise. Innovation results from a texture of practices made possible by the appropriate linkages among actors. We identify how innovation practices arise from a context in which linkages serve as a bridge between resources and actors.

 The “InDemand” space on Indiegogo and the “Always On” area in Crowdfunder UK resulted from a confluence of demands of all actors in the system. In some cases, crowdfunding associations (A7) can also have an influence in a context that allows for the convergence of all interests through the development of informal linkages to facilitate innovation. With different aims, PDB developed, with great success, the idea of creating a “network” that would meet the demands of groups of crowds developing their activity in parallel areas of knowledge. Based on a similar objective, Lánzanos PRO was born from enterprises’ desire to make use of the crowd problem- solving process (i.e., the ability of the crowd to fix a problem together) in its system. Patreon involved big enterprises working with networks such as Spotify, YouTube, Facebook, and Twitter to improve the network potential for all actors in their sphere.

In addition, some crowdfunding platforms, such as Indiegogo, conscious of their capability to link actors to exchange resources, have started to develop practices such as the creation of spaces for big enterprises, including P&G, Coca-Cola, Sony, Bose, Whirlpool, and Honeywell, called “innovation validation for large enterprises.”

Table 5. Innovation practices

|  |  |  |
| --- | --- | --- |
| Platform | Texture of practices and innovating | Actors involved and linkages among them |
| Indiegogo<https://www.indiegogo.com/><https://entrepreneur.indiegogo.com/how-it-works/indemand/> | *InDemand*This space results from the demand of project directors and backers. It is a post-campaign funding solution that bridges the gap between crowdfunding and commerce. *Innovation validation for large enterprises*Trusted by P&G, Coca-Cola, Sony, Bose, Whirlpool and Honeywell, this space in Indiegogo is designed to de-risk and accelerate corporate innovation with Indiegogo Enterprise. | ActorsA1, A2, A3, A4, A6LinkagesAll actors are connected through social networks. There are non-hierarchical relationships among them and they all feel free to make proposals or give ideas.  |
| PDB<https://www.produzionidalbasso.com/><https://www.produzionidalbasso.com/network> | *Network* This service aims at developing networks in which different kinds of structures can join under the same aim. It consists of a network of networks. One interesting example is Banca Ética, which has joined 214 crowdfunding projects. | ActorsA1, A2, A3, A4, A5, A6LinkagesAll actors are connected through social networks (Facebook, Twitter, etc.). There are non-hierarchical relationships among them, and they make complex connections among projects. Actors usually start in one of the networks, but can easily connect to the others. |
| Crowdfunder UK<https://www.crowdfunder.co.uk>Onhttp://help.crowdfunder.co.uk/en/articles/2720917-always-on-projects | *Always On*This service enables crowdfunders (past and present) to continue raising funds and building their community once their project has closed successfully.*Crowdfunder Live*This enables direct live connections with projects, and real-time and direct connections with project creators. | ActorsA1, A2, A3, A4, A5, A6LinkagesAll actors are connected through social networks (Facebook, Twitter, etc.). There are non-hierarchical relationships among them. |
| Lánzanos<https://www.lanzanos.com/>[https://www.lanzanos.com/partners/#](https://www.lanzanos.com/partners/) | *Lánzanos PRO* This service answers the demand of enterprises who want to bring the crowdfunding process into their system for developing ideas, grouping projects, etc.  | ActorsA1, A2, A3, A4, A5, A6LinkagesAll actors are connected through social networks (Facebook, Twitter, etc.). There are non-hierarchical relationships among them. |
| Patreon<https://www.patreon.com/>https://www.patreon.com/social-connect | *Patrons Network*Under “Find creators you already love,” Patreon creates a network of networks in which patrons can connect in association with Spotify, YouTube, Twitter, and Facebook. This connection improves the co-creation process and the actors’ interactions.  | ActorsA1, A2, A3, A4, A5, A6LinkagesAll actors are connected through social networks (Facebook, Twitter, Spotify, etc.). There are non-hierarchical relationships among them and the platform is actively engaged in fostering actor participation in other relationships with patrons and other the actors. |

