



Decoding value exchange in entrepreneurial ecosystems through a service-dominant lens

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Abstract Research on entrepreneurial ecosystems has consolidated over the past decades. This study ventures beyond traditional analyses that primarily focus on quantitative outcomes to investigate the foundational processes that can facilitate a range of socio-economic advantages. Recognizing a gap in the existing literature, which often correlates input factors with anticipated benefits yet struggles to unearth underlying mechanisms, our research offers a novel perspective through applying a network-centric service ecosystem lens grounded in a service-dominant logic. Utilizing a qualitative approach based on pragmatic abduction, 16 narrative interviews explored the experiences and perspectives of multiple entrepreneurial actors within a privately governed Spanish ecosystem. Findings present a conceptual model that

bridges emphasis between structure and outcomes with those of agency and strategy.

Plain English Summary Entrepreneurial ecosystems are interactive hubs where entrepreneurs and various other business-related players collaborate in helping to create new companies and jobs in our communities. Traditionally, entrepreneurial ecosystem success is measured by looking at the number and growth rate of new startups. But is this the complete picture? In our study, we went deeper trying to understand not just what makes these ecosystems successful (like creating new startups), but also how they manage to do it. By interviewing 16 entrepreneurial ecosystem members in a privately governed Spanish ecosystem, we unraveled the processes and mechanics that help new businesses emerge and thrive. The key implication of this study is the recognition that the entrepreneurial ecosystem is composed of multiple actors who exchange services in search of multiple valued outcomes.

Keywords Entrepreneurs · Entrepreneurial ecosystem · Value exchange · Service-dominant lens · Co-creation

JEL classification codes D9 · M13 · M19 · Z13

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1 Introduction

Entrepreneurs do not operate in isolation. They are nested within a community of complementary and networked support systems that have the capacity to stimulate the co-creation of value (Audretsch & Link, 2019; Bouncken & Kraus, 2022). This study's focal phenomenon—the entrepreneurial ecosystem (EE)—which is defined as “a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory” (Stam & Spigel, 2018, p. 407) epitomizes this idea of reciprocal support (Bouncken et al., 2022).

Facilitating entrepreneurship through an ecosystem lens is enticing given its perceived capacity to connect several heterogeneous human, infrastructural, market, and institutional elements (Audretsch et al., 2020; Bouncken & Kraus, 2022; Theodoraki et al., 2018). Such connections can positively influence a range of beneficial outcomes, from entry-level to high-growth entrepreneurship (Miller & Acs, 2017), technological transfer (Prencipe et al., 2020), and improving the survival rate of new ventures (Vedula & Kim, 2019).

Given the multiplexity of the EE, various evaluative frameworks have been advanced (Nicotra et al., 2018); however, many of these positions have evolved from policy-driven approaches, giving way to more theory-oriented research (Wurth et al., 2022). For instance, there has been a proliferation in context-sensitive case studies (e.g., Alaassar et al., 2022; Khurana & Dutta, 2023; Spigel, 2017) and contemporary explanations that acknowledge the embedded social complexity and multi-actor nature of the entrepreneurial journey (Pocek, 2022; Prokop & Thompson, 2023; Roundy et al., 2018).

However, research continues to struggle with key theoretical dimensions. At an ontological level, a structuralist focus de-emphasizes the importance of interaction dynamics between actors (Alaassar et al., 2022; Cloutier & Messegem, 2022). At an epistemological level, measures of value-creation are often unidimensional exogenous outputs (for instance firm birth, job creation, investment attracted), making it difficult to capture and account for value created endogenously (Ancona et al., 2023; Stam, 2018). Despite recommendations to define EE boundaries through the “identifiable cohesion” (Stam & van de Ven, 2021, p. 811) that might be evident on multiple

levels, the field remains attached to the use of spatial boundaries with limited insights into how actors act trans-contextually across multiple nested contexts (Muñoz et al., 2023).

Recent research has started to address these theoretical challenges. For example, a network paradigm is offering a change in focus (Ancona et al., 2023; Fernandes & Ferreira, 2022; Pocek, 2022; Prokop & Thompson, 2023; Scott et al., 2022). Rather than an emphasis on either structure or agency, the focus is at the meso-level—the network of interconnections between multiple agents and resources (Spigel & Harrison, 2018). This accepts that connections between resource seekers are often dynamic and bidirectional (Czernek-Marszałek et al., 2023), and are not solely based on transaction-based thinking, resulting in an increasing focus on wider societal transformation (Khurana & Dutta, 2023; O'Shea et al., 2021).

Given an EE's capacity to stimulate economic growth (Audretsch et al., 2023), EE research has emphasized the supply side of value provision. This neglects how multiple actors embedded within institutional contexts exchange services to help co-create and “use” value (Scheidgen, 2021). Additionally, much current research assumes value creation as a stable goal that materializes from structural configuration and resource allocation. A more realistic approach would be to expect a plurality of potential outcomes (Stam & van de Ven, 2021), both subjective and objective (Liguori et al., 2019), that transpire from meso- and micro-level interactions of a full cast of actors (Muñoz et al., 2023).

Enhanced understanding of these relational dynamics can help us strengthen existing practice-based literature while allowing for more informed policy decisions. What is missing is a dynamic, multi-actor, multi-perspective approach that embraces the systematic nature of value creation, switching thinking from economically defined transactions to the exchange of valued services within and across institutional arrangements. Service-dominant logic (S-D logic), which grounds service ecosystem thinking, presents a potential solution to these issues. S-D logic is a theoretical lens recognizing services as dominant in contemporary business over goods (Vargo & Lusch, 2004). In a mindset shift, production and consumption are no longer delineated as separate relations to the producer and consumer. As a meta-level theory, S-D logic emphasizes that value changes

at the interface between actors' resource networks. Thus, a mechanism is provided to conceptualize EEs beyond existing typologies of convenience and an inclination to statically categorize best practice factors (Scott et al., 2022; Stam & van de Ven, 2021; Sussan & Acs, 2017).

The aim of this paper is therefore to explore the fit of a S-D logic approach to EE research and ask: *how does a S-D logic map onto an EE; and how does the process of value exchange unfold within an EE?* The research adopts a qualitative approach, taking a privately governed EE in Spain as the setting. We use participant completed visual network maps (Jaspersen & Stein, 2019) as the basis for narrative interviews with 16 EE actors. Findings showed these actors operated in institutionally embedded overlapping domains of expertise leading to heterogeneity in exchange motivations and participation in different exchange events. Actors sourced resources either within their own domains of expertise or trans-contextually depending on resource and actor requirements. Value was only realized when actors could identify, access, and put resources to use, a process facilitated through different resource integrating competences. This led to phenomenologically determined value of several different outcomes.

The paper makes several contributions to EE research and S-D logic. Firstly, we provide a network-centric ecosystems perspective that emphasizes agency and relations of a range of entrepreneurial actors across multiple levels as they create value. This addresses calls to explore how resources circulate within the EE (Spigel and Harrison, 2018; O'Shea, 2021). Secondly, we add to work on nested sub-systems by decoupling the EE into overlapping domains of expertise. Presenting affinity frames to support collective interrelation (Scheiden, 2021) across permeable boundaries (Khurana and Dutta, 2023) clears the way for a dynamic identifiable cohesion that balances structure-agency concerns (Cao & Shi, 2021). Thirdly, we contribute a contingency perspective to the multi-actor nature of EEs by explicitly understanding that entrepreneurs are not the sole players in EEs (Hwang and Horowitz, 2012). We recognize a wider range of actors involved in value-generating interactions which demonstrate the relevance of a distributed entrepreneurial agency approach to the co-creation of value (Jennings et al., 2013). Finally, we contribute to S-D logic theory by explicitly linking it

to the EE domain (Vargo et al., 2020). The entrepreneurship context is characterized by uncertainty and constantly evolving interactions. The EE provides a unique governance system driven through bottom-up, middle-through, and top-down value-creation interactions, where the tenets of S-D logic are reaffirmed.

2 Theoretical background

2.1 Theoretical foundations: uni-dimensional and exogenous value creation

Entrepreneurship scholars associate the ecosystem metaphor, extracted from an original application in ecology, with the emergence of geographically bound and entrepreneurially productive areas (Bosma et al., 2018). To contend with the atheoretical nature of accompanying practice, the fundamental reasoning has been borrowed from literature based on strategy and regional development (Cavallo et al., 2019). For both, the belief holds that sustained regional competitive advantage can be supported through the innovations of locally concentrated firms (Saxenian, 1994). This attention to territorial boundedness implies that one of the central theoretical tenets of an EE resides in a spatial co-location rooted in the search for innovative and productive outputs (Acs et al., 2018).

