

Exploring how different innovation ecosystems create shared value: insights from a multiple case study analysis

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Abstract

Purpose – Innovation ecosystems (IEs) have attracted the attention of policymakers and researchers because of their potential to positively affect territories, creating shared value. However, due to the fragmentation of IEs, how this happens in different IEs has been explored only partially. This research aims to bridge this gap, aiming to support policymakers in understanding how to foster shared value in diverse IEs.

Design/methodology/approach – The paper identifies, based on the literature, two “drivers of aggregation” of IE’s actors as key dimensions characterizing shared value in IEs, namely physical proximity and dominant issue. If these are combined, three archetypes emerge: Hub- and Chain-Driven, Place-Driven, Competence- and Issue-Driven IEs. Then, elements useful for understanding shared value creation in these archetypes are framed and studied in real cases.

Findings – Results reveal that aggregation drivers affect shared value creation, which differ among archetypes: in Competence- and Issue-Driven IEs alignment is challenged by the low physical proximity, which in Place-Driven IEs is high, but not enough to grant shared value; in Hub- and Chain-Driven IEs, the hub is the orchestrator, representing both a driver and a risk.

Originality/value – Differences in shared value creation processes relate to the set-up of the IE, which has relevant implications for policy definition. In Competence- and Issue-Driven IEs, policies at diverse levels align in funding and promoting the IE; in Place-Driven IEs, policies support anchors’ development on-site; in Hub- and Chain-Driven IEs, policies, sometimes absent, should foster partnerships for projects for the territory, IE’s enlargement and resilience.

Keywords Archetype, Innovation ecosystem, Multiple case study, Shared value, Typology

Paper type Research paper

1. Introduction

In recent years, innovation ecosystems (IEs) have emerged as a promising approach to tackle complex challenges (i.e. climate change and sustainable development), turbulence (i.e. innovations and technological changes) and unexpected events (i.e. pandemics and wars) that affect companies, public administration and the society at large (Florida *et al.*, 2016; Ramezani and Camarinha-Matos, 2019).

IEs are considered inherently capable of generating “*greater opportunities for innovation, sustainable project development, and economic development*” (Royo-Vela and Cueva-Lizama, 2022) for entire territories (Bevilacqua and Ou, 2018): they have the potential for creating highly distributed value (Adner, 2006; Khademi, 2020) and even shared value (Alberti and



Belfanti, 2019), which is intended as the simultaneous pursuit of socio-economic benefits for different stakeholders, fostered by managerial practices and public policies (Porter and Kramer, 2006, 2011; Kramer and Pfitzer, 2016).

The reason why IEs are considered capable of creating shared value (Gu *et al.*, 2021) is that they represent a “*cooperation environment surrounding the innovation activities of its co-evolving actors*” (Klimas and Czakon, 2022), that can jointly co-create and capture higher value than single entities (Adner, 2006), significantly contributing to the competitiveness and sustainability of territories.

Acknowledging these potentialities, in the last few years, policymakers have started focusing on defining policies capable of fostering the birth and growth of IEs as done in Canada with the Global Innovation Clusters [1] in UK Catapult Program [2] or in Italy with MIND (Milan Innovation District) [3].

However, designing policies capable of ensuring that the potentialities of IEs are actually translated into shared value is quite complex, because it requires understanding how IEs create value and how the shared value-creation process can be activated and sustained (Oskam *et al.*, 2021; Gu *et al.*, 2021).

So far, only a limited understanding of the shared value-creation processes in IEs has been achieved (Liu *et al.*, 2016; Alberti and Belfanti, 2019; Arena *et al.*, 2021). Prior studies have addressed the mechanisms and determinants of value creation in IEs (Ritala *et al.*, 2013; Khademi, 2020), their potentialities (Liu and Stephens, 2019; Oskam *et al.*, 2021) and some components of the process of shared value creation in IEs (Alberti and Belfanti, 2019; Arena *et al.*, 2021; Yang and Yan, 2020; Gu *et al.*, 2021).

However, prior research remains largely conceptual and fragmented (Liu and Stephens, 2019).

One reason for this fragmentation is that IEs are very heterogeneous (Ritala and Almanopoulou, 2017; Khademi, 2020): they can be hub-based realities (Adner, 2006; Adner and Kapoor, 2010) or decentralized and dynamic structures (Dedehayir *et al.*, 2015) and local ecosystems or global systems based on interactions in virtual spaces (Jelinek *et al.*, 2012). This heterogeneity is an obstacle to understanding shared value-creation processes (Ben Letaifa, 2014; Khademi, 2020) and, in turn, how public policies could support this process.

Moving from these considerations highlighting, on the one hand, the need for understanding shared value-creation processes in IEs to unlock their potentialities and, on the other hand, the fragmentation of the literature in this connection, this paper aims to answer three research questions: *What outputs in terms of shared value can IEs create? How can IEs achieve such outputs? Which IE’s actors are primarily involved in the shared value-creation process?*

To deal with the heterogeneity of IEs, different archetypes of IEs are individuated based on two dimensions that emerge as particularly relevant in the literature, as they affect IEs’ structures and value creation and capture mechanisms (Ritala *et al.*, 2013; Klimas and Czakon, 2022; Arena *et al.*, 2021). These dimensions refer to the two main drivers of actors’ aggregation in IEs: in fact, actors can aggregate leveraging on physical proximity or on the presence of a dominant issue.

Combining such drivers, three possible IE configurations emerge (“archetypes”): *Place-Driven IEs*, *Competence- and Issue-Driven IEs* and *Hub- and Chain-Driven IEs*. The main driver of aggregation in the first archetype is physical proximity, whereas in the second it is the presence of a dominant issue. Both these elements (physical proximity and a dominant issue) drive aggregation in the last one.

Thus, three cases of IEs, representative of these archetypes, are empirically analyzed, relying on an exploratory multiple-case study conducted at the IE level (Eisenhardt, 1989; Eisenhardt and Graebner, 2007; Yin, 2014). The analysis of the shared value-creation process focused on what is created, how and by whom, thus considering what Gomes *et al.* (2021) call a

“process view” and relying on the triangulation of ad hoc primary and secondary data, collected, coded and analyzed.

The empirical analysis confirms that shared value-creation processes in the three cases are different and suggests that such differences are informed by the characteristics of the specific IE archetype: *Competence- and Issue-Driven IEs* leverage the presence of a common issue and actors’ complementary capabilities to create shared value, which is hindered by misalignments caused by low physical proximity. Physical proximity *per se* cannot grant shared value creation, as emerges in *Place-Driven IEs*, where supporting the role of anchors is fundamental. Lastly, in *Hub- and Chain-Driven IEs*, the role of the hub as the orchestrator of the IE is so crucial that the strategy of the IE seems to overlap to the hub’s one.

In terms of contribution, these findings can be of significant relevance to policymakers, as diverse shared value creation processes require diverse public policies. In *Competence- and Issue-Driven IEs*, policies play a key role in promoting and sustaining the IE, through regulation and incentives at diverse levels (municipal, provincial, regional and national); policy support is important to overcome the obstacles arising from the lack of proximity that is critical, in particular, in the early stage of development of the IE. In *Place-Driven IEs*, policies are enablers of relationships and partnerships and are particularly relevant for supporting the development and reinforcement of the anchors that play a central role in the value-creation process.

Finally, the role of policies is weaker in *Hub- and Chain-Driven IEs*, where the coordinating environment is built around the hub. Here, policies can be synergic with the strategy of the hub and, in this case, they might foster shared value creation but are not strictly necessary for supporting it.

Further, from an academic perspective, with this paper, we contribute to the debate about value and shared value in IEs, which are discussed in the evolving stream of the literature focused on IE strategy, management, governance and policies supporting value creation (Gomes *et al.*, 2018, Gomes *et al.*, 2021; Arena *et al.*, 2021; Gu *et al.*, 2021).

Section 2 below deals with the state of the art on value creation, capture and shared value in IEs (section 2.1); from this analysis, three archetypes emerge (section 2.2), as well as the framework used (section 2.3). Section 3 illustrates the methodology adopted, while section 4 focuses on the results of the archetype analysis, which is discussed in section 5. Section 6 furnishes the concluding remarks.

2. Theoretical background

2.1 Value and shared value in IEs

As explained in the introduction, IEs aim at co-creating value through innovation (Gomes *et al.*, 2018) and are increasingly adopted to face complex challenges. IEs differ from other kinds of ecosystems, as they are a set of hierarchically independent actors, creating value without a technology platform set for coordination (Autio and Thomas, 2022).

“Value” in IEs is traditionally defined in terms of economic benefits created for – and captured by – companies that are part of the IE (i.e. profit for IEs hubs, components and complementors; Adner, 2006) and customers (available products and services). As such, value creation in IEs is defined as “*the collaborative processes and activities of creating value for customers*” (Ritala *et al.*, 2013, p. 248), while value capture in IEs “*refers to the individual firm-level actualised profit-taking; that is, how firms eventually pursue to reach their own competitive advantages and to reap related profits*” (Ritala *et al.*, 2013, p. 248).

