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Innovation-as-Interaction in an Emerging Innovation Ecosystem: A Single-Case Research

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Abstract: Innovation ecosystems are increasingly recognized as central vehicles for value creation, yet the nature of innovation within ecosystems remains undertheorized, particularly at early stages of development. Prior research often treats innovation implicitly as an outcome or a process, offering limited insight into how innovation emerges through interaction among ecosystem actors. This study addresses this gap by examining innovation as an interaction-based phenomenon in a birth-stage innovation ecosystem. Adopting an ecosystem-as-structure perspective, the study draws on a qualitative single-case design based on semi-structured interviews with B2B SMEs participating in an emerging Finnish innovation ecosystem. The findings conceptualize innovation as **innovation-as-interaction-outcome**, encompassing both tangible outcomes (joint offerings, processes, and market access) and intangible outcomes (relational, mental, and hunch spaces). The study advances an interaction-centered understanding of innovation and contributes to innovation ecosystem management research stream by highlighting innovation as both outcome and enabler in nascent ecosystems.

Keywords: innovation ecosystems; innovation-as-interaction; birth-stage ecosystems; qualitative case study; inter-organizational interaction; innovation

1 Introduction

Innovation ecosystems have become a prominent focus in innovation management research. Scholars have examined ecosystem actors and roles, governance mechanisms, and value creation dynamics (Adner, 2017; Jacobides et al., 2018; Kapoor, 2018). Despite this growth, the concept of **innovation itself** remains surprisingly vague in ecosystem research. Innovation is frequently portrayed as a key ecosystem outcome or success factor, yet its defining characteristics are rarely explicated, particularly in multi-actor and inter-organizational contexts.

This omission is problematic because innovation in ecosystems is rarely produced by a single firm. Instead, innovation often emerges through interaction among interdependent actors embedded in relational structures (Powell et al., 1996). While recent work has begun to address innovation conceptually—distinguishing innovation-as-outcome, innovation-as-process, and innovation-as-context (Ritala & Thomas, 2025)—empirically grounded studies that explore innovation emerging through interaction in ecosystems remain scarce.

The gap is especially pronounced at the **birth stage** of ecosystem development. Early-stage ecosystems are characterized by fluid boundaries, evolving roles, and incomplete value propositions. At this stage, innovation is often anticipated rather than materialized, making it difficult to conceptualize using conventional outcome-based frameworks. Yet the capacity to generate innovation at birth stage is critical for ecosystem viability (Rodríguez-Romera et al., 2026).

This study responds to these gaps by examining innovation as it emerges through interaction in a nascent innovation ecosystem. Drawing on an ecosystem-as-structure perspective (Adner, 2017), innovation is conceptualized as **innovation-as-interaction**, emphasizing interaction as a constitutive element rather than a secondary mechanism.

The study addresses two research questions: (1) What is innovation-as-interaction in an innovation ecosystem? (2) What are the core characteristics of innovation at the birth stage of an ecosystem?

Using qualitative single-case research, the paper offers an empirically grounded account of innovation in a birth-stage ecosystem and advances a novel conceptualization of **innovation-as-interaction-outcome**.

2 Innovation in innovation ecosystems at birth stage

Innovation ecosystem research often positions innovation as central yet implicitly defined. Many studies view innovation as a **system-level outcome**, such as novel value propositions, offerings, or solutions generated collectively (Kapoor, 2018; Han et al., 2022). Others emphasize innovation as a collaborative **process** involving coordination among actors (Jacobides et al., 2018). While valuable, these approaches frequently retain a firm-centric or object-oriented view, insufficiently accounting for the interdependent, emergent nature of innovation in ecosystems.

Ritala and Thomas (2025) provide a more explicit conceptualization by distinguishing innovation-as-outcome, innovation-as-process, and innovation-as-context. Their innovation-as-context perspective highlights shared infrastructures and environmental conditions that enable innovation. However, empirical research capturing what an innovation enacted through interaction is—particularly before tangible outputs crystallize—remains limited.

Understanding innovation at the **birth stage** requires particular attention. Ecosystem development is often described as progressing through stages, including birth, expansion, leadership, and renewal (e.g., Roderíquez-Romera et al., 2026). The birth stage is characterized by experimentation, emerging visions, and increasing actor diversity, alongside frequent entry and exit (Han et al., 2022). Innovation at this stage is typically prospective and relational rather than outcome-driven.

The present study adopts the **ecosystem-as-structure** perspective (Adner, 2017), which shifts attention from actors to interdependent activities needed to realize a focal value proposition. This perspective is particularly suitable for examining early-stage

ecosystems, where roles and outcomes remain unsettled and interaction itself becomes a central organizing principle.

3 Research design and process

Given the exploratory nature of the research questions, a **qualitative single-case study** approach was employed (Yin, 2003). This methodology enables in-depth examination of complex, context-dependent phenomena and is well suited for theory development in underexplored research areas (Eisenhardt, 1989).