While from industrial and regional innovation perspectives, theoretical grounding is a mutually beneficial relationship, an issue arises in that value appears to be predominantly structurally and statically determined. For example, value from clusters emanates from the vertical interaction between supply chain members and horizontal forms of competition. It is additive and product focused, which would be described as goods dominant (Lusch & Vargo, 2006). Simultaneously, the thinking of industrial economists builds on a desire to increase productivity that links heavily to a manufacturing logic associated with a locally concentrated base of production systems.

As EE theorizing builds on these theoretical roots, much focus is placed on standardized models in search for productive outputs. This high-growth venture "supply chain" mentality can become incongruent with the everyday reality of the entrepreneurship process (Neumeier & Santos, 2018) with the value that EEs provide being understood as outputs. In turn, these outputs are captured by indicators that

are averaged and used as determinants for success. As an example, start-up rates, self-employment statistics, foreign direct investment figures, and venture capital financing are all used as output measures within frameworks aimed at determining ecosystem “success” (Bell-Masterson & Stangler, 2015; Isenberg, 2010; Leendertse et al., 2022).

Quantities of outputs used to rank and benchmark EEs arguably lack robust theoretical foundation (Liguori et al., 2019) and are often not a reflection of reality given their susceptibility to perverse learning (Meyer & Gupta, 1994). Nevertheless, owing to their positivist nature, they afford an easy and relatively straightforward mode of evaluation. Often, these objectives and targets are defined at a governmental level which impose their own criteria for value. There is, however, an acceptance that the implementation of economically derived metrics is unlikely to represent the real value created and is at best a surrogate (Bruns et al., 2017; Feld & Hathaway, 2020).

Theoretical attempts to define value in EEs have drawn from multiple perspectives largely driven by a focus on economic growth where productive entrepreneurship outputs are used as indicators of success. This “goods” dominant perspective perceiving configurations of EE components as opportunity structures determining the value that can be appropriated makes it difficult to detect relevant and underlying relational dynamics leading to widely applied lagged outputs (Hubner et al., 2022). This hitherto favored approach involves the compression of ecosystem elements into convenient typologies of common actors and factors (Spigel, 2020). The interactive mechanisms among multiple actors operating at meso- and micro-levels that may potentially lead to the emergence of such externalities (Scott et al., 2022; Spigel, 2017) require further investigation (Donaldson, 2021; Ryan et al., 2021).

2.2 Alternative explanations for entrepreneurial ecosystems

EE scholars have begun to embrace the utility of alternative approaches such as micro-foundations of behavior in situated context (Muñoz et al., 2023), complex adaptive systems (Roundy et al., 2018), and network views (Fernandes & Ferreira, 2022). These

valorize interconnectedness of actors and resource elements (Leendertse et al., 2022; Motoyama & Knowlton, 2017) while acknowledging the heterogeneity of place (Audretsch et al., 2023; Khurana & Dutta, 2023). Individuals do not merely occupy their environments but enact them in collaboration with others (Muldoon et al., 2023). A multiple-actor approach signals that EEs are as much a social phenomenon as they are an economic one and that their multi-layered social structures warrant attention (Fraiberg, 2017; Neumeyer & Santos, 2018; Wurth et al., 2022). EEs have been described as existing as “networks of social relations” (Muñoz et al., 2022, p. 3) and it is unsurprising that research is beginning to embrace the key role that ecosystem actors and their institutional embeddedness have on not just outputs but also entrepreneurial behavior. Social context is a salient feature of this scholarship with entrepreneurs being described as socially embedded agents that leverage resources from networks located in their surrounding environments (Czernek-Marszałek et al., 2023; Neumeyer et al., 2019). This thinking builds on a proximity hypothesis extending beyond geographical closeness as a facilitator of interaction to include cognitive and organizational proximity (Boschma, 2005).

The literature linking networks and social environments to the EE (Fernandes & Ferreira, 2022) tends to center on network anatomy including variables such as size, density, formality, multiplexity, and positioning (Quan & Motoyama, 2010; Stam, 2015). Given their strategic significance in enabling opportunity exploitation, networks are viewed as a means through which resources, such as financial, human, or transnational capital, can be extracted to help new business entry (Fraiberg, 2017; Hoang & Yi, 2015).

This network approach to EEs emphasizes relationships (Pittz et al., 2021) in which rational instrumentality assumes preference whereby actions are oriented around a relatively stable and singular goal, such as gaining investment (Hallen & Eisenhardt, 2012; Slotte-Kock & Coviello, 2010). However, this achieved outcome is not solely dependent on the existence of relationships and obscures the contingent, emergent, and unfolding nature of multi-actor processes (Rauch et al., 2016).

2.3 A network-centric service ecosystem lens

A service ecosystems perspective (Vargo & Lusch, 2011) with foundations in a S-D logic has much to offer toward explicating the innate contextual heterogeneities of what represents value and its exchange within the EE. A S-D logic can be viewed as a general theoretic lens that is used to interface with other mid-range theories (Brodie & Peters, 2020). It is a synthesis theory that accommodates other theories such as institutional theory or complexity theory. S-D logic, through incorporating institutional arrangements and its focus on the mechanisms of cooperation and coordination between levels of analysis, provides a gateway toward a more empirical investigation (Brodie & Peters, 2020). We can begin to understand the environment at large accepting that entrepreneurial actors will both contribute and draw from their local surroundings (Jack & Anderson, 2002). The advantage of this approach is that resources are not uniformly used nor perceived with the same degree of importance by all actors within and across spatiotemporal circumstances (Archpru Akaka & Chandler, 2011).

The core of S-D logic is the focus on services as opposed to goods. In a change to traditional mindsets, production and consumption are no longer withheld to the specific and separate entities of the firm and customer or the vertical transactions of the production line. Instead, the focus is the application of knowledge, skills, and abilities for the benefit of others (Lusch & Vargo, 2014). In this logic, service-for-service exchange and the integration of resources through collaborative interactions across multiple actors are the source of co-created value (Akaka & Vargo, 2014). This value is determined by the beneficiary of a given service (Vargo & Lusch, 2008).

Vargo and Akaka (2012) introduce the concept of *service ecosystems* to encapsulate contexts in which this mutual value co-creation occurs. *Service ecosystems* are defined as “relatively self-contained self-adjusting systems of resource integrating actors connected by shared institutional logics and mutual value creation through service exchange” (2012, p. 207). This definition, if applied to the EE, provides a useful, holistic, and dynamic characterization. We therefore ask: *how does a S-D logic map onto an EE; and how does the process of value exchange unfold within an EE?*

3 Methods

3.1 Research design

Given the research questions and the focus on exploring the depth of relationships, a qualitative design was implemented (Karatas-Ozkan et al., 2014). A qualitative approach is particularly well-suited to understanding relational processes as it allows for the capturing of evolving phenomena in rich detail (Langley & Abdallah, 2011). While much EE research implicitly adopts a positivist stance, there is a danger this could lock new research into a goods-dominant perspective. To allow a service-dominant lens and the meaning behind value exchanges to emerge, we adopt a pragmatist stance (Peirce, 1992) and approach our data as moderate subjectivists.

We chose to deploy a visual method of network research that allowed us to examine what, why, and how value is created and distributed across links (Jaspersen & Stein, 2019). This approach trades scope of coverage for depth of meaning by focusing on the content and quality of relationships between actors and is coherent with pragmatic abduction where visualization of the phenomenon is the first step in logical inference (Coccia, 2018). Our point of departure was the belief that entrepreneurial networks are constructed by and through meaning. This signifies that networks are shaped and conditioned by the cultural context in which they are embedded and interpreted.

We followed a process of logical abduction (Peirce, 1992). This involved a two-stage procedure: first, we determined the relationships between the actors in our specific EE and, second, we examined the egocentric networks from the perspective of the focal actors in the ecosystem. To do so, we applied the concept of visual network research which involves the visual mapping of social networks to capture relational data that include actor, social, and contextual attributes (Jaspersen & Stein, 2019). These maps then served as an analytical tool in the second step of logical inference, analysis of the patterns, and content of relations through key informant interviews.

3.2 Research setting

To explore relationships within context at a sufficient level of depth, we sought a self-contained and manageable EE. This needed to simultaneously

demonstrate both identifiable cohesion (EE) and distinction (service ecosystems) criteria. For this, we searched for external recognition and internal identification of the EE as a distinct unit. We selected Marina de Empresas (Mde), a privately governed EE located in the Spanish coastal city of Valencia. For external recognition, we identified objective indicators being used to represent its success as a cohesive entity. Mde has been recognized for the quantity of investment made, the number of start-ups accelerated, and has been identified as positioned 19th out of 125 leading start-up hubs across Europe according to the Financial Times¹. For internal identification of cohesion, we relied on the lead author's embeddedness in the Mde ecosystem and their accompanying tacit understanding of the culture, structure, and values. Thus, the Mde case fulfills the criteria as having an externally recognized identity and internally validated cohesion. The current EE evolved from three discrete sub-units: (1) EDEM Business School, a non-profit foundation established in 2002²; (2) Lanzadera, a start-up incubator and accelerator established in 2013³; and (3) Angels, an entrepreneurial financing company established in 2009⁴. In 2015, these sub-units were brought together in the same location with the connected mission of training (EDEM), supporting (Lanzadera), and funding (Angels) entrepreneurs and entrepreneurial students. Since founding, it has created over 10,000 jobs, raising over €700 million from external stakeholders.