The authors who studied value creation and capture at the IE level adopted a process logic (Reyvens *et al.*, 2016), individuating inputs, mechanisms and outputs. For instance, Reyvens *et al.* (2016) identified stakeholders, networks and their characteristics as key inputs affecting value creation and capture. They also defined some processes of value creation,

i.e. coordination, consultation, compromise and of value capture, i.e. anticipation, assessment and application (Reypens *et al.*, 2016). In doing this, Reypens *et al.* (2016) stressed that all the processes of value creation strongly require relationships among actors, which assume a physical or sectorial aggregation, to enable compromises and resource bundling.

Ritala *et al.* (2013) focused on the mechanisms of value creation in IEs in diverse lifecycle stages. In the birth phase, for instance, mechanisms aimed at facilitating the premises of value creation entail participating in industry conferences, supporting the birth of a consortium, crafting a common vision for the IE and structuring internal and external open innovation labs. In the maturity phase, mechanisms of value creation are aimed at maintaining it, through meetings and events for knowledge exchange, adopting standards and developing cooperation agreements (Ritala *et al.*, 2013). In general, the analysis of these mechanisms highlights how actors are required to aggregate physically or driven by common issues, sharing values and propositions.

Value creation and value capture in IEs are connected (Khademi, 2020) and, according to Khademi (2020) affected by actors, their relationships and interdependencies, actions and roles. To further clarify this, Khademi (2020) individuated the determinants of mechanisms for value creation and capture in ecosystems. Two of the determinants are actors' locations in ecosystem structures and the mutuality of intentions: this highlights that actors can be more or less physically close and/or share issues and intentions, which then affect value creation and capture. Other determinants are the role of actors and the type of interactions (Khademi, 2020): they highlight the relevance of individuating who creates and captures value. How this is done emerges as key, too, as other determinants relate to actors' logic of actions.

More recently, the literature has started broadening the definition of value concerning the one considered in the above contributions: in line with the Triple Bottom Line (TBL) approach, social and environmental impacts started to be considered in IEs, besides the economic ones. The TBL concept states that firms should be committed and measure not only the economic but also the social and environmental results, having in focus people, planet and profits (Miller, 2020). Moreover, in IEs, innovation-related benefits are individuated as key (Arena *et al.*, 2021) too.

Second, not only companies and customers, but also public actors, communities and territories that co-create value and benefit from it are in focus. This concept of value that entails the simultaneous pursuit of socio-economic benefits by and for multiple actors reflects the definition of shared value in IEs (Alberti and Belfanti, 2019; Arena *et al.*, 2021; Royo-Vela and Cuevas-Lizama, 2022), which is defined as capable of enhancing "*the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates*" (Porter and Kramer, 2011, p. 66), through properly set policies and practices. The domain of benefits generated by policies and practices fostering shared value can even extend to economic, social and environmental ones, in line with the TBL framework. Therefore, shared value creation can aim at reaching TBL objectives, thus benefitting companies and multiple stakeholders.

In IEs, the shared value-creation process has been studied only to a limited extent. Alberti and Belfanti (2019) demonstrated through real-case applications that shared value is created in clusters if the suggestions of Kramer and Pfizer (2016) are followed: a common agenda, a backbone structure, mutually reinforcing activities, a shared measurement system and constant communication. Structuring such elements in ecosystems can be favored by the aggregation of actors in a common location or around a core issue.

Royo-Vela and Cuevas Lizama (2022) observed that shared value can be created through the relationships among companies and other actors: companies co-create value with these entities, benefitting themselves and the actors comprising the ecosystem by reaching TBL outputs. Indeed, an IE is comprised of independent actors who are the constituent nodes of the IE itself: they have diverse characteristics, needs, resources and capabilities and aggregate in

an IE becoming interdependent but remaining independent (Ritala and Almanopoulou, 2017; Jacobides *et al.*, 2018). Flows and relationships among actors are fundamental in this connection: relations in IEs support sharing resources, key for creating sustainable innovations and win-win solutions, thus enhancing shared value (Royo-Vela and Cuevas Lizama, 2022). Further, Arena *et al.* (2021) highlighted the role of actors and their relationships in their conceptualization of the shared value-creation process in IEs. They framed the building blocks of this process in terms of inputs (IEs' actors, relationships, governance and structures), strategies (alignment and cooperation), mechanisms, TBL and innovation outputs. Arena *et al.* (2021) showed that a few identified characteristics of IEs affect strategies, mechanisms and outputs.

However, they do not provide empirical evidence on that, inviting future research to study shared value creation in different configurations.

In summary, this overview allows identifying three main results that inform the development of the research framework.

First, actors' aggregation emerges as a key factor for understanding value creation and capture in IE and, even more, for uncovering shared value in them (Ritala *et al.*, 2013; Reypens *et al.*, 2016; Arena *et al.*, 2021).

Second, actors can aggregate in diverse ways: physically (sharing the same physical location) or virtually (driven by common issues). These insights guide the identification of archetypes (section 2.2.), which are useful to structure the analysis of shared value in diverse IE configurations.

Third, shared value in IEs can be analyzed through a process logic (Reypens *et al.*, 2016; Arena *et al.*, 2021; Gomes *et al.*, 2021) by individuating what is created, how and by whom. These insights inform the theoretical framework (section 2.3).

2.2 IEs' archetypes

As emerged in section 2.1, how actors aggregate in IEs is a fundamental driver for creating shared value, as it grants those relations that sustain cooperation, resource exchange and co-creation (Royo-Vela and Cuevas Lizama, 2022). The reviewed literature shows that actors can aggregate in IEs in two main ways: physically, as they co-locate (i.e. when IEs emerge in entrepreneurial, industrial or urban ecosystems; Autio and Thomas, 2022), and/or virtually, as they are driven by common issues.

Starting from *physical proximity*, prior research highlights that living the same spaces, having access to shared resources, relating with the same stakeholders allow actors to get in contact, contaminate each other, build collaborative relationships and exploit their localization and connection with the territory to generate shared value (Boschma, 2005; Rissola *et al.*, 2017). Indeed, high-physical proximity supports spatially concentrated actors to interact and exchange knowledge. Moreover, geographical aggregation is capable of driving innovation and change, enhancing attraction, information and interaction (Dos Santos Silvestre and Tavares Dalcol, 2009).

Not only physical proximity can be an aggregation driver, but actors in IEs can also aggregate driven by a common issue (mobility, health, energy, telecommunication, etc. Liu *et al.*, 2016; Huang *et al.*, 2019; Rohrbeck *et al.*, 2009). Herein this second aggregation driver is intended in terms of commonalities of challenges that actors participating in the IE aim to address (Jüttig, 2020). This reflects in the bundle of competences of these actors (Linde *et al.*, 2021). The literature provides several examples of IEs that focus on peculiar issues, as mobility (Huang *et al.*, 2019), complex product systems (Liu *et al.*, 2016), copper production (Dedehayir and Seppänen, 2015) or 3D printing (Xu *et al.*, 2018). In these cases, actors aggregate with the aim of bundling the core competences needed to be competitive in the given sector, as they face a specific challenge.

The two aforesaid aggregation drivers can also coexist, leading to three main IE archetypes (see Table 1) that can be seen as *emblematic configurations of IEs driven by diverse aggregation levers and, therefore, expected to be characterized by different shared value creation modalities*.

- (1) **COMPETENCE and ISSUE-DRIVEN IEs:** they are characterized by dispersed actors which are the nodes of a system driven by a core issue or by key competences spread through specific technological areas.
- (2) **PLACE-DRIVEN IEs:** they have a place-based structure strongly connected to the territory where the IE is set and focused on different sectors that are relevant at the local level. They are characterized by the presence of heterogeneous and diversified actors that coexist in a system with well-defined “geographical” boundaries. Some anchors can be identified as co-localized key initial conveyors of the IE.
- (3) **HUB and CHAIN-DRIVEN IEs:** they are characterized by a place-based structure and focus on one theme/challenge, with a limited number of actors which are usually centered on a hub – a public or private entity around which the IE develops – and well overlapped with its value and supply chains.

2.3 Research framework

In this section, we identify the variables that will guide the analysis of shared value creation in the three individuated archetypes.