1. Linkages that improve ecosystem viability.

New practices resulting from the actors’ interaction have improved ecosystem viability. Actors promote innovation without making a deliberate, planned effort to do so. Based on intricate connections between actors, activities, and varied resources in the wider service ecosystem, innovation practices evolve as a continuous, effective, systemic process. Evidence of this fact includes new processes, such as InDemand or Always On (for Indiegogo and Crowdfunding UK, respectively), that emerge and consolidate as a result of actors’ proposals and thereby offer engaged actors a place to allow projects and communities to evolve in a context that goes much further than the funding original aim. These innovation practices improve ecosystem viability through the consolidation of an evolved service that is self-validated by the actors of the system.

# 5. Discussion and implications for further research

This paper examines how linkages influence AE, innovation practices, and ecosystem viability in reward crowdfunding open platforms. Actors perform actions and integrate resources to improve their well-being or the system’s viability. Resource integration increases resourcefulness and produces new resources. The creation and integration processes can continue as new resources are added and merged with existing ones. The results provide countless prospects for innovation and ecosystem viability. Actors work to make their systems more viable; they have direct connections to other players and resources, as well as indirect connections to an expanding network of systems that are likewise connected by complicated networks of interactions or complex exchanges. Figure 2 depicts the connections related to how actors work to innovate, to increase the viability of their systems, and to influence the systems of other actors.

Figure 2. The role of linkages on actor engagement, innovation, and ecosystem viability.



The present paper utilizes S-D logic and AE as a theoretical foundation to highlight the need for more research on linkages as a key factor to improve connections that allow for the continuous improvement of ecosystems framed on collaborative economy. The context of crowdfunding is used to develop the empirical approach, due to the literature’s interest in it as a business model (Quero and Mele, 2022; Brem et al., 2019; Fehrer and Nenonen, 2020; Quero and Ventura, 2019), which has indicated the special conditions it provides for connecting actors (and resources), making possible emergence and system viability. Previous literature has highlighted the special characteristics of new open business models in general (Fehrer et al., 2018), and crowdfunding ecosystem in particular (Quero and Mele, 2022), but no specific research connects linkages with AE, innovation, and system viability.

 The main contribution of the research lies in the fact that it addresses linkage characteristics in crowdfunding networks as transient, fluid, informal, highly scalable, non-hierarchical, continuously emerging among peers, and forming spontaneously and serendipitously (as characterized in the literature). The study aims to improve understanding of the context of crowdfunding and its capacity for engaging (Mele and Russo Spena, 2017), and it contributes to the growing demand for an academic approach to this new business model that Fehrer et al. (2018a) classify as an open multisided network. Although some previous approaches in the literature highlight the unique characteristics of crowdfunding, there has been a gap in connecting the specific characteristics of linkages with AE in a system.

The influence on engaged actors in the network, where resource integration takes place and relationships among actors account for a higher level of freedom (because of the informal and non-hierarchical relationships) results in innovation practices due to actors’ work. Skålen and Gummerus (2022) highlight the need for research on how actors change the template of activities during service innovation. The present work focuses on the role of linkages to minimize barriers, influence actors work, and make change and innovation possible.

We can conclude that linkages play a decisive role in fostering innovation practices and ecosystem viability through engaged actors. Crowdfunding platforms offer an open space that makes possible the development of shared engagement through informal and non-hierarchical linkages that facilitate actors’ work, resulting in positive network effects, enhanced efficiency, and growth of the service ecosystem. Open collaborative business models represent a significant challenge for organizations, as value is co-created through the actors’ work to enhance mutual well-being through actors’ interaction, which improves resource integration (Fehrer et al., 2018a; Quero and Mele, 2022).