3.3 Data capture

First, we determined the structural composition and the boundaries of the EE. We identified its core as

three fundamental institutions: (1) an entrepreneurial university, (2) a start-up incubator/accelerator, and (3) an entrepreneurial financing company. We demarcated the core ecosystem boundaries based on these fundamental pillars and the practical reality of the ecosystem's dominant structure given that the three sub-units fall under the jurisdictional control of a general director. Next, building on Spigel's (2020) identification of influential EE actors, we targeted several EE actors of which 16 agreed to participate in our study (Table 1).

A network map template focusing on the identification of ecosystem actors and the relationships between actors was constructed (Pittz et al., 2021; Stein & Jaspersen, 2019). A randomly selected project director from the EE's incubator checked the map template for readability and ease of understanding. Based on this preliminary test, several questions pertaining to the relational variables of interest were re-worded for greater clarity. During September and October 2022, each participant was sent an electronic copy of the network map template alongside instructions for its completion via Microsoft Teams.

The capture of relational data from participants using the template followed a four-step procedure (Jaspersen & Stein, 2019). First, drawing on the participants' interpretations of their own networks through open-ended recall, participants were asked to identify the main actors/organizations in the ecosystem. Second, the participants were asked to spatially position the various actors onto a three-level concentric circle radar based on their perceived importance, with the respondent acting as the ego positioned at the center. Participants also had to draw links between the ego and other actors as well as report ties among other contacts.

Third, participants were instructed to provide information pertaining to the actors and the nature of the relationships. Questions included: "What type of relationship do you have with this actor?"; "What is the expectation of the interaction with this actor?"; "How frequently do you interact with this actor?"; and "Is the relationship formal or informal?" Any participant queries were resolved by the lead author either in person, via Microsoft Teams, or telephonically. On average, the completed templates were returned within 3 weeks with a reminder message sent after week 1 to those participants who had not yet responded.

¹ <https://rankings.ft.com/incubator-accelerator-programmes-europe/c/ranking>

² EDEM is affiliated to two public universities in the city and offers degrees in Business Management and Entrepreneurship and in Engineering and Business Management. They also offer several postgraduate and executive-level courses. As a foundation, the university is sustained by over 130 member and sponsoring companies.

³ There are currently 300 start-ups co-located in the incubator and accelerator; 150 new start-ups enter each year, and 1100 start-ups have been incubated and accelerated since its creation. A total of €25 million internal and €700 million external investments in Lanzadera start-ups have been made.

⁴ Angels has invested \$35 million in 47 start-ups since its creation with several successful exits.

Table 1 Overview of interview participants

Actor	Ecosystem component	Physically located in ecosystem	Actor type
A	EDEM	Yes	Student
B	EDEM	Yes	Professor (internal)
C	EDEM	No	Professor (external)
D	EDEM	Yes	Business relations
E	MdE	Yes	Marketing
F	MdE	Yes	Administration
G	MdE	Yes	Legal
H	MdE	Yes	Top management
I	EDEM	No	Member business
J	EDEM	No	Sponsor business
K	MdE	Yes	Chief information officer
L	Lanzadera	Yes	Project director
M	Lanzadera	Yes	Corporate project director
N	Lanzadera	Yes	Entrepreneur
O	Lanzadera	Yes	Entrepreneur
P	Angels	Yes	Angel investment manager

Fourth, a dialogical approach through a narrative interview with each participant provided further depth and dynamism to the map's interpretation and validation of its structure and content. Interviews lasted between 15 and 58 min and were carried out approximately 1 month after the network map templates were received. Participants were asked to describe their everyday experiences within the ecosystem through the lens of their network map. As a point of embodied ignition (Scarles, 2010), and acting as a "boundary object," participants were shown their own eco-net and asked to "think aloud" about the interconnectedness of their relations and how they are used to fulfil objectives. Using this method of verbal protocol analysis allowed us to capture the different meanings behind ties by identifying the "how" and "why" of their networks (Fayolle et al., 2014). Interviews were carried out face-to-face, digitally recorded, transcribed verbatim, and thematically analyzed.

3.4 Data analysis

An abductive approach was adopted that started with the belief that S-D logic was a potential explanation of EEs. We then extracted meanings and built theory about the "how" and "why" of relational exchange based on the everyday lived experiences and thought

processes of the participants that allowed the capture of temporal activities (Peirce, 1992).

We followed a variation of the Gioia (2021) approach where data is progressively coded into categories. Words, phrases, and statements (codes) from the text were used to identify first-order categories (Gioia, 2021). The variation was in following our pragmatist stance, where the initial visualization of the phenomenon has order imposed, in this case through tagging codes through the lens of a S-D logic. Rather than the inductive approach outlined by Gioia (2021), this is abduction, being a logical inference to what we consider a potential explanation (Coccia, 2018). As an initial guide, we non-restrictively focused on words representative of terms and constructs associated with a S-D logic, such as "service-for-service exchange," "resources," "value," "value proposition," "exchange," and "institutional arrangements." This process generated 40 first-order categories that were subsequently reduced to 11 higher-level themes ("second-order") by looking for similarities, differences, and linkages in structure among the codes through axial coding (Gehman et al., 2018).

The final stage of the coding process explored how all second-order themes fitted together in relation to their theoretical dimensions. Secondary themes were categorized into five aggregate dimensions. We

added to the robustness of our findings using formal and informal checks with key informants (Lincoln & Guba, 1985). The final data structure is presented in Fig. 1.

We convey our findings by reporting the experiences described by the study's participants. The analysis is organized by way of the five aggregate dimensions and supported by representative quotations from our data.

4 Findings

4.1 Co-constituted by overlapping domains of expertise

The entrepreneurial journey was found to be heavily influenced by several communities of practice that represent heterogeneous groups of specialists. Aggregate dimension 1 reflected this specialization and was composed of (1) affinity-creating frames and (2) customized roles and identity.

4.1.1 Affinity-creating frames

Within the EE, actors in their everyday work interacted with experts in different aspects of the entrepreneurship process (e.g., financing, legalities, technology) and benefitted from their distinctive knowledge and skills. As the entrepreneurial knowledge base expands, specialization has important implications for the overall values of the EE and the process of value exchange. Affinity frames acted as organizing principles that mediated and brought coherency to actors' experiences as they attempted to navigate various normative arrangements:

In general, I think that we all believe in and value the same thing [MdE]. If we didn't, then we wouldn't be here ... As a whole, we all see things through the same eyes and we speak the same language ... everyone is working toward the same main objective of progressing the project and in many ways we all more or less share this same emotional attachment even if it is at differing degrees. (Actor D)

One specific frame known as "dar-pedir" (to give and request) based on a motivation to serve the

interest of others, the paradigm of giving before asking, was prevalent:

The idea is that for someone to have their needs satisfied, first the needs of others must be fulfilled. This means that we have to be motivated to help others. (Actor H)

Affinity frames were conserved and instantiated via a (1) co-mission, (2) co-location, (3) co-participation, (4) co-membership, and (5) co-language of ecosystem actors. For example, data showed the importance of seeing the "cathedral" [seeing the importance of the bigger picture and the project that the ecosystem is trying to develop] and that "If you ask anyone here what the mission of Marina de Empresas is I am sure that they will be able to tell you. You always have to be conscious of this mission" (actor H). This highlighted that members felt that they were part of something bigger than their individual roles or areas.