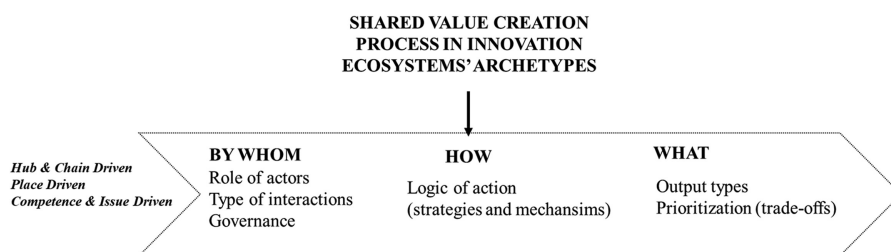
As mentioned in section 2.1, a process logic is adopted (Reypens *et al.*, 2016; Arena *et al.*, 2021); therefore, the focus will be on *what is eventually created, how and by whom* (Figure 1).

First: what is eventually created? This refers to the generated “output” and entails the understanding of what kind of benefits are created, which can be economic, social, environmental and innovation related (Lopes and Farinha, 2018; Audretsch *et al.*, 2019; Arena *et al.*, 2021). Second, uncovering the generated “output” requires understanding to what

| Aggregation drivers | | IE archetype |
|-----------------------|--------------------------|---|
| Physical proximity | Dominant issue | |
| NO (IE dispersed) | YES (one dominant issue) | <i>Competence & Issue-Driven IE</i> |
| YES (IE co-localized) | NO (different issues) | <i>Place-Driven IE</i> |
| YES (IE co-localized) | YES (one dominant issue) | <i>Hub & Chain-Driven IE</i> |

Source(s): Authors' own creation

Table 1. Innovation ecosystem archetypes identified by considering the two main aggregation drivers: physical proximity and dominant issue



Source(s): Author's own creation

Figure 1. The research framework: following a process-based logic, shared value creation in IEs is studied, considering three IEs configurations (archetypes): Hub- and Chain-Driven, Place-Driven, Competence- and Issue-Driven IEs

extent the IE has been successful in terms of intensity (Surie, 2017), resilience (Fukuda, 2020) and rapidity (Liu *et al.*, 2016) in creating shared value.

Analyzing *how shared value is created* requires addressing the logic of action (Khademi, 2020) in terms of type of strategies (alignment and cooperation; Arena *et al.*, 2021) leveraged in the process. Internal alignment occurs among IE members when they share objectives, goals and roadmaps, while external alignment enhances viability between the IE and the outer levels (Walrave *et al.*, 2018). IE strategies for shared value creation are also characterized by cooperation (Nalebuff and Brandenburger, 1997): this entails the co-existence of competition and collaboration among the independent actors of the system. How actors align and cooperate can affect shared value creation and support reaching overarching goals and value propositions (Lopes and Farinha, 2018), avoiding lock-ins (Ben Letaifa and Rabeau, 2013) and misalignments (Dittrich *et al.*, 2015) and enhancing knowledge exchange and generation.

Uncovering *who creates value in the IEs* requires defining the role of actors and the types of interactions in place (Khademi, 2020). To do so, the mix of actors, their relationships and governance structure (Arena *et al.*, 2021; Remneland Wikhamn and Styre, 2022) need to be uncovered. Actors in IEs differ in type, size, number and proximity (Ben Letaifa and Rabeau, 2013; Khademi, 2020). Relationships among actors can be analyzed considering the type of resources flowing and their strategic level, intensity and direction. Indeed, relationships among actors at diverse levels of the structure (Jacobides *et al.*, 2018) support sharing of material, money, data, information and knowledge (Valkokari *et al.*, 2017; Xu *et al.*, 2018; Knockaert *et al.*, 2019). The presence of stable relationships among actors favors the creation and the exploitation of synergies that enrich the bundle of available resources and support the IE in creating value. Lastly, decision principles, institutions and regulations (here referred to as “governance”) are key factors for an IE to be successful - i.e. to create shared value (Granstrand and Holgersson, 2020).

3. Multiple case study analysis

In the light of the proposed framework, the shared value creation process is here analyzed through a multiple case study (Eisenhardt, 1989; Siggelkow, 2007; Eisenhardt and Graebner, 2007; Yin, 2014), which is adopted as methodology as it well applies to answer broad research questions (Eisenhardt and Graebner, 2007; Yin, 2014) as those posed here; also it fits complex, and not yet fully defined concepts, as shared value creation in IE still is (Arena *et al.*, 2021). Applying this methodology inserts well in the current studies on value creation in IEs too: the literature suggests completing research in this field with empirics from multiple realities (Ritala *et al.*, 2013; Arena *et al.*, 2021; Klimas and Czakon, 2022).

The analysis has been conducted at an ecosystem level in an exploratory way, keeping a recursive approach (Curtis *et al.*, 2000; Draucker *et al.*, 2007): we have often iterated between findings and literature, performing data collection and analysis in a partially overlapped way (Figure 2).

As follows, more details on case selection and case setting (section 3.1), data collection and analysis (section 3.2) are provided.

3.1 Case selection and setting

Three cases (here called 1, 2 and 3) have been selected, one per archetype, through theoretical sampling (Eisenhardt and Graebner, 2007; Ligita *et al.*, 2019) to fit at best the archetypes (see Table 2). Each case is selected due to its representativeness (Siggelkow, 2007), thus following intensity sampling (Draucker *et al.*, 2007): they are illustrative of the issue under analysis (they are IEs aiming at creating shared value and pertaining to different archetypes) and rich in data.

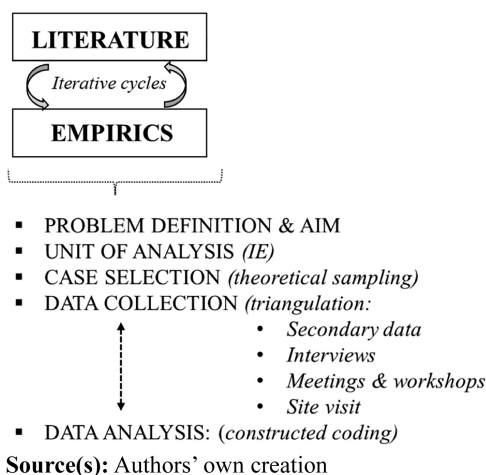


Figure 2. Research design: the multiple case study analysis

| | Aggregation driver | Case and archetype |
|--|---|--|
| Physical proximity | Dominant issue | |
| NO: low physical proximity (diffused IE) | YES: one dominant (artificial intelligence in the supply chain) | CASE 1 <i>Competence & Issue-Driven IE</i> |
| YES: high physical proximity (place-based IE) | NO: multiple themes and issues | CASE 2 <i>Place-Driven IE</i> |
| YES: high physical proximity (place-based IE) | YES: one dominant (measurement systems adopted in automotive, electric appliances . . .) | CASE 3 <i>Hub & Chain-Driven IE</i> |
| Source(s): Authors' own creation | | |

Table 2. Aggregation drivers in the three cases and related archetypes

Specifically, Case 1 is a *Competence- and Issue-Driven IE*. Born in 2017 in North America, thanks to funds provided by the Government (more than US\$200m from the National Government and US\$50m from the Province Authority) and then complemented by private ones (almost doubling the amount) (Case 1 official website); this IE is centered around a common issue: overcoming the misalignment between basic research and commercialization of innovation in the field of artificial intelligence (AI).

The IE was born as a “business led consortium” (IE official website), whose members are now more than 100 and are diverse in terms of typology, location and size. Therefore, actors are heterogeneous and located in diverse cities, provinces and regions.

Case 2 is a *Place-Driven IE*. This IE emerged as an evolution of an urban redevelopment project initiated in 2015 close to a big European city after it hosted an international event. When the event ended, attention was put on not abandoning its heritage, regenerating the entire area in a definitive way. Thus, the idea of building an IE there came top-down: a dedicated public entity was established to manage the development of the ecosystem, and the National Government funded a research center on site with about 140m € per year. Then, it selected a private real estate company in charge of the market risk, while the public entity kept on dealing

with the administrative and bureaucratic processes and land regeneration risks. Now, the IE is populated by the public entity managing the process, the real estate company, a foundation, the on-site research center, a hospital and a university (expected to move a campus there). A private investment of 2.4bn € is contributing to the development of the IE and numerous events have started to be held on site (Case 2 website). The IE is characterized by high-physical proximity among very heterogeneous actors spread in different sectors: at least 11 diverse themes can be identified (from life sciences to mobility, from circular economy to fintech).

Last, Case 3 is a *Hub and Chain-Driven* IE characterized by both physical proximity and the presence of a dominant issue, which is the production of monitoring systems for companies active in high tech niches in healthcare, automotive, electrical appliance, aerospace and energy. The IE is now mature: it was born 50 years ago, thanks to the hub firm's entrepreneur who started working as an artisan in the electrical appliance sector to then grow an ecosystem leveraging on his own knowhow, as well as on a trusted network of clients and collaborators. Due to the artisanal and rural origins of the entrepreneur, the hub driving the IE has always associated its success with the well-being of the territory. Thus, the IE is described as *"open, vibrant, and family based. A school of competences for students, clients, suppliers, that generates richness reinvesting its profits to the territory"* [hub company website].