The case is an emerging Finnish innovation ecosystem focused on health and wellbeing, coordinated by a regional university of applied sciences. The ecosystem was initiated approximately one year prior to data collection, clearly situating it at the birth stage. At this phase, innovations had not yet fully materialized, allowing the study to capture envisioned and interaction-based forms of innovation rather than established outcomes.

Data were collected through **five semi-structured interviews** with representatives of B2B SMEs participating in the ecosystem. The firms varied in size and industry, providing diverse perspectives on innovation and interaction. Interviews were conducted remotely in October 2025, recorded, and transcribed verbatim. To ensure anonymity in a small regional context, organizational details were withheld.

The data were analyzed using **inductive qualitative content analysis** (Tuomi & Sarajärvi, 2018). Analysis progressed from original expressions to reduced expressions, subcategories, and higher-level conceptual categories. Throughout the process, attention was paid to grounding interpretations in the empirical material while identifying recurring patterns relevant to the research questions.

4 Findings

The findings reveal that innovation in the birth-stage ecosystem emerges primarily through interaction among actors. Innovation was associated with both **tangible** and **intangible** outcomes, collectively conceptualized as **innovation-as-interaction-outcome**.

Interviewees commonly associated innovation with **novelty**, particularly new combinations of existing technologies, products, and services contributed by ecosystem members. Joint offerings were seen as collective improvements rather than entirely new inventions. Innovation was also linked to **experimentation and failure**, with rapid learning emphasized as essential.

Innovation was frequently described as a **joint process**, involving shared idea generation, experimentation, and commercialization. Interviewees stressed the need to make innovation processes concrete and actionable rather than abstract. Large firms were perceived as particularly important in early-stage innovation, as they could absorb uncertainty and support nascent ideas.

Interaction within the ecosystem was also seen as enabling **access to new markets**. Collaboration provided complementary resources, networks, and legitimacy, facilitating market entry beyond the regional context.

Beyond tangible outcomes, the analysis revealed more latent forms of innovation conceptualized as **spaces**, drawing on Nonaka and Konno's (1998) notion of shared contexts for knowledge creation.

Relational space refers to the interactional context in which trust, dialogue, and collaborative potential develop. Networking is regarded central to this space, enabling resource combination and idea emergence. Over time, relational space was expected to evolve from organizational networking toward more personal, relationship-based interaction.

Embedded within relational space, **mental space** captures the emotions, attitudes, and mindsets that enable collaboration. Interviewees emphasized enthusiasm, openness, kindness, humor, and genuine interest in others as crucial for sustaining joint innovation efforts.

Finally, **hunch space** reflects shared anticipations and "what-ought-to-be" knowledge regarding future opportunities. Although concrete outcomes were not yet realized, interviewees shared expectations about business potential and regional development, forming a collective sense of direction.

In conclusion, the findings identify two main categories of innovation, each comprising distinct subcategories. An overview of these forms of innovation is illustrated in Figure 1.

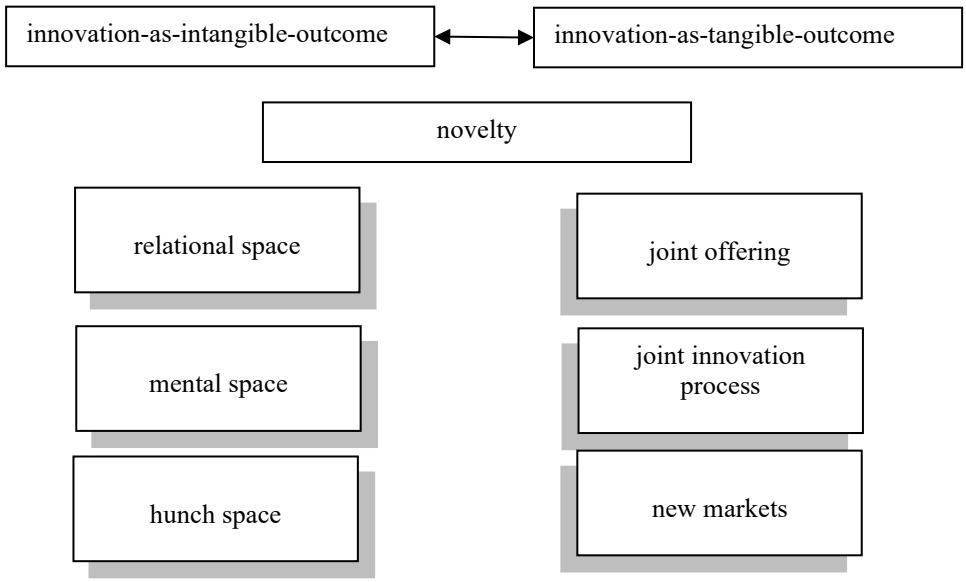

Figure 1 Innovation-as-interaction-outcome in innovation ecosystem.