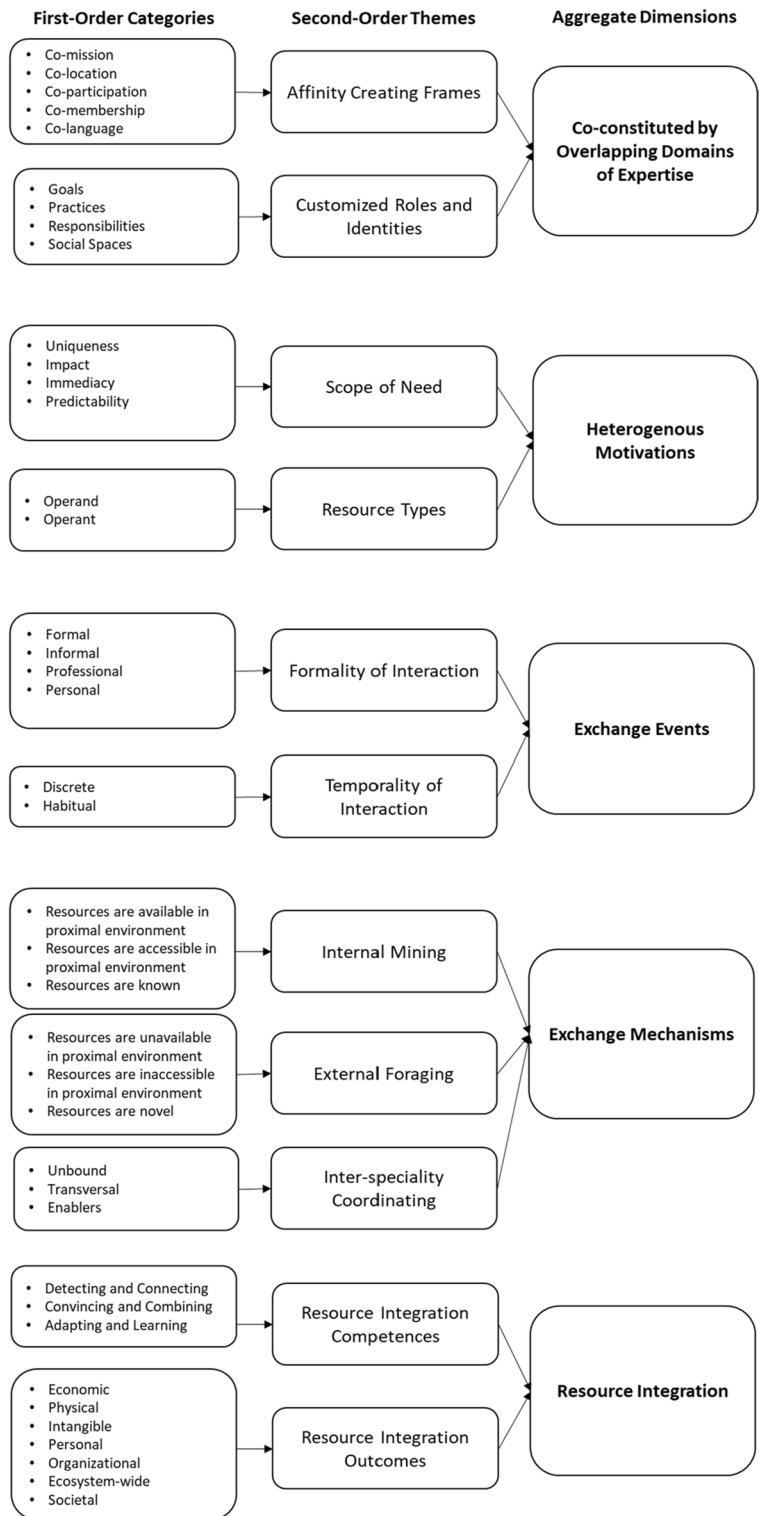
Being co-located facilitated interactions between members and provided a sense of belonging, "Being in the same place makes it a lot easier for us to interact and in many respects shows that we are on the same team" (actor D), concomitantly emphasizing co-membership and co-participation of a community driven toward a common cause. Understanding was further heightened through the use of a co-language where abbreviations (e.g., "DP" was commonly used for project director), colloquialisms (e.g., "win-win"), and metaphors (e.g., "swimming against the tide" making reference to the turbulent nature of entrepreneurship) were deployed as linguistic and symbolic tools.

4.1.2 Customized roles and identity

When operating within specific communities of practice, or particular domains of expertise, the interpretation of the overriding purpose was conditioned by everyday work and thus a layering of values occurred. The EE core was differentiated and layered into internally structured and interrelated sets of meanings that governed particular entrepreneurship domains, creating an inter-institutional pluralism within the ecosystem's internal boundaries. Customized roles and identity were composed of (1) goals, (2) practices, (3) responsibilities, and (4) social spaces.

Investors were predominantly focused on identifying entrepreneurs that could scale and grow their

Fig. 1 Data structure



companies: “Our mission is clear. We look for entrepreneurial leaders [...] The first thing that we do is to invest in number 1s [entrepreneurial leaders]. In the end this is our primary responsibility, making sure that we find those number 1s that can use the money in smart way and grow” (actor P). Entrepreneurs within the accelerator were focused on such things as validating their ideas, acquiring customers, building their team, and receiving finance: “As entrepreneurs our first thought is how can we survive. How can we make sure that we have an attractive idea that will get us enough customers? Paying customers that is. After that it is about being sustainable” (actor O). Students were mainly focused on getting good grades: “Although it would be nice to be an entrepreneur in the future, our first priority has to be passing the degree” (actor A). Each domain also displayed their own distinct practices to achieve their goals, embedded in particular responsibilities. Furthermore, domains were physically distinct and had their own social space in which their practice was located.

Thus, each zone entailed an internal coherence and consistency based on its own central logic that constituted a specific organizing principle and translated into a particular institutional order forming the basis for internal legitimacy through customized roles and identity.

4.2 Heterogeneous motivations

Differing, although overlapping, domains of expertise led to heterogeneity in actor motivations representing aggregate dimension 2. This dimension included the second-order themes: (1) the scope of the need and (2) resource types.

4.2.1 *Scope of the need*

The scope of the need captures (1) resource uniqueness, (2) the immediacy of resource needs, (3) need predictability, and (4) the potential impact that the resource could have.

Uniqueness describes the extent to which an actor would find it difficult to encounter the resource within their own proximal domain of expertise. These resources are rare for a given domain and are not easily replicated because of their distinctiveness; often resources of greater uniqueness are intangible and stem from historical path dependencies embedded

within expertise domains. For example, one professor noted that:

[...] it would be almost impossible for me to find someone with both start-up experience and the ability to teach if I only have access to other academics in my area. How can we truly transfer the real and individualized experiences that each entrepreneur goes through? (Actor B)

Immediacy relates to the urgency associated with acquiring and using specific resources. It pertains to how quickly and readily certain resources can be mobilized to support an ecosystem actor’s goals and objectives. Resource immediacy acknowledges that different resources may have varying levels of time-sensitivity and importance. For example, in a given moment, some actors would be future-oriented in engaging in actions through an altruistic intelligence understanding that, although they may not require a specific resource, interacting with a given actor could be of future use. This mainly occurred when resource needs were vague and the current necessity was not obvious:

I always try to help others out. Even if I don’t need something in that moment I will talk to them and see if I can help them in any way [...] An example would be when I attend an innovation event, I am not looking for something valuable and that could help us there and then. I am looking to build valuable relationships and find potential partners that can maybe in the future want to collaborate with us. What will that collaboration look like? I don’t know. (Actor M)

On other occasions resource needs were more pressing and thus present-oriented:

At the moment we have a small team and we are doing much of the work ourselves. If we want to continue then we need some help and we are looking to EDEM for this help. We know the pool of young talent that is there and are actively seeking an intern to start immediately. (Actor N)

Predictability references the level of certainty or ability to anticipate resource needs in advance. An understanding of one’s own resource requirements was conducive to more informed decision-making, increasing the likelihood of value co-creation. When

ecosystem actors had access to required resources at the right time, it enabled them to focus on their core activities, leverage their expertise, and minimized resource mismatches and uncertainties:

We made several projections to what our future would look like knowing that a lot of these would turn out to be way off the mark. What it did allow us to do however was make sure we had the resources, or at least know where to find them, for where the start-up was at [...] We knew that if we were successful then we would need external financing to scale up so we kept alert and tried to build connections with the right people from early on. (Actor O)

Finally, impact considers the effects or consequences that resources can have on specific ecosystem actors or on the EE community as a whole. It encompasses both the positive and negative potential of resource integration. For example, access to funding directly impacted an entrepreneur's ability to launch and sustain their venture, whereas limited funding opportunities constrained execution and growth: "Getting funding was a significant milestone for us, it allowed us to keep doing what we were doing, without it I am sure that our business would not exist" (actor N). At the community level, ecosystem actors participated in resource exchanges that benefited the broader community, "Having real entrepreneurs in class adds great value to the students, to myself as an educator and for the complete ecosystem" (actor B).

4.2.2 Resource types

Two general categories of resources were identified: (1) operand and (2) operant. Operand resources deal with static resources (e.g., physical buildings, facilities, and products) that require action before they can provide value. Operant resources are dynamic and intangible (e.g., knowledge, skills, competences, and technology) and serve as a necessary condition for ecosystem functioning by acting upon other resources within specific contexts to create value.