3.2 Data collection and analysis

The cases have been analyzed by keeping the IE as unit of analysis and triangulating secondary and primary data (Yin, 2014): a structured database was created, containing notes, documental analysis, tables for organizing interviews and validations.

First, a structured desk analysis of secondary data was performed, collecting them from the IEs' websites, the websites of main entities composing the IEs, their annual and/or sustainability reports, strategic plans and presentations. Lastly, starting from the social media channels of the IEs or of their main entities as well as from press releases and news, articles related to the ecosystems were collected and analyzed. Site visits (for Case 2 and 3) and workshops (with representatives of Case 2) helped enhancing the knowledge on the cases. During these events and during interviews, not-publicly available secondary data could be retrieved (as presentations, reports, etc.).

Primary data were collected through semi-structured interviews done face to face, by phone-calls or online. Per each case, highly knowledgeable informants have been individuated among representatives of core ecosystem's entities (Eisenhardt and Graebner, 2007). Selected informants cover key roles in the IEs: for instance, innovation fund managers, human resource (HR) and business unit managers of the hub firm were interviewed for Case 3, which is strongly hub centered. Representatives of key actors and anchors of Case 2 have been interviewed, as the President of the Advisory Board of the IE, the Director EMEA (Europe, Middle East and Africa) of the real estate managing the area, the President of the on-site research center, the COO (Chief Operating Officer), the previous CEO (Chief Executive Officer) and Communication Manager of the public entity managing the area. Lastly, concerning Case 1, representatives of the IE and of its diverse actors' typologies were selected, as the IE's Interim CEO, managers of key firms in the ecosystem and the former National Director of Policy, who dealt with the IE's launch.

Then, this panel of informants has been enriched with expert collaborators of the IEs (as university professors and research coordinators, consultants, Government delegate that dealt with the IE funding, etc.), as it was perceived that including these knowledgeable actors would have brought value to the research. Overall, 28 interviews (of 30–120 min length) were conducted (see Table 3).

Informants were provided with an interview guideline beforehand (see Appendix), enriched during the analysis and adapted to each informant. Questions aimed at collecting

| Case | Informant | Type | Duration |
|------|---|-------|----------|
| 3 | SITE VISIT | F2F | All day |
| 3 | Innovation Fund Manager at the IE's hub | Skype | 50 min |
| 3 | Innovation Fund Manager at the IE's hub | F2F | 120 min |
| 3 | Business Unit Manager at the IE's hub | F2F | 32 min |
| 3 | HR Manager at the IE's hub | F2F | 60 min |
| 3 | <i>ADDED INFORMANT: Expert Collaborator of the IE</i> | Skype | 53 min |
| 2 | ALL DAY WORKSHOP | F2F | All day |
| 2 | ALL DAY WORKSHOP + site visit | F2F | All day |
| 2 | Director EMEA - real estate company managing the IE's area | F2F | 60 min |
| 2 | President of a Scientific Committee for Social Innovation involved in the IE | F2F | 60 min |
| 2 | | Teams | 30 min |
| 2 | President of the Advisory Board of the IE | Skype | 30 min |
| 2 | Former CEO of a public entity managing the area | F2F | 46 min |
| 2 | President of the research center on site | Skype | 39 min |
| 2 | CEO of a Hospital and Research Institute on site | F2F | 44 min |
| 2 | Scientific Director of the Hospital on site | F2F | 44 min |
| 2 | Communication and Marketing Manager of the IE | Teams | 45 min |
| 2 | Director of the public entity managing the area | F2F | 80 min |
| 2 | COO of the public entity managing the area | F2F | 80 min |
| 2 | <i>ADDED INFORMANT: Former government delegate involved in the IE funding</i> | Skype | 35 min |
| 2 | <i>ADDED INFORMANT: Funding partner and CEO of a collaborating consulting firm</i> | F2F | 45 min |
| 2 | <i>ADDED INFORMANT: Funding partner and director of research of a consulting firm</i> | F2F | 55 min |
| 2 | <i>ADDED INFORMANT: University professor – former rector (expert of the IE)</i> | F2F | 60 min |
| 1 | Interim CEO of the IE | F2F | 45 min |
| 1 | Engineering Director of Research at a University part of the IE | Teams | 40 min |
| 1 | Project Manager at a member of the IE | Call | 35 min |
| 1 | Human Factors and Cognitive Engineering Specialist at a member company | Webex | 60 min |
| 1 | Project Manager at a member of the IE | Teams | 60 min |
| 1 | Former national director of Policy – CEO of a member company | Meet | 60 min |
| 1 | <i>ADDED INFORMANT: Research coordinator (expert of the IE)</i> | Teams | 45 min |
| 1 | <i>ADDED INFORMANT: University professor (expert of IEs)</i> | Phone | 30 min |

Note(s): Additional informants included during data collection are inserted in italics, at the end of the informants list per each case

Source(s): Authors' own creation

Table 3.
Details on the performed interviews, site visits and workshops

data on the IEs' main characteristics, performance drivers and value creation and capture mechanisms, policies enacted to support shared value. Then, further questions were included to better specify some interesting aspects, such as actors' roles and shared value strategies. Data collection and refinement have been conducted partly in parallel with data analysis (Eisenhardt, 1989) in a recursive cycling.

Interviews were recorded, transcribed verbatim and analyzed manually through constructed coding (Strauss *et al.*, 1998). This procedure has been recursive: codes were identified and uniquely assigned to sub-categories, categories and themes recognized as relevant in the conceptual framework (and, thus, in literature). The coding process adopted categories referred to the introduced research framework and aims: IE archetypes, shared value process and policies (see Table A1). Categories used for connoting the IEs' archetypes include the "aggregation drivers" (physical proximity issues). The ones for shared value creation process include what is created (objectives and performances), how (strategies of co-opetition and alignment) and by whom (actors creating value, governance and relationships). Categories related to the "Policy" theme refer to type and role of policies.

This structured process helped supporting the exploration of shared value processes in the three cases and codes then emerged inductively. After the interview transcription and during analysis, a report was submitted to informants for validation.

4. Exploration of archetypes: real case evidence

The three cases are analyzed here in line with the research framework introduced in [section 2.3: sections 4.1, 4.2 and 4.3](#) focus, respectively, on *what is eventually created, how* and *by whom* in the three cases representing the three specific archetypes (see [Table 4](#) for a synthesis of the results). Lastly, [section 4.4](#) structures the findings related to policies defined in each archetype, thus introducing the main implication of the work, which is further discussed in [section 5](#).

4.1 What is created

4.1.1 Shared value outputs. As stated on the official website of Case 1, the outputs generated by this IE pertain to the economic, social and innovation spheres. Concerning economic outputs, the IE aims at increasing its country's gross domestic product (GDP) by US\$16.5bn by 2028, at supporting companies' revenues growth (of 2–5%) and cost reduction (i.e. 10–20% reduction of manufacturing, warehousing and distribution costs) (Case 1 Strategic Plan; Case 1 Annual Report, 2021–2022). Concerning the social sphere, the focus is on employment (increasing jobs of 16,000 units by 2028), in particular, on creating highly skilled jobs. Further, the innovation sphere emerges as key, as the IE aims at “*leading the world in AI adoption and innovation*” (Case 1 official website): almost 400 intellectual property (IP) assets will be generated by March 2023 (Case 1 Annual Report, 2021–2022).

Due to the large number and dispersion of actors, to track each project's progress, project partners are required by specific policies to implement *ad hoc* measurement systems; this can inform the publicly communicated impacts. For instance, they “*need to indicate the number of IP elements, [...] the number of partnerships created [...] revenue generation*” [Project Manager]. Sometimes, the required measurements are complex to fill in and usually not aligned with companies' internal ones, thus being difficult to integrate: as indicated by one of the interviewed project managers, the measurements required by the IE do “*not integrate seamlessly with our internal company reporting system [...]*” [Project Manager].

Further, as actors are so numerous, dispersed and independent, prioritization and alignment of objectives are particularly complex. As an example, while research centers and academics are more interested in the innovation sphere, companies and small and medium-sized enterprises (SMEs) focus on the social and economic ones (e.g. on having fast returns on their investments). On the other hand, the Government is mostly focused on GDP growth and on the increase in employment.

Case 2 aims to benefit investors, private firms and the other actors involved (i.e. local communities, non-profit organizations (NGOs) [...]) simultaneously. This is confirmed by the COO of the public entity managing the area, who said: “*what we are trying to do here is fostering shared value [...] being able to develop an ecosystem capable of creating value for the socio-economic system of the entire territory.*”

Therefore, the value created in Case 2 pertains to different spheres (economic, social, environmental and innovation), that present possible synergies, which are enhanced by the localization of actors (the driver of this archetype). For instance, sustainable mobility, green areas and smart buildings planned to be located in the district will not only positively affect the local environment (i.e. emission reduction), but also the local economy and the social sphere, in terms of jobs created and the well-being of local communities.