Innovation-as-interaction-outcome refers to innovations that emerge through interactions among firms within an innovation ecosystem. These interaction-based innovations can be categorized into **tangible** and **intangible** outcomes. Tangible outcomes include joint offerings such as new combinations of technologies, products, and services, joint innovation activities, and the creation or access to new markets. Intangible outcomes, in turn, take the form of *spaces*—contexts that enable the emergence and development of relationships. Notably, these spaces are continuously evolving and therefore dynamic

rather than static in nature (see Nonaka & Konno, 1998). Moreover, spaces function simultaneously as outcomes and as ongoing processes.

The analysis identifies three forms of space: **relational space**, referring to networking through inter-organizational and interpersonal relationships; **mental space**, encompassing emotions and collective mindsets; and **hunch space**, referring to shared insights and anticipatory understandings. These forms of innovation should not be viewed as isolated entities but as mutually complementary and interrelated, reflecting the dynamic and evolving nature of innovation (see Nonaka & Takeuchi, 1995).

5 Discussion

The paper began by arguing that innovation within innovation ecosystems remains a poorly understood phenomenon in innovation management research. By addressing the nature of innovation-as-interaction within an innovation ecosystem at its birth stage, the study develops a conceptualization of the **innovation-as-interaction-outcome** approach.

The approach reveals that innovation emerges from inter-organizational interactions. This finding aligns with prior research in the B2B marketing stream, which has demonstrated that innovations require intensive interaction between firms to emerge (e.g., Sihvonen et al., 2021). The study departs from research suggesting that the sole creation of a new value proposition by a single focal firm can constitute an innovation within an ecosystem (Adner, 2017).

Consistent with earlier research conceptualizing innovation as an outcome (e.g., Han et al., 2022; Kapoor, 2018) or as a process (Jacobides et al., 2018), the findings indicate that joint offerings and joint innovation processes represent innovation as a tangible outcome. The study also suggests that the creation of new markets falls within this category.

Unlike much of the prior literature (e.g., Ritala and Thomas, 2025), the results further demonstrate that innovation can also be intangible in nature. This finding aligns with research on innovation ecosystems emphasizing the need to recognize intangible outcomes as innovations in such settings (Rodríguez-Romera et al., 2026). These intangible outcomes include *relational space*, *mental space*, and *hunch space*, which function both as enabling conditions for future innovation and as outcomes of innovation processes. Finally, the findings identify novelty itself as a form of innovation, which is consistent with Schumpeter's (1934) seminal conceptualization of innovation as the introduction of something new.

While the study largely aligns with prior research on innovation as a tangible outcome, it differs in a key respect. Existing literature typically conceptualizes innovation outcomes as objects—such as new value propositions or system-level results—whereas the present findings emphasize the enabling conditions that make such outcomes possible. In this emerging ecosystem, innovation-as-intangible-outcome appears to take the form of interaction enablers that facilitate collaboration among firms. These enablers function as innovations in their own right and serve as foundational prerequisites for subsequent tangible innovation outcomes.

6. Implications for researchers, managers, limitations and further research

The study makes several contributions to the innovation management literature. First, it broadens the existing discussion on innovation in innovation ecosystems by offering an empirically grounded conceptualization of innovation and its defining features within such contexts. Second, the study extends the discussion by shifting attention from value-proposition-oriented innovation to innovation that functions as an enabler within the ecosystem, particularly at its birth stage. Finally, it introduces a new innovation-as-interaction-outcome conceptualization, which highlights the central role of inter-organizational collaboration as a foundation for enabling innovation activities.

The findings also offer important practical implications. From an ecosystem governance perspective, it is crucial to understand and identify the interdependent activities required for innovation and to develop the capacity to engage relevant firms effectively within the ecosystem. Moreover, conceptualizing innovation as an enabler emphasizes the importance of managerial practices that facilitate interaction among ecosystem firms, rather than focusing exclusively on the development of value propositions. Also, envisioning and communicating shared aspirational goals for the ecosystem should be given priority.

For individual firms, recognizing the nature of innovation within ecosystems helps to identify potential growth pathways and opportunities to leverage collaboration. This understanding can also guide firms in accessing critical partners and navigating ecosystem governance structures.

A major limitation concerns the methodology, particularly the reliance on a single-case study with a limited number of interviewees. In addition, the nascent stage of the innovation ecosystem as the empirical context may constrain the findings, as it necessitates envisioning innovation processes that are not yet fully developed. However, consistent with the flexible nature of case study research, additional interviews can be conducted as the ecosystem evolves and the research progresses. Furthermore, the study opens avenues for future research to refine the concept of innovation-as-interaction-outcome and to examine its applicability across different ecosystem contexts.

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Areas for feedback & development

- Feedback on the overall innovation idea of the paper would be helpful. What are your initial impressions of the innovation approach developed in this study?
- The problems of the paper: What do you think are the problems with the article? What could be improved and how?
- The literature reviews on the innovation ecosystem in innovation management research stream: Are you aware of any review articles regarding innovation ecosystems in the innovation management stream of research?