Resources were found to be neither fixed nor finitely designed purely for their capture in pursuit of advantage. It was through agency and creative processes that both material and non-material components of the environment were transformed into

something of use. In this respect, knowledge and ability emerged as powerful operant resources:

One of the most important things for me is developing skills and knowledge that give me confidence and reassurance that I can successfully complete create and scale my business. (Actor O)

4.3 Exchange events

Aggregate dimension 3, exchange events describe and locate situations, opportunities, or communicative moments where resources can be shared and exchanged among ecosystem actors. These events represent occasions for the application of knowledge and skills to benefit another actor through interaction and mutual cooperation (e.g., service-for-service exchange) and serve as the primary interface for coordination for the co-production of value. Exchange events moderate how value-exchange unfolds and included the second-order themes of (1) formality of interaction and (2) temporality of interaction.

4.3.1 Formality of interaction

Formality of exchange events encompasses the degree to which interactions follow explicitly acknowledged and accepted rules and conventions. Examples included those that are (1) formal, (2) informal, (3) professional, and (4) personal. Formal exchange events involved structured and organized interactions that were planned and facilitated by specific actors. These included classes, networking sessions, and workshops, where actors could come together and interact. Informal exchange events were unplanned and happened spontaneously. Some of the most common informal events referenced occurred within the co-working spaces of the incubator and in the communal areas of the EE such as the cafeteria:

This is one of the most used phrases in the ecosystem [referring to grabbing a coffee] and for a very good reason. Some of the most valuable advice and information that I have benefited from was through chatting over a coffee. (Actor N)

Professional exchange events represented a clear focus on the transfer of specialized services among

professionals. These encounters often involved actors with complementary skills in the same or similar industries. For example, contractual arrangements served to formalize relations between two or more actors through the setting of legally binding obligations. In contrast, personal exchange events revolved around the provision of resources in the form of support, guidance, and mentorship on individual levels. These interactions were often based on trust, shared experiences, or common interests:

When we enter into a program for the first time we are assigned a big brother. This is great as they normally operate in the same or a very similar industry as you. They have the best knowledge on who to talk to or where to go when you need a specific resource or have a problem that you are trying to solve. (Actor N)

4.3.2 *Temporality of interaction*

Exchange events could be categorized as to whether they were (1) habitual or (2) discrete. We noticed the occurrence of discrete exchange events that were specific, standalone instances where resources were exchanged for a particular end purpose and without expectancy of continual relations. For example, actor O stated “We knew very little about term sheets. We spoke to our DP [project director] and they put us into contact with the right person who explained everything we needed to know in 30 minutes. That has been the full extent of our interaction with this person however it was enough.” Accordingly, some exchanges were characterized by their short temporal nature; others were habitual given that the interactions were ongoing and repeated. These exchanges were embedded in the routines and practices of the EE in a broader sense and promoted continuous collaboration and knowledge flow. A prime example were the communities of practice in which entrepreneurs regularly met to share ideas and exchange best practices on a bi-weekly basis:

We have objectives sessions every two weeks for entrepreneurs that are at different phases. In these sessions the entrepreneurs share what they have done over the past few weeks and what they are looking to do next. This is a great way to learn from others as they often have experi-

enced similar challenges and have ready-made solutions ... It makes it easier for me to help others either through direct knowledge or connecting entrepreneurs with other start-ups. (Actor L)

Exchange events did not operate in isolation with many types intertwined and difficult to designate to one specific category. For instance, informal exchange events often led to the identification of potential collaboration opportunities which would then transition into more formal exchange events like contractual employment. Professional exchange events provided the necessary knowledge and expertise for personal exchange events through mentoring and advice. Habitual exchange events emerged from professional and personal exchange encounters creating an ongoing culture of collaboration. By leveraging and combining different types of exchange events, EE actors created a dynamic and interactive environment that facilitated service-for-service exchange. These exchange event characteristics impacted the fluidity of resource flows and, alongside actor motivation, created particular resource-seeking mechanisms.

4.4 Exchange mechanisms

Aggregate dimension 4 describes the processes and methods through which ecosystem actors search for and transfer resources comprising the second-order themes of (1) internal mining, (2) external foraging, and (3) inter-specialty coordinating.

4.4.1 *Internal mining*

When an entrepreneurial actor was operating within their own domain of expertise and required resources that were (1) known, (2) available, and (3) accessible within that domain, they engaged in a process of internal mining. That is, resources were sourced from their own domain. They were influenced by physical proximity, a higher frequency of interaction, and greater predictability regarding the needs of oneself and others, alongside the habituality of exchange encounters fostering familiarity and trust.

Similarities in experiences and resource pools created empathy and goal alignment with a mutual understanding of the challenges and opportunities within the specific domain. Given the homophilic nature of the domain, modes of communication when

actively seeking resources tended to be transactional. Actors often required resources promptly to address pressing issues. Thus, the mode of value exchange needed to be efficient with transactional exchanges leveraged given a shared knowledge that created a base for timely decision-making. However, informal interactions were common among actors and instigated with no clear resource needs. Trust-building occurred whereby knowledge and experiences were naturally shared, cushioning the transactional forms of exchange and resulting in spontaneous and unexpected value co-creation:

It is difficult to say whether the interactions that we have in our own areas are less or more important. I can say that they are a lot more frequent, so I guess that adds to their importance. Normally, the types of information or resources are the same or very similar when collaborating in the department and this makes it easy to share whatever it is that someone needs. ... I think that the relationships that we build through small friendly chats and getting to know people on a more personal level are what makes these exchanges easier. (Actor E)

4.4.2 External foraging

The process of external foraging, based on (1) unavailable and (2) inaccessible resources in one's proximal domain as well as a desire for (3) novel resources, transgressed the semi-permeable internal boundaries of the EE. External foraging signified a broader perspective of tapping into the network effects and expansive resource portfolios available at the intersections of ecosystem boundaries. By travelling beyond their domains of expertise—both cognitively and physically—actors sought to acquire new knowledge, insights, and perspectives that fueled innovation and enriched, not just their own, but also the goals of the entire ecosystem:

Here we specialize in the identification and development and training of talent. That means if we want the best for our students then we need to know the skills and qualities that are in most demand in the workplace. To make sure we provide quality training we reach out to our member companies or they reach out to

us. They tell us that the world is becoming more digitalized or AI is going to disrupt business practice. Lanzadera tells us students need more knowledge on x or Angels let us know that students need to know more about investment. We take note of this and make sure to incorporate it into our learning programs. (Actor D)

With external foraging, we witnessed a greater variety of interactions leading to the possibility of more creative and innovative outcomes by blending and merging different services from different fields of practice. External foraging thus introduces higher degrees of uncertainty as actors explore unfamiliar territories. Given the associated learning curves when operating in unfamiliar terrain genres of communication were adapted accordingly.

4.4.3 Inter-specialty coordinating

We observed the critical role of various groups of actors in supporting collaborative interaction and thus value exchange. These actor groupings, including the top management team, marketing, legal, and administration departments, and the chief information officer, (1) were not tied to the physical structure of a particular zone of expertise *per se*⁵, (2) but were dispersed throughout various institutional arrangements. Accordingly, we viewed them as not being predominantly “top-down” (e.g., a centralized decision-making unit) or “bottom-up” (e.g., individual agency) mechanisms, but as a more collaborative “middle-through” mode of value creation governance.

Several obstacles to value co-creation and ecosystem sustainability emerged throughout our study. Difficulties arose from logistical, motivational, and technological sources.

There are so many great people doing great things here, but it is impossible to keep track of everything. We all have our own jobs to get done and the reality is that sometimes we just have the time to go searching. (Actor I)

Active inter-specialty coordination across domains of expertise was critical when trying to (3) enable and

⁵ As determined by our initial setting of the ecosystems core boundaries and sub-components.

incubate exchange events and resource integration within and across domains of expertise.

We are constantly thinking of ways to make ‘one marina’. This means that having all legs working together. Getting the benefits from each part to make the whole greater. We need to be aware of what is happening in the whole of MdE. One of the great things here is the work of the marketing department. They organize events that provide opportunities to mix with others that under normal conditions we may not have. (Actor H)

Attempts were made to avoid short-term silo mentalities, individual actor opportunism, and possible frictions between and within domains. Strategies to contend with such issues varied depending on the specific challenge and the actors involved.

For example, external foraging was not without problems as sometimes tensions between differing central logics emerged. Silo visions could appear that favored the goals of one actor over another.