Indicators pertaining to the output spheres are tracked in terms of jobs created and training hours, funds raised, events held on-site, CO2 emissions, innovative products, patents

| | Case 1 | Case 2 | Case 3 |
|-----------------------------|--|---|--|
| <i>WHAT is created</i> | | | |
| Output sphere | Different output spheres are in focus; members are required to monitor specific indicators at project level | Different output spheres in focus (importance of the social one). A performance measurement system will stress the relevance of the “joint” results | Social, economic, innovation and environmental impacts generated and partially monitored by the hub Economic returns necessary to reinvest for having the other ones Rapidly is particularly key |
| Performance | Intensity is fostered by the width of the IE and the nature of actors | Resilience is in focus in the design of the IE | |
| <i>HOW value is created</i> | | | |
| Cooperation | Collaboration at project level, supported by formal mechanisms (i.e. IP rules) | Anchors are not competitors. Other actors may be also competitors and their collaboration in the same place might open opportunities | Collaboration and openness are values of the actors in the IE |
| Alignment | Internal alignment at project level. Formal procedures are necessary to grant it at IE level. External viability supported by the width of the structure | Internal alignment supported by the anchors and the physical proximity. External viability strengthened by the type and role of anchors | Internal alignment strengthened by the presence of the hub and the internal coherence of actors |
| <i>WHO creates value</i> | | | |
| Actors | Dispersed and diverse: mainly companies of diverse sizes (from multinationals to start-ups) | Very diverse anchors: hospital, research center, private multinational, public entity, university | Private hub firm + its components, complementors and clients |
| Relationships | Relationships strengthened at project level. Difficult to be identified and maintained at IE level Tangible and intangible resources shared at project level, with care | Both internal and external, strengthened by the anchors. Spaces and intangible resources shared (rational openness) | Mainly internal, stemming from the hub and client and then among all IE actors Tangible and intangible resources shared |
| Governance | Top-down mandate and bottom-up development Independent industry led consortium | Top-down mandate (with independence of the tops) and bottom-up future development Multi-layered governance structure | Hub's centrality and bottom – up development Governance structure overlapped with the hub |
| <i>Policies</i> | | | |
| Role | Key role in promoting, funding, designing the IE | Important in promoting PPPs and enabling some anchors' roles | Policy gap at national and local level |
| Type | Incentives and funds Regulations Consistency at diverse levels | Funding Regulations ad – hoc Incentives for research (at diverse levels) | Incentives and funds (especially for research at international level) |

Source(s): Author's own creation

Table 4.
A synthesis of the emerging results related to shared value-creation process in the studied cases

and spin-offs (Internal Report). This requires a big effort: in the words of the consultant helping the IE in building its monitoring system: *“we are co-designing KPIs at this point. We started from a very sophisticated framework [. . .]: this is a balancing exercise”* between acceptance of the monitoring control system and its completeness. *“The more sophisticated thing they would like to implement is the monitoring of the joint stuff,”* i.e. joint patents, labs, spin-offs, etc., thus keeping a system level of analysis. This requires continuous communication among the actors involved, especially the anchors. The high proximity among them helps in this consultation process, which is nudged by policies set up to support them.

In the face of this complexity, despite the attempt at reaching hybrid value, informants show that possible trade-offs emerge, for instance, between social and economic results, i.e. training workers, launching projects aimed at fostering social inclusion (involving convicts in activities on site, etc.) imply costs and investments that may not have fast returns.

In Case 3, clearly located in a territory and focused on a specific sector, value is more straightforward to be understood and monitored: it is primarily created for the IE's clients, in terms of effectiveness in delivering the required products and services. Informants stressed that the selected clients are usually top *niche* players, and they are so relevant that, in the words of the Innovation Fund Manager, *“our guideline is: follow the customer. Therefore, [. . .] the client represents the key to our evolution.”* As clients are very relevant, the ecosystem strongly involves them in value creation processes: they are *“in the middle of the production process. We reach them, know them and start building relations of sharing that then become projects”* [Innovation Fund Manager].

Value is also created for the IE's hub and traced with metrics of profitability and liquidity, social inclusion, employment training and environmental benefits generated by monitoring the number of jobs created locally, local students trained, projects conducted for the territory, number of visitors, number of patents and academic research published (Hub's Sustainability Report).

The presence of the hub in this archetype affects output definition and monitoring: the IE's hub deals not only with the monitoring system, but also with the definition of the IE's shared value creation process. Consequently, the economic sphere, the most relevant for the hub, has a primary role. In the words of an expert collaborator of the IE, without sound financial statements (a solid balance sheet, positive cash flows and profits) and customer satisfaction, reinvestments in social and environmental projects are not feasible: *“therefore, everything comes back to the economic sustainability of the enterprise.”*

Further, local communities benefit from the value created by the ecosystem: for instance, some projects are executed by private ecosystem actors in partnership with public ones and communities to reduce local energy consumption (i.e. development of smart grids and renewables), support education and training for locals, as well as nurture the cultural heritage by renovating local sites of interest. In the words of the Innovation Fund Manager, *“we are a bit taking care of this physical territory [. . .], to enable (people) enjoying it”*. Indeed, the territory is defined as *“the real shareholder”* of the system, whose aim is to *“leave the territory a bit better than how we found it”* [Innovation Fund Manager]. Therefore, despite emerging trade-offs, the aim is to create societal and environmental benefits with economic ones, *“giving back to the territory [. . .] (as) the Porterian Shared Value”* [Expert Collaborator of the IE].

In all the analyzed cases, key performance indicators (KPIs) related to the identified spheres are in focus and monitored, but differences in terms of prioritization emerge as linked to the set-up of the ecosystem: the more dispersed and numerous the actors involved, the more difficult prioritizing and aligning objectives. In all the cases, having a monitoring system in place emerges as crucial, as it strengthens the common agenda and shows whether the IE is proceeding in the desired direction. The role of the monitoring system in this connection appears as archetype specific: the aggregation drivers in place, indeed, not only affect the

definition of KPIs, but also their monitoring opportunities and risks. While in Case 1, consultations for designing monitoring systems are too complex and not performed, resulting in monitoring systems that are not fully integrated, in Case 2, where actors are closer and there are anchors, consultations are made with them to define an advanced monitoring system. Lastly, in Case 3, the role of the hub emerges as crucial in this connection: it can play a central role thanks to the physical and sectorial aggregation of actors.

4.1.2 Performance: resilience, intensity and rapidity. The complexity and dispersion characterizing Case 1 hinder its resilience: to favor it, informants suggest funding projects with longer-term views than the ones currently in place (one-year duration): “*maybe making projects a bit larger, with go/no go phases, with some secure approval for longer projects is something that may comfort all the partners*” [Human Factors and Cognitive Engineering Specialist].

Conversely, the dispersion and heterogeneity of actors are expected to support the intensity of value creation, by affecting the entire country’s competitiveness, GDP growth and the export of AI-related technologies (Case 1 Strategic Plan; Case 1 Annual Report, 2021–2022).

Concerning Case 2, to achieve the expected long-term impacts and manage the emerging trade-offs, resilience becomes fundamental, as it enables having the long-term view necessary for realizing the awaited benefits for the territory (Case 2 website). Resilience is in this case achieved by the anchors who select talented and coherent actors, as “*the same actors bring quality[. . .]. The better a project is made, the higher the capability for absorbing undesired shocks. And then this depends on every single actor: if they have a good plan, they are capable of resisting to shocks*” [President of the on-site research center].

Lastly, in Case 3, in line with the importance of sustaining economic returns for the hub and the clients, speed in reacting to clients’ needs is deemed as key. This introduces a possible trade-off between short- and long-term results, the former fundamental for the hub’s financial health and the latter for social and environmental returns.

This analysis pinpoints that there is no “optimal” IE archetype for creating shared value: they can all reach some shared value outputs and display diverse performances in terms of rapidity vs resilience (for instance). No archetype can be thus seen as the best in class under all the performance criteria (intensity, resilience and rapidity), which appear to be archetype driven.

4.2 How shared value is created: strategies of coopetition and alignment

4.2.1 Collaboration and coopetition. In Case 1, it is difficult to reach collaboration, mainly due to the dispersion of actors. Indeed, synergies usually brought by agglomerations cannot be leveraged in this case and, instead, huge efforts are required to grant collaboration. In the words of an expert collaborator of the IE, “*you were talking about proximity and that’s a real issue. I mean, they have set the (IE) up to cover a very broad territory,*” which challenges collaboration.

Specifically, members and partners collaborate with each other only when interacting on the same IE-related project, as confirmed by the interviewed project managers. In their words, projects are perceived as a “*safe environment,*” since they are not composed by competitors, but instead are there in the IEs (which indeed has a dominant issue in focus). Thus, intra-project collaboration is much more developed than inter-project collaboration.