 The results suggest that linkages have not received sufficient direct recognition in the literature as a factor capable of influencing AE, triggering innovation practices, and enhancing service viability. This represents a contribution from the S-D logic perspective, as we build on the demand for contributions regarding the question, “How do service ecosystems adapt and evolve?” (Vargo and Lusch, 2017, p. 50). Systems emergence is explained partially by AE processes that arise in dynamic and iterative relationships (Brodie et al., 2019). These relationships match the idea of resource integration as an aspect of value co-creation (Edvardsson and Tronvoll, 2013; Helkkula et al., 2012). From the S-D logic approach, we frame our research on the systemic archetype of service innovation that consider actors as the center of every service ecosystem (Tronvoll, 2017) and proposes that “firms must design resource integration mechanisms to link resources, actors and institutional arrangements and to enable actors to enhance the service innovation” (Helkkula et al., 2018, p. 289). From this perspective, we consider linkages among actors as a key factor to facilitate/inhibit the exchange of resources among actors and, consequently, enable system self-adjustment and innovation as a result of the actors’ work.

 Regarding AE, we frame our research against the role of linkages to foster connectivity, resulting in innovative practices that allow for system viability. Our contribution in the context of crowdfunding aims to highlight an important factor related to connectedness, which is the linkages among actors. The empirical approach provides clear results regarding the need to consciously design engagement platforms in order to facilitate the flow of resources in any direction.

**7. Implications for international management practitioners**

Using crowds as a source to finance service innovation is considered an “alternative market” by the European Union. This alternative market has shown rapid growth: the total European online alternative finance market grew by 36%, to reach 10.44 billion euros, in 2017 (Ziegler et al., 2021).

Interestingly, these new financial models are more than just an alternative funding arena (European Commission, 2015) – they are also a means to an end of service innovation within service ecosystems (Quero et al., 2017) where actors exchange services and collaborate to create value (Quero and Mele, 2022; Quero and Ventura, 2019). Subsequently, to understand the collaborative crowdfunding market, research should go beyond the customer perspective and include a more complex systems perspective. The practice-based approach to innovation, built on the S-D logic (Mele and Russo Spena, 2018), frames the empirical results of this paper, allowing us to shed light on the reasons for the success of these open networks to position crowdfunding open networks as places to test innovations, look for new ideas, and involve customers, thereby increasing AE.

 The theoretical and empirical results have the following implications. First, there is a need to adopt practice theory to understand why and how innovation is taking place in new open business models such as crowdfunding. This understanding can frame how AE practices trigger actors’ work and result in innovation. Second, managers in open business models and crowdfunding should pay greater attention to linkage design as a main strategic issue. Linkages are also a strategic issue for AE, as crowdfunding platforms act as engagement platforms that provide structural support for resource investments and facilitate the development of shared engagement through informal and non-hierarchical linkages that facilitate actors’ work, resulting in positive network effects, enhanced efficiency, and growth of the service ecosystem. Finally, linkages and AE result in connections that contribute to an actor’s disposition while simultaneously representing a context for engagement.

**8. Limitations and future research**

The present paper offers a starting point for improving understanding of the role of linkages in triggering innovation practices and ecosystem viability through AE. A main issue in these contexts is how to increase the system’s viability. In this vein, we adopt three theoretical approaches that open new directions for future research:

- The systemic archetype of innovation (Helkkula et al., 2018), framed on S-D logic to develop one main issue in this process, serves as a theoretical framework to shed light on a process that is in continuous evolution and adaptation to the context. Although we have highlighted the positive role of linkages in the system, future research should analyze other factors and possible negative effects of managing linkages with a higher level of freedom in order to provide a more complex understanding of the reality.

- From the AE perspective, we frame our research on fundamental premise 3 proposed by Brodie et al. (2019). This refers to the multidimensional concept of AE, which involves the degree of interaction among actors; however, also considering connections to other dimensions of AE would provide a more comprehensive vision of the process.

- Finally, the empirical approach frames the crowdfunding context, contributing to the midrange theory, as it is context-specific. However, the information analyzed in the present paper opens the possibility for research not only in the crowdfunding context but also in other open networks operating in the CE to which crowdfunding platforms belong.

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