Sometimes working on ecosystem-wide projects we name unique people of contact by initiatives and then each unique person of contact works for their initiative in silos. There is no transversal vision or common processes and, consequently, there are no common tools that breathe unanimity into the experiences or that understand or speak to each other. (Actor H)

In response to a potential for disconnect and conflicting messages to ecosystem members, the EE top management piloted an approach of working in “squads” by employing agile methodologies in which work teams (squads) vary depending on needs. A process owner was assigned either voluntarily or based on their experience, working transversally with operand and operant resources (e.g., product, processes, and technology) to serve a goal that would benefit EE sub-components, and more importantly the shared values of the ecosystem. This reinforced a global vision and aimed to maximize compatibility in processes, tools, and outcomes.

The top management team thus actively tried to empower EE actors through the distribution of information, power, and rewards, while also fostering a sense of psychological ownership among community members. In doing so, they actively listened and

learned from other stakeholders to understand what was needed on the “ground.”

This provision of discretion, power, and incentives to the wider community meant that leadership actively fostered initiative-taking at lower levels. Overall, these mechanisms of exchange helped to facilitate resource integration.

4.5 Resource integration

The final aggregate dimension describes the dynamic and interactive process through which resources from different EE actors are (re)combined and leveraged to create valued outcomes. It was composed of (1) resource integration competences and (2) resource integrated outcomes.

4.5.1 Resource integration competencies

We identified three key competencies used in the integration of resources: (1) detecting and connecting, (2) convincing and combining, and (3) adapting and learning. Firstly, EE actors benefited from the ability to identify, initiate, develop, and manage collaborative relationships. The presentation and communication of value propositions played an important role:

We have developed an app called Angels Conecta so that investors don’t miss an opportunity to invest ... The app is voluntary, investors sign up to increase their deal flow and entrepreneurs sign up so that they can receive investment to continue growing their start-ups. We act as a connector offering value beyond Angels just investing in a start-up. (Actor P)

In this way, it was possible to identify and form bonds with actors they perceived as essential for the achievement of their goals. Central to the emergence of synergistic outcomes was the ability to convince others to participate in the exchange and to (re)combine expansive resource pools to create new forms of value. Key to successful convincing was the capacity to articulate the value proposition in a clear and concise manner:

We know where to go to find what we are looking for. The ecosystem tries to make the value of others as visible as possible. If you need advice on legal stuff you go there, if you need

support with financing options you go there... we need to make sure what we do and have of value is visible to all. (Actor N)

The final integration competency was the ability to absorb external knowledge, internalize experiences, and participate in reflective sense-making processes that helped in the ongoing management of network relations. For example, the start-up accelerator embraced this mindset and had the ability to review its processes and programs continuously and iteratively, incorporating feedback into their operations and processes to fine-tune and increase the relevance and effectiveness of the support mechanisms provided. This focus on empowerment and improvement emerged in a LinkedIn post of the general director of the incubator/accelerator:

Today we start a renewed acceleration program in Lanzadera. After several months of work where we have listened to a lot of our clients, the program ceases to have phase labels and we will work individually according to the needs of each start-up to give them a personalized itinerary [...]. (extracted from ecosystem documentation)

Resource integration competencies are interrelated and mutually reinforcing. Detecting and connecting form the foundation for identifying service-for-service exchange opportunities which in turn facilitate the convincing and combining of resources. Through convincing and combining, actors create unique configurations that harness the potential of a diversity of resources and experiences. The capacity to adapt and learn ensures that actors continuously improve their resource integration capabilities over time.

4.5.2 Resource integration outcomes

Co-created value transcends interactive exchange processes and is only fully realized when the outcome produced is applied within the beneficiaries' own idiosyncratic context. The consequence of the ideas and information exchanged results in the actor being in possession of a potentially valuable resource; however, the actor will only be able to assess the true worth of this value proposition contingent on the specificity of its use:

It's great that we get to collaborate with EDEM. The students work on a specific challenge that we are currently facing in our business. They come up with really good ideas, however they are only ideas. It is our job to convert these into reality because if not, they are wasted. (Actor J)

The diverse valued outcomes that emerged from resource integration were not monolithic and represented forms of co-created value. Outcomes spanned multiple perspectives and included value that was economic (e.g., investment), physical (products), intangible (knowledge), personal (satisfaction), organizational (growth), ecosystem-wide (culture), and societal (job creation).

5 Discussion

Figure 2 presents a process model of value exchange based on our findings. In the following sub-sections, we initially locate this in the literature before presenting the contributions of the research.

5.1 Conceptualizing the process of value exchange

Our model depicts that value exchange in an EE is largely dependent on connectivity of individual actors and their sharing of institutional arrangements. The self-containing nature of an EE is less a product of its boundaries *per se*, but instead evolves from the sharedness of relations between actors embedded in overlapping domains of expertise and ways of thinking and acting that coordinate the system through adaptation and adjustment. The mutually beneficial flow of valuable entrepreneurial resources is thus permitted via resource integration and service exchange by multiple actors from which the co-creation of value occurs: value in this instance manifold representing actors' well-being and system viability.

5.1.1 Context

Value co-creation within EEs is regulated by institutional contexts (Mack & Mayer, 2016; Spigel & Harrison, 2018) and achieved through relational interaction (Theodoraki et al., 2018). Interactions are facilitated through an enabling environment that is

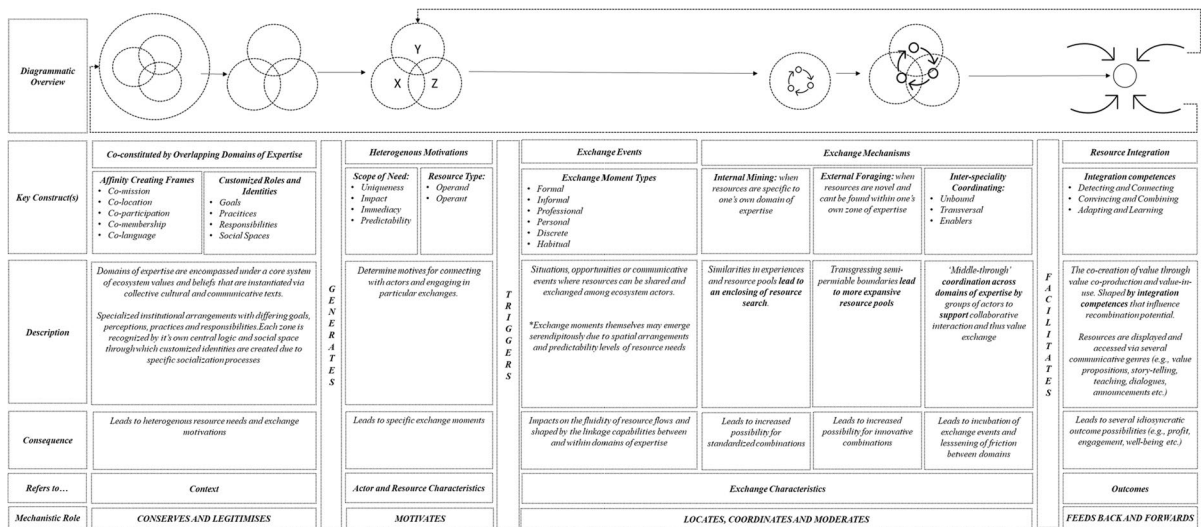


Fig. 2 The process of value exchange in a privately governed entrepreneurial ecosystem

meaningful, motivating members to actively participate (Shrivastava & Kennelly, 2013).

Drawing from higher-order discourses afforded by contextually and historically produced, disseminated, and consumed texts (Zilber, 2011), including communicating in the same language, participating in the same events, being located in the same spatial arrangements, and being members of the same initiative, establishes affinity-creating frames—knowledge structures that assist individuals in organizing and interpreting perceptual information conveyed in a specific context (Cornelissen & Werner, 2014)—and helps to embolden and legitimize the efforts of the EE and its actors. This idea of location-specific emotional attachment and legitimacy aligns with contemporary work stressing place-based connections within EEs (Kibler et al., 2015; Pushkarskaya et al., 2021) and reflects institutional proximity (Boschma, 2005).

Thus, value priorities among specialized groupings can be made coherent, legitimizing the efforts of the EE as a whole. Although domains of expertise are compartmentalized into distinctive institutional arrangements in a form of aligned complexity (Raynard, 2016), a guiding frame stimulates the creation of wealth and well-being within the society by promoting venture entry and entrepreneurial leadership. This shared intention is deemed critical to enabling mission-driven behaviors and holding

an EE together (O'Shea et al., 2021). At an ideological level, affinity framing establishes synergy between the core values and beliefs of the EE and provides meaning and direction for its members (Muñoz et al., 2022). For example, as a mechanism for cooperation and the co-creation of value, the affinity frame of “dar-pedir” aligns heavily with a S-D logic and is positioned as a “universal truth” for the ecosystem community. Such altruistic openness to support others is recognized as a core dynamic of functioning EEs (Alaassar et al., 2022; Pocek, 2022).