In Case 2, collaboration is granted by the anchors, who are not competitors, as they belong to very diverse sectors and do not have conflicting aims. Collaborating for nurturing the ecosystem since the beginning, some of them “*have been prone to make all the necessary meetings to show their intention to collaborate*” [Scientific Director], believing the IE could be leveraged to create value through new synergies. The hospital, for instance, benefits from

being close to the university, the research center and companies operating in the life-science sector, as *“being in an area where there can be advantages of collaboration with other entities and the university is more than being in the city center”* [Scientific Director]. This proves the relevance of collaboration nurtured by proximity for these actors. Leveraging the positive attitude toward collaboration of some anchors (like the hospital) was vital to spread this attitude among those anchors, whose attitude toward collaboration has not been visible since the beginning (there have been *“2 years of siloed relationships”* [Consultant collaborating with the IE] among some of them).

The other actors *“cooperate to compete”* [Partner of a collaborating consulting firm]: *“clearly, inside a working ecosystem, there is also some competition, not among anchors, but among secondary actors”* [Director of the on-site research center]. For instance, there are 10 members, so far, focusing on life sciences and healthcare: 2 of them are multinational pharma companies that are competitors when outside the IE realm (Case 2 official website). However, when co-localized in the same place-based ecosystem, they collaborate on specific projects, sharing spaces, resources and partners. Collaborating with competitors requires proper management of knowledge and data as well as their careful sharing (Case 2 official website). Therefore, consultants collaborating with the IE had *“the idea of building a rational model of open innovation, in which there is a solid legal structure – of IP protection – that protects your interests even in a context where you also have competitors around the table”*. Resources and spaces might be pooled, too, to test new business models that companies alone could not have experimented on (as emerged during the workshops): *“this is a sociological experiment: putting together very diverse actors and making them collaborate”* [Director of the on-site research center]. As competitors also collaborate, new value creation opportunities arise from these synergies.

In Case 3, thanks to the centrality and strength of the hub, *“(the IE) is characterized by collaborators that have a collaboration level above the average”* [HR manager].

Collaborators are carefully selected by the hub, belong to the same supply-chain and have common values and approaches (open and sustainable). They are of very high quality and feature an open and dynamic attitude (HR manager); they share open spaces, which support connections even further (Case 3 hub’s website): collaborators, suppliers, partners and customers all work together on specific projects in dedicated areas (known as *“cloisters”*), to be aligned and updated timely on the projects’ progress as explained by the hub managers.

4.2.2 Alignment. The difficulties in collaboration highlighted in Case 1 mainly due to the dispersion of actors emerge when focusing on internal alignment too: intra-project alignment is favored by the project management teams that set-up clear roadmaps, agendas and expected outputs (IE’s Annual Report, 2021–2022); conversely, inter-project alignment at IE level is weaker, since there is no clear communication among the entities spread in the IE: this remains *“a big deal”* [CEO of a member company].

Conversely, external viability is high, thanks to the nature of the IE: its governmental mandate, large size, and the heterogeneity of actors support connections with outer levels, involved *“to try to build the networks that exist beyond the local strengths”* [CEO of an IE’s member].

In Case 2, for enhancing alignment, the drafting of a common agenda has started with the help of future members since the birth of the ecosystem (as explained and done during workshops), as *“in an ecosystem, all parts are very diverse, but they should have a common goal [. . .], egoistically interested in the success of others”* [President of the on-site research center].

Moreover, the design of spaces turns out to be fundamental for alignment in this localized ecosystem: all the ground floors of buildings in the IE’s area will be available to the public to host exhibitions, meetings, etc. (Case 2 Master Plan and Case History, 2019): *“this public function of spaces is a new social model, and it is a model that can really create the conditions to build new communities”* [Previous CEO of the public entity].

Connections with external actors are strong, too, reinforced by the type of anchors (i.e. hospital, university, research center, etc.) and the public–private partnership (PPP) among the promoters of the ecosystem.

These connections with public institutions are granted, *inter alia*, by the involvement of public entities in managing the area: “*we have the central government, the regional government, the municipality*” [former CEO of the public entity managing the area].

In Case 3, internal alignment is strong, as the core hub’s strategy overlaps with the IE’s, and this helps to avoid possible mission drifts: the hub defines a clear mission, vision and values, which are transmitted through its chain, to the ecosystem itself (Case 3 hub website). For instance, the centrality of the territory and communities, which is relevant for the hub, has started characterizing the entire IE, which benefits not only clients but also the society, through projects for the territory (i.e. laboratories for energy transition, PPPs to value the historical, cultural and natural heritage of a rural area close to the IE’s hub).

Despite the high aggregation of actors enhancing the risk of lock-ins, external connections are enhanced by the quality of the hub: numerous external experts are attracted by the ecosystem and its hub, “*which is becoming like a pilgrimage destination*” [Expert collaborator of the IE].

To synthesize, in Case 1, low transparency and alignment are issues, as actors, numerous and dispersed, are not aware of the IE guidelines and have difficulties in enriching synergies. Hence, the flows of information and resources needed to create shared value are supported by formal mechanisms applied mainly at the project level (as formal IP guidelines, specific indications for project definition, funding and monitoring), where alignment and collaboration are mostly needed.

This high formalization, however, is time-consuming and, sometimes, perceived as costly and even unclear by the IE actors.

Conversely, in Case 2, there has been a strong focus and attempt, *ab initio*, in nurturing alignment and collaboration, first, among anchors (competing in diverse fields, as there is no dominant issue) and then among the other actors.

This is done not only by leveraging on the anchors’ role and the careful selection of actors, but also through the design of spaces (particularly crucial in these localized ecosystems).

Lastly, similarity among actors and strong connections with the hub (driven by their proximity and belonging to a specific sector) are the drivers of alignment and collaboration in Case 3.

4.3 By whom shared value is created

4.3.1 Actors. Case 1 includes more than 80 companies (of different sizes), 14 academic entities and 16 public ones (Case 1 official website and Annual Reports). These core entities, in turn, attract many others, thus multiplying existing connections. The ecosystem they encompass focuses on a dominant issue related to AI: consistently, actors are mainly “*specialists, pure software specialists [. . .] or AI cross over with software in a certified area. [. . .], big supply chain collaborators*” [Project Manager]. Among all the actors comprising the IE, the ones that are by now more capable of creating shared value are large firms active in projects. Indeed, only private entities can directly obtain funding from the IE and propose or initiate projects (Case 1 submission guide); they can then involve NGOs and academia, which thus have a secondary role (Case 1 website): “*the university role is secondary: the universities are partners, but there are no really university-led projects*” [University professor expert of IEs].

Case 2 is less diffused than Case 1: it is centered on anchors of different types, sectors and sizes. They attract other entities, pertaining to different sectors, which can be grouped into 11 big thematic areas (energy, fintech, retail-tech, logistics, security, etc.) (Case 2 official website). As such, unlike what happens in Case 1, actors aggregate not due to the presence of a dominant issue but due to proximity (Case History Document, 2019). The IE members (formally 36, up to

now; Case 2 official website) are further tied by the anchors that create enabling conditions for identifying and exploiting synergies. As such, they are the first engines of value creation: in the words of a collaborator of the IE, anchors' relevance in value creation is central and thus "not leveraging on anchors would be a silly mistake" [Expert of the IE met during workshops].

In Case 3, shared value creation is driven by the IE's hub, its collaborators and complementors (mainly local SMEs and start-ups). Research centers, schools, universities and independent experts are involved in shared value creation too, but they play a less-proactive role. Given the similarity in terms of location, knowledge field and way of thinking, as well as the presence of a dominant theme, these key actors display high cognitive proximity, which supports relations.

4.3.2 Relationships. As actors in Case 1 are geographically diffused, their *inter se* relationships are difficult to be strengthened; consequently, resource sharing is also not easy (Case 1 Strategic Plan). Relations are strengthened among project partners that share the same specific focus and objectives. Thus, strategic resources are shared at the project level and not at the IE level: these resources mainly include knowledge related to the adopted technology, information and data, which are protected through deeply negotiated IPs or non-disclosure agreements (Annual Report, 2021–2022). This formal procedure is perceived as necessary in such dispersed and heterogeneous systems but is hard to be set and maintained: "it took us one year for the process between the initial conversation with the IE leading body and the moment we had an agreed-upon project" [Project Manager].

Case 2 is characterized by the anchors' centrality and their relations are crucial for shared value creation: the ecosystem is presented as "synapsis inside the brain" and "a physical platform of relations," [Public actor] facilitating the sharing of intangible resources and, in the future, of physical resources and even spaces, as it "is fundamental for favoring integration among people and thus creating new communities" [Former CEO of the public entity managing the area]. Synergies, so precious for creating shared value, are strengthened by physical proximity, as "the territory forms an integral part of the innovation ecosystem" [COO of the public entity].