Through specialization and the associated socialization processes, diverse customized identities emerge (Pratt et al., 2006). These identities are built around the dominant discourse and institutional logics of the roles, activities, and typical relations between actors embedded within the bounds of their social space (Kibler et al., 2015). What follows is a similarity in the availability of vocabularies shaping ways of thinking, communicating, and sets of practices generated within a domain facilitating access to specific resource pools (Ocasio et al., 2015). Within one's own zones of expertise, motivations and goals tended to high resemblance; when perceiving the EE as an inter-related whole, a heterogeneity in motivations prevail.

5.1.2 Actor and resource characteristics

Entrepreneurial actors operating in domains of expertise have different roles that they fulfil and resource deficits that need to be satisfied in the completion of their day-to-day tasks. For example, entrepreneurs might be primarily focused on obtaining funding and mentorship while investors are looking for potential investment opportunities with high returns. This diversity can lead to complex interactions where each actor seeks out the connections that best align with their specific goals at a given moment in time (Hallen & Eisenhardt, 2012).

As examples of motivations that condition resource needs, we found that levels of resource uniqueness, potential impact, immediacy, and levels of predictability impact resourcing strategy. All of these factors are supported in the entrepreneurship literature. For example, resource uniqueness—with uniqueness representing newness to the actor or their domain—is associated with asymmetries of information where one actor is more knowledgeable than another in a particular area (Colombo, 2021). Thus, in efforts to lessen information and ability differentials, ecosystem actors will search for others who can satisfy their needs. Motivation for impact on the other hand can come at different scales from individual (enhancing one's own abilities), venture (funding) to ecosystem-wide (entrepreneurial process learning and knowledge spillovers) (Khurana & Dutta, 2023).

Temporal preference for a given resource is highly related with entrepreneurship research on time orientation that has argued entrepreneurs to be future-oriented (Baron, 2000) and that entrepreneurs will adopt diverse time perspectives to manage their relations (Zheng et al., 2020). However, we found evidence that this also holds for different types of entrepreneurial actors that are critical for EE dynamics (Hwang & Horowitz, 2012). The main premise being that short-termism is favored during moments where resources need to be accessed quickly whereas a longer-term view is taken when specific resource needs are not evident, but actors, from a community logic (Roundy et al., 2017), can envision value in maintaining relations in the anticipation for future value creation. Agreement is found with Engel et al. (2017) in this regard as relationships can be motivated by factors other than immediate instrumental gains and links into the “dar-pedir” value frame of the EE.

Finally, resource predictability deals with the inherent uncertainty of the entrepreneurship process (Bylund & McCaffrey, 2017). Certain aspects of the entrepreneurship journey can be predicted and therefore causative forms of reasoning can be valuable for risk reduction, for instance when an entrepreneur writes a business plan used to access venture funding (Hubner et al., 2022). However, other resource ingredients are unknown and unknowable (Ramoglou, 2021) promoting more effectual styles of reasoning where improvisation and resource decisions are taken in the moment (Sarasvathy, 2001).

Resource characteristics refer to resource types, that as services, are the “what” of exchange and stem directly from a S-D logic (Constantin & Lusch, 1994). The application of operand resources embodies the main premise of service-for-service exchange by allowing for the accrual of multi-sided strategic benefits (Vargo & Lusch, 2016). For example, by inhabiting and interacting within co-working spaces entrepreneurial actors convert an operand resource—the physical space—into one that provides more value than if it remained vacant. The operand resource remains neutral until knowledgeable actors use it in the performance of their everyday practices. One of the most critical services of an EE is therefore entrepreneurship process knowledge (Boschma, 2005; Khurana & Dutta, 2023) that is applied as an operand resource to facilitate the use and usefulness of operand resources. For instance, Alaassar et al. (2022) showed the critical role of education and knowledge as an operand resource which when lacking prevented venture capitalists from capitalizing on novel fintech start-up disruption.

Given that each central organizing principle governing a domain of expertise is technically and materially constrained through operating within certain resource requirements and limits, heterogeneous exchange motivations within and between institutional orders create a possibility for known resources to be unavailable, a lack of clarity on resources, or the need for altogether new resources that previously did not exist. Resource constraints and ambiguity can therefore trigger motivation to activate a diverse range of exchange mechanisms.

5.1.3 Exchange characteristics

Value-cocreation in EEs is socially situated, described as value-in-context where operand and operant resources interact (Vargo & Lusch, 2008). These locales emerge as exchange events that are differentiated based on their degree of formality and habituality. It is common for entrepreneurial actors to opt for more formal mechanisms of relational management such as written contracts when there are issues related to agency, trust, and information asymmetries (Colombo, 2021). However, it is suggested that some of the most useful exchange events are informal and personal allowing for advice, ideas, and knowledge to flow (Johannisson et al., 2002).

The concepts of internal mining and external foraging are mechanisms showing the interdependent practices that allow for standardized and novel contributions supporting ecosystem evolution. They can be classified as a form of institutional work (Wright et al., 2017) within overlapping and mutually reinforcing domains of expertise, creating networks of interdependencies designed to uphold one's own domain and forging a collective identity supporting overall EE values. Recent arguments surrounding EEs and their nested nature suggest that sub-ecosystems generate role differentials emphasizing heterogeneities of competency bases and contextual operations (Alaassar et al., 2022).

Social and cognitive proximity (Boschma, 2005) promote local interactions within one's own domain of expertise as the former can facilitate habituality of relations, whereas the latter means actors share a common foundational knowledge base facilitating quick and efficient communication. Although operating in one's own domain of expertise creates less friction and capacity for knowledge absorption, it can lead to mindset and competency lock-in causing collaborative inertia (Alaassar et al., 2022). Acting trans-contextually (Muñoz et al., 2023) through external foraging and "network broadening" establishes new interpersonal knowledge and connections (Vissa, 2011, 2012), allowing access to resources that would otherwise be unavailable, inaccessible, or unknowable (Scott et al., 2022).

As such, domains of expertise, although enclosed socially (Khurana & Dutta, 2023), do not necessitate an absolute adherence to one specific logic but instead cede a degree of jurisdictional control to

overlapping domains leading to critical complementarities (Delbridge & Edwards, 2013). This diffusion of competing logics (Khurana & Dutta, 2023), evidenced by actors' willingness to share control by favoring empowerment through other actors' engagement in co-creation activities, permitted the intersectional exchange of services and congruence of goals.

Interactions can be encouraged through purposeful governance (Motoyama & Knowlton, 2017), as demonstrated in our work through the concept of "middle-through" governance that represents a unique approach bridging the gap between micro- and macro-levels by operating at a meso-level and within the interstitial spaces of overlap between domains of expertise. A "middle-through" approach emphasizes the benefits of interstitial guidance by de-centralizing decision-making and empowering actors to interact in ways that will benefit their own individual ambitions, while at the same time, promoting a shared responsibility for overall EE outcomes. Thus, there is a simultaneous amplification of both the creative and spontaneous actions of individual actors that foster organic evolution, with the dominant ecosystem values that provide structure and direction for the community at large.

Connecting heterogeneous actors and their abilities across and within organizations provides the opportunity for the proposal of value propositions which can be actualized through the competencies needed for service integration (Boschma, 2005).

5.1.4 Outcomes

Perceptual evaluations of EEs are argued to be a core feature of their measurement (Liguori et al., 2019), yet little attention is given to the value perceptions of those other than the entrepreneur or investors. Much in the same way EE development is driven by capable entrepreneurs, it must also include the nuances of a range of capable support actors (Malecki, 2018). These actors themselves require the competence to identify, initiate, develop, and manage collaborative relationships (Muñoz et al., 2022).

The presentation of distinct value propositions represents a dynamic means through which ecosystem actors can communicate resource offerings, convince, share knowledge, and shape mutual expectations (Frow et al., 2014; Hubner et al., 2022). Thus, value propositions appealed to different actors and

activated distinct patterns of interaction. Actors draw on different strategies including self-selecting through an altruistic intelligence (Engel et al., 2017) and proposing and accepting value propositions that are most suited to their own skills and circumstantial needs. In making such decisions about collaboration, actors anticipate the transferability of solutions and knowledge, the complementarity of activities, and the potential implications of the relationship for their networks (Anderson et al., 1994).

This collaboration process is a distinguishing feature of service networks from those that emphasize obtaining necessary economic resources, and thus speaks to creating shared visions for the EE that through co-operation can reduce environmental uncertainty (Kerr & Coviello, 2019). By assisting in the search for solutions, the service provider benefits from performance enhancement through learning effects that extend beyond reciprocal interaction (Shah et al., 2018).