In Case 3, "trust, belonging to a common system, and sharing culture and objectives" [Innovation Fund Manager] are core elements for value creation and are supported by internal relations nurtured by trust in the hub. Thanks to these relationships, diverse resources are shared (human, tangible and intangible ones); some - as data, information, and tacit knowledge - are shared with care, as they are strategic for each involved actor, as explained by the hub's managers (contracts, agreements and IPs are put in place to protect them). In this configuration, the hub emerges as a facilitator of such relationships among actors.

4.3.3 Governance. Case 1 is promoted through public policies that require the introduction of an industry-led non-profit consortium to take care of preparing guidelines, measurement systems and grants and to select the projects to be funded. Projects are proposed by the independent industrial partners, and they are then evaluated by a committee; this team verifies that the guidelines are respected: the inclusion of at least one small medium enterprise, the definition of growth criteria and the alignment of the mission and values of the specific project with those of the IE (Case 1 official website; Annual Reports). Being transparent in such a broad system is complex, as "they are extremely opaque in terms of [...] their governance, in terms of how they work" [Project manager].

To support the relationships among heterogeneous actors characterizing Case 2, governance is a mix of top-down and bottom-up tensions (Case 2 website). While some informants highlighted the relevance of public policies and the need for orchestrating the IE further (COO and CEO of the public entity managing the area), others stressed that IEs emerge and grow bottom-up (workshop participants and president of the research center on site). Despite it being initially top-down mandated by the public actor, the IE is now managed by a multi-layered leading body, with anchors at the top and "companies that want to have their say on the collaboration rules, defining IPs, deciding priorities of the scientific agenda"

[*Expert collaborator*]. Other layers are open and welcome the actors of the IE that thus are involved and informed.

Lastly, in Case 3 the role of the hub is key when considering the IE governance too: the leading body tends to overlap with the hub, which provides clear guidelines and training, manages the planning, financing and road mapping of the projects; it is the center of relationships and partnerships and prompts openness by managing data sharing. This is possible, thanks to the peculiar set-up of the ecosystem, where actors are closely located and focused on a specific issue. Despite the hub's centrality, actors remain independent and tend to nurture a bottom-up development of the ecosystem itself, which indeed dynamically develops from the clients' needs through the relationships formed by all entities in the ecosystem: all actors involved are independent and their independent decisions and relations nurture the growth of the ecosystem; public actors and policies are secondary in this connection.

Overall, it emerges that who creates value strongly depends on the type of IE in focus. In Case 1, dispersed geographically but focused thematically, the role of public actors designing policies and of big companies participating in the consortium is focal, but not enough to grant relations and transparency in the entire IE (relations are mainly at the project level, where value is created).

In Case 2, anchors are the primary nodes around which relationships of coopetition are strengthened and help create the right environment for openness and sharing. This key role is played by the hub in Case 3: it orchestrates the IE, setting guidelines, monitoring systems and promoting relationships among actors.

4.4 Policies: role and type

Given the intensity of the expected impacts in Case 1, public actors play a crucial role in promoting this IE: policies provided the initial funding (public actors "*put the money on the table*" [*Former director of policy; now CEO of an IE's member*]), which then attracted further private investments. Further, policies formalized top-down guidelines for the selection of projects, partners and governance definition. They also facilitated the creation of synergies among the distant IE's actors, i.e. by requiring the presence of at least a small medium enterprise or a start-up for an IE project to be approved, specific expected economic, social, environmental and innovation impacts and *ad hoc* measurement systems.

To favor collaboration among dispersed entities, policies framed IP protection and data sharing too.

As this IE is diffused and affected by policies defined at diverse levels (municipal, regional and national), it is relevant that they are consistent with one another. For instance, the guidelines provided by national policies on incentives and project selection should dovetail with the incentives, funding and guidelines locally defined for the participants of each project (located in diverse municipalities and regions).

In Case 2, public policies are designed to grant the availability of funding and infrastructure in the long term, useful to sustain the emergence, development and resilience of the IE, to support anchors and their internal and external connections. For instance, local policies support the participation of public actors as anchors of the IE, facilitate their presence on site (e.g. the university needed to be transferred on site and this has been possible thanks to ad hoc policies) and grant them financial support (as the 140 million€ per year funding for the onsite research center). "*The fact that billions have been allocated in ten years helped a lot [. . .]*" the anchors [*Consultant collaborator*].

There is agreement on the introduction of policies as core instruments for governing the IE during its birth phase, to then become mainly a mechanism to encourage collaboration and alignment, by providing infrastructure, backbone support and simplifying bureaucratic processes that are needed for establishing new partnerships (this process is still ongoing). Local policies are not only particularly effective ("*public administration of (the city) and of the*

Region are extremely efficient [Consultant collaborator]”), but also support value creation by funding research projects at an international level.

Concerning Case 3, public policies used to be framed as short-term incentives not always well aligned with the IE’s capabilities, skills, assets and aims. According to the Innovation Fund Manager, if not long-term oriented and IE-specific, these incentives risk even impeding the smooth bottom-up development of the IE: “*all the exaggerated incentives can have a doping effect [...] while the guideline we follow here is to focus on projects that can work and bring value by themselves*” [Innovation Fund Manager]. Thus, by now, a national policy gap is perceived; to fill it, public policies could simplify administrative processes related to partnerships and IP protection (that would support synergies).

Moreover, policies might be framed to expedite and favor the existing and future PPPs held with the IE’s hub, facilitating the approval and management of the IE’s projects for the territory (like the ones related to education, cultural heritage and neighborhood redevelopment). They could also incentivize start-ups to move on-site, thus increasing the competences useful for the creation of value.

If properly established, policies could enhance the recognition and visibility of the IE, its resilience and enlargement. International policies are leveraged to support applied research (e.g. through European funds).

5. Discussion

The case analysis shows that differences in shared value creation processes are strictly linked to the belonging of the IE to one of the three identified archetypes. This result contributes to individuating the role and type of policies supporting shared value creation, showing that they should be consistent with the IE’s shared value process in each archetype.

The analysis pinpoints that spatial proximity strongly determines the processes of shared value creation in *Hub- and Chain-Driven and Place-Driven IEs* (both characterized by physical proximity). In these archetypes, shared value creation is supported by the co-location of actors, which strengthens relationships among entities and thus facilitates the flow of resources (Desrochers, 2001) through a dense net of multiple relationships (Jacobides et al., 2018), supported by anchors and their heterogeneity (Case 2) or hubs and common issues (Case 3).

This shows that shared value in localized structures is affected by the presence of anchors or hubs, in line with the authors affirming the relevance of orchestrators in IEs (i.e. Viitanen, 2016; Linde et al., 2021). Moreover, the *ex ante* strategic selection and inclusion of entities and the strong connections existing among them and with the territory strengthen the coherence between the IE and the actors, in terms of common agendas, infrastructure, measurement system and key determinants of shared value (Kramer and Pfitzer, 2016; Alberti and Belfanti, 2019).

Further, barriers to shared value creation emerge and they inform policy definition: in *Place-Driven IEs*, given the centrality of the anchors, the highest risks relate to them; if the anchors do not collaborate, attract or insert in the local community, the IE might become an empty, isolated island with no possibility of creating shared value. Conversely, if the anchors are well supported, this archetype can simultaneously benefit the diverse involved actors and the local territory, making the IE a powerful development engine. This is why public actors display high interest in such IEs and play a key role in promoting their birth and anchors’ development, providing funding and infrastructure that facilitate internal and external synergies.

In *Hub- and Chain-Driven IEs*, the creation of shared value is driven by the presence of the hub, which role is relevant as it has orchestrating capabilities (Linde et al., 2021), enables the definition of shared value propositions (Walrave et al., 2018) and mechanisms (Ritala et al., 2013).

Hence, the risk in this archetype derives from a too strong overlap between the IE and its hub: if the hub’s image and reputation worsen, the IE would suffer as would its shared value creation. Public policies, if the hub is a private entity, might not significantly help in facing

these risks: thus, a policy gap is individuated, driven by the low connections among the policies and activities of the IEs. This generates possible misalignments between the focus of the policies and the IE's assets and needs. This gap could be filled by introducing policies supporting PPPs, incentivizing start-ups on-site and simplifying bureaucratic processes. Policies synergic with the hub could foster the intensity and resilience of IE's outputs, but they are not strictly necessary for supporting shared value in this archetype.

In light of these considerations on co-localized ecosystems, our results confirm that physical proximity alone is not sufficient to grant shared value creation. It also emerges as not always necessary (Ben Letaifa and Rabeau, 2013; Witte *et al.*, 2018): in the absence of physical proximity, the presence of a dominant issue can drive shared value, supported by *ad hoc* policies and formal mechanisms, as done in *Competence- and Issue-Driven IEs*, where shared value is created by leveraging key competences enabling complementarities, needed to face the common issue.