Actors must develop the capability to continuously evolve, acquire new knowledge, and adjust to changing resource dynamics and institutional arrangements. Highlighted is the ability to absorb external knowledge, internalize experiences, and participate in reflective sense-making processes that help in the ongoing management of network relations. What is valuable to one actor at a particular moment may not be valuable to another. Different actors may choose (Scheidgen, 2021), or have the ability to use (Vargo & Lusch, 2008), resources in different ways. In fact, pre-commitments are made by EE actors based on indeterminable outcomes a priori in the hope of what might become (Engel et al., 2017). Value is not taken as a property of an output or the holding of a specific resource but instead emerges through experience. Thus, value in use requires actors to assess and determine the value of a given proposition on the specificity of application within a particular context (Vargo & Lusch, 2008).

In summary, our findings afford us the opportunity to convey a successfully functioning EE as an adaptable network of nested sub-systems where diverse actors—for example, entrepreneurs, investors, service providers, and policymakers—with both common and heterogeneous goals and logics engage in cooperative interactions that foster mutual prosperity through service exchange. This process of exchange facilitates the co-creation of value beyond mere economic

outcomes to include social impact and community resilience.

6 Conclusion

6.1 Contributions to EE theory

A pressing issue within contemporary EE literature is the lesser studied question of how generative processes allow valuable outcomes to emerge (Autio, 2022; Colombelli et al., 2019). EEs are complex adaptive systems (Roundy et al., 2018) and it is beneficial to move from an excessive emphasis on structure to the subjective complexity of decision-makers (Barile et al., 2016). Specifically, Spigel and Harrison (2018, p. 165) emphasize the importance of understanding “how resources flow within the ecosystem” and “how they are produced by internal mechanisms,” while O’Shea et al. (2021, p1110) state that at the core of a process view of EEs is “the presence and circulation of resources.”

Our first contribution is a network-centric service ecosystems perspective (Vargo & Lusch, 2011) with foundations in S-D logic as a useful theoretical lens in explicating dynamic local processes (Malecki, 2018). Although the co-presence of functional resources in a specific locality is fundamental, they are not sufficient on their own (Motoyama and Knowlton, 2017; Pugh et al., 2018). Current theories appear to underplay the agency of a range of entrepreneurial actors and the relations between them as they create value via the effective use and integration of resources. We fill a critical void by incorporating a multi-level approach (the interactions of institutions at a macro-level, networks at the meso-and the micro-level behaviors of individuals) delving into the underlying mechanisms through a relational approach to value exchange (Muldoon et al., 2024).

Second, through decomposing the EE into overlapping domains of expertise encompassed under a common institutional organizing frame, we speak to recent work on nested sub-ecosystems (e.g., Malecki, 2018; Neumeyer et al., 2019; Neumeyer & Santos, 2018; Scott et al., 2022; Spigel, 2022; Vissa, 2011) through applying the concept of affinity frames that provide collective cohesion to domains vulnerable to fragmentation (Scheidgen, 2021). Boundaries within an EE are described as fluid and permeable

promoting spatial flexibility sparking institutional complementarities (Khurana and Dutta, 2023). Evidently, value co-creation also depends on the bringing together of such complementary services with affinity frames lowering the cost of coordination. Networks are not only the structure of relations between actors, heavily researched by previous literature, but also engines that allow the exchange of services to unfold. If too much divergence occurs then benefits can be lost (hence privately governed EEs represent a different construct than those that are public). In this way, arrangements could be described as loosely coupled generating a “broader learner interface” (Boschma, 2005, p. 66). These findings have the potential to allow for a dynamic identifiable cohesion that balances structure-agency concerns (Cao & Shi, 2021).

Third, we contribute a contingency perspective to the multi-actor nature of EEs. In their book *The Rainforest: The Secret to Building the Next Silicon Valley*, Hwang and Horowitz (2012) recognize the outsized attention entrepreneurs receive while other important actors that are driven by diverse motivations are often understudied. Although EEs have entrepreneurs at their core, there are a wide range of “entrepreneurial” actors who engage in the exchange of services in value-generating interactions. The involvement and elevated standings of these “new” actors embrace a distributed entrepreneurial agency approach (Jennings et al., 2013) that spreads action beyond the entrepreneur. This is achieved by taking exchange as a generic actor-to-actor process.

A S-D logic implies that entrepreneurial actors will determine their own idiosyncratic connotation of what is valuable for them through specific use encounters (Welter et al., 2018). Value becomes phenomenologically interpreted (Lusch & Vargo, 2014) and dependent upon each actor’s ability to couple with relevant networks through internal mining and external foraging, as well as their capacity for resource integration through their accompanying resourcefulness. S-D logic demonstrates “how” underlying strategic benefits and thus value are delivered (Spigel et al., 2020).

6.2 Contribution to S-D logic theory

S-D logic, through its broad applicability, is establishing itself as a general theory that transcends multiple fields of study. However, it remains absent

from the EE domain (Vargo et al., 2020). Entrepreneurs operate within constantly evolving and dynamic situations having to contend with large amounts of uncertainty through adaptation and learning. By applying S-D logic to EE thinking, and more specifically its cross-fertilization with an entrepreneurial network approach, we highlight the importance of pro-entrepreneurial institutions as a source of increasing system viability. As a mechanism for ecosystem governance, actors are coordinated by informal heuristics that create an entrepreneurial culture in ways that permit increased possibilities for mutual value co-creation. These interactions lead to the sculpting of a socio-spatial environment that is driven from the bottom-up, middle-through, and top-down, influencing institutional arrangements that help to affirm the main tenets of a S-D logic.

6.3 Contribution to practice

The main practical implication of our work underscores the importance of explicitly incorporating a multi-actor perspective into EE development. Policies and programs supporting entrepreneurial endeavors should be crafted with input from a diverse array of actors within the ecosystem. This entails engaging not only entrepreneurs but also investors, educators, policymakers, and support services in the formulation of policies and the design of the ecosystem. Likewise, relational processes—how these actors interact, exchange knowledge, and collaborate—are foundational to the ecosystem’s ability to adapt and sustain itself over time. While objective outcomes such as job creation, company growth rates, and investment levels are important indicators, it is the quality and depth of relationships that ensure these outcomes can be maintained and improved upon.

Efforts should be made to cultivate environments that encourage collaborative interactions among various actors within ecosystems. Innovation often emerges from complex interactions and the exchange of services among diverse participants. By prioritizing these dynamics, ecosystems can foster a more innovative and adaptable environment that leverages the collective assets and capabilities of its actors. Achieving this requires the establishment of enduring relationships characterized by shared values and long-term perspectives. It also entails creating platforms that facilitate dialogue,

exchange, and the co-creation of value, where the insights and experiences of all actors are both valued and integrated into the ongoing development of the ecosystem.

6.4 Limitations

This research has several limiting features. First, a pressing concern is to what extent we can accurately report on the structure of networks. Our selection of a sample of core actors was both practically and theoretically driven; however, this tradeoff between access, practicality, and scope of coverage meant that it was impossible to include all potentially relevant actors.

Relatedly, we were reliant on the respondent's ability to identify who their primary contacts were and the nature of their interactions. This places a heavy perceptual burden on the participant, influencing the validity of the results. Furthermore, we relied on the respondent's interpretation of these ties in an effort to gain a more expansive insight into the ecosystem's dynamics; and thus, a limitation is the accuracy of this subjective self-reporting. Some actors also had to represent the networks of a group (for example, the student surveyed was asked to represent the whole cohort of students in the ecosystem). This is a limitation as intra-group differences will exist with students interacting among themselves and with a variety of different actors, depending on their own circumstances.

Another limitation is the work's focus on one contextual setting and one specific type of EE (privately governed). We are cognizant that this inhibits our ability to generalize, yet this is of lesser concern as our ambition is to generate local knowledge that allows for more fine-grained and relational accounts that can develop new theoretical interpretations and enhance those already existing. Future research can generate further insights into how different types and locations of EEs can facilitate or impede the co-creation of value. Research could investigate the applicability of the proposed model in different types of ecosystems, for example, by exploring the role of digital technology in facilitating value exchange or examining the impact of external shocks (e.g., economic crises, pandemics) on the dynamics of value exchange within EEs.

6.5 Concluding remarks

Through perceiving the ecosystem as continuously emerging, entrepreneurial actors connect with wider networks and multiple actors within the system (Ibarra et al., 2005). Transcending beyond a manufacturing logic for command and control (Barile et al., 2016), actors through their adaptive behaviors and guided by inter-specialty coordinators have the power to govern their own value generating relationships through both seeking value propositions *from*, and exposing value propositions *to*, others. Through a paradigmatic shift, S-D logic examines "how" and "why" value processes unfold emphasizing constellations of resource-receiving, resource-integrating, and service-providing actors.

Compliance with Ethical Standards

Competing interests There are no competing interests as provided in the submission documentation.

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