The absence of physical proximity characterizing *Competence- and Issue-Driven IEs* challenges shared value, as relationships are multiple and decentralized, thus hindering the creation of synergies (Desrochers, 2001), internal alignment and collaboration.

However, if these issues are correctly managed applying formal mechanisms and leveraging *ad hoc* policies, this archetype is capable of generating very intense and spread impacts, as these IEs are characterized by a wide geographical scale (positively affecting outputs; Ben Letaifa and Rabeau, 2013). Therefore, public actors are highly interested in promoting and nurturing the development and growth of these IEs, by providing initial funding and formalizing collaboration among members, IP rights, data sharing, results definition (i.e. in terms of social inclusion) and monitoring. This formalization is expected to support bottom-up collaborative innovation among distant actors of the same industry-led consortium. Thus, public policies enact "*pull-based*" dynamics (Fukuda, 2020): instead of pushing the development of national systems and sectors, they focus on applied innovations and value creation by enabling bottom-up technology development and knowledge exchange (Audretsch, 1998).

6. Conclusion

This paper contributes to the research on shared value in IEs and dovetails with the evolving stream of literature focused on IE strategy, management, governance and value creation (Gomes *et al.*, 2018; Gomes *et al.*, 2021; Arena *et al.*, 2021; Gu *et al.*, 2021). We contribute to this field by studying the characteristics of the shared value creation process in different IE archetypes, which is particularly relevant for framing public policies intended to support these processes.

To do so, we individuate IE archetypes, based on the literature on value creation and capture in IEs, focusing on the drivers of actors' "aggregation" as crucial to determine shared value processes in IEs. This and the empirical analysis conducted complement the conceptualizations provided in the literature about IE typologies (Komorowski, 2019; Klimas and Czakon, 2022; Autio and Thomas, 2022) and originally contribute to the academic debate on shared value creation in ecosystems (Gomes *et al.*, 2018; Liu and Stephens, 2019; Arena *et al.*, 2021) characterizing this process as archetype-specific in terms of risks, potentialities, measurement systems and public policies.

In *Hub- and Chain-Driven IEs*, shared value creation is driven by the presence of a hub entity and its connections with local actors, aligned thanks to high physical, social and cognitive proximity. The centrality of the hub is both the main driver and risk in this case. In *Place-Driven IEs* co-location is key for fostering the aggregation of heterogeneous actors but is not sufficient for granting shared value: the presence of anchors is crucial for this aim and is hence to be managed and leveraged at best. Lastly, in *Competence- and Issue-Driven IEs*, shared value managed at the IE-level risks being loosely bonded with projects and actors: the risk of misalignment is high.

The paper has interesting contributions for policymakers because it confirms the need for abandoning a "*copy-paste approach*" in defining policies for IEs, leveraging the specificity of IEs and their shared value creation processes (Witte *et al.*, 2018), highlighting the importance of drafting IE-

sensitive policies (Ooms *et al.*, 2015), thus being demand driven and aligned with the needs of its actors and territories (Witte *et al.*, 2018). In *Competence- and Issue-Driven IEs*, policies set at multiple levels should be mutually consistent and aimed at promoting, funding and designing the ecosystem, as well as supporting collaboration among actors. In *Place-Driven IEs*, local policies should focus on supporting anchors and their integration with the territory. Lastly, in *Hub-centered IEs*, local policies should support PPPs, simplify administrative procedures and incentivize the growth of start-ups around hubs but might not be strictly necessary for shared value creation.

There are relevant implications for managers too: they can rely on the proposed archetypes to individuate the key characteristics of the IE they are working in, so to better understand and manage it. Moreover, the studied cases provide managers with examples of how shared value can be created in diverse IEs, by whom and on what terms: this can be a useful support for designing and managing shared value creation processes (i.e. collaboration and alignment strategies), but it can also be used to more effectively communicate (internally and externally) choices regarding such processes.

This study has some limitations, mainly linked to the qualitative nature of the methodology adopted; specifically, only one case per archetype has been analyzed herein, which cannot support the verification of some discussion points. This opens paths for future research in this field: an in-depth study of more cases belonging to the three archetypes can be conducted to analyze whether emerging risks and potentialities can be more archetype specific or case specific. Lastly, quantitative studies may also be introduced to explain the relationships among the identified constructs (i.e. public policies and performances) as a first step toward further uncovering shared value creation in IEs and validating the proposed archetypal configurations.

Notes

1. Further details available at: <https://ised-isde.canada.ca/site/global-innovation-clusters/en/objectives-innovation-clusters-initiative> [December, 2022]
2. Further details available at: <https://catapult.org.uk/>[December, 2022]
3. Further details available at: <https://www.mindmilano.it/>[December, 2022]

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Appendix

Interview guidelines

Generic *Interview Guidelines* for informants (an ad hoc version is used for experts). Italian informants have been sent an Italian version of such guidelines. In the end, further questions added during data collection are proposed ("Further added details" section).

Preliminary information on the informant and the entity he/she represents

Which is your role and your career path inside the organization?

Which is your role, and the one of your organization, in relation to the innovation ecosystem?

Innovation ecosystems_name

Could you please describe the innovation ecosystem and its evolution?

Which are, if any, the main actors? What are their roles?

What are/are expected to be the core connections and relations among these core actors?

How is physically structured the area where you operate?

Are there (expected to be) places dedicated to networking and sharing? Do you host/organize events to stimulate networking and sharing with the actors in the ecosystem?

How much do you perceive your ecosystem (would you like your ecosystem to be) connected to or isolated from its surroundings?

Performance drivers

Which performance drivers do you consider relevant for the creation of value in the ecosystem? Which ones are key to grant its sustainability in the long term?

Which KPIs do you think could be useful to monitor the multi-actor system in which you operate?

Value creation and capture

In your opinion, is the innovation ecosystem in which you operate able to create value for the specific organizations? And for the local areas? What are the economic and social benefits?

Who is going to mainly capture such value and how?

Do you share value? Do you know some people/companies that do it in the ecosystem?

What main challenges do you see in creating, capturing and sharing value?

Context and policy

How would you define the context in which the ecosystem is/will evolve? Which characteristics of such context do you perceive as more relevant?

Which policy instruments have been applied/are going to be applied to support the birth, growth and maintenance of the ecosystem and the role of your organization inside it?

Interview guidelines – further added details

(1) Actors

Considering the IE, is there one/are there many conveyors/main players? Do they collaborate or compete?

Is there a specific structure of relationships among actors? Do they complement each other?

(2) Structure

Which is the geographical scope of the ecosystem? Are proximity and density key factors?

Is the ecosystem intended to have relations also to outside entities?

Is the ecosystem focused on one sector only or does it cover multiple ones?

(3) Aim and governance

Are there common objectives, projects, roadmaps, values? How much are they aligned with the vision?

Is there (will there be) a dedicated reporting system?

Are there boards/committees/management teams in the supercluster? Which are their roles and how do they relate with the boards and management teams?

(4) Strategic assessment

Which opportunities are there in for your entity in taking part to the innovation ecosystem? How is your entity planning to seize these opportunities? Do you see any potential risks?

| Theme | Category | Codes (examples) |
|-----------------------------|--------------------|--|
| IE archetypes | Physical proximity | High/low level of geographical proximity Proximity (other than geographical) Hub-centered system Defined area of action Dispersed ecosystem |
| | Dominant issue | One sector in focus Multiple sectors in focus One focus/topic Multiple focuses/topics Synergies among issues tackled |
| What is created | Outputs | Output in the economic sphere Output in the environmental sphere Output in the social sphere Output in the innovation sphere Prioritization among outputs is clear The IE aims at mixing outputs Measuring outputs: issues |
| | Performance | Resilience of the IE Rapidity in reaching outputs Intense outputs reached |
| How shared value is created | Coopetition | Good/low collaboration among actors High/low competition among actors A mix of collaboration and competition |
| | Alignment | A common agenda is shared Common vision/mission presented Common project roadmap Reinforcing activities and projects High/low external viability Shared Measurement Systems in place Backbone infrastructure in place Communication networks and events |
| Who creates shared value | Actors' type | Private actor(s) and its characteristics Public actor(s) and its characteristics PPPs in place Non-profit entity Experts and their characteristics |
| | | Orchestrators: names and characteristics- Strategic and competitive resources shared Not strategic resources shared Type of resources shared (tangible/intangible) Inside – out or outside-in relationships Bidirectional relationships Relationships among project members only |
| | Governance | Top – down structure Bottom – up structure A mix of top-down and bottom-up A multi-levered structure Committees and boards |
| Policies | Role | Key role of policies Policies as enabling settings for innovation Role of policies is secondary Difficult synergies with private IEs |
| | Type | Promoting the IE Promoting relations and PPPs Incentives and funding Remediation and development |

Source(s): Author's own creation

Table A1.
Themes, categories
and examples of codes
used in the analysis

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