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The jazz jam session improvisation model of stakeholder engagement in entrepreneurial ecosystems

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ABSTRACT

Research on entrepreneurial ecosystems has seen significant growth in the last decade, with a focus on the key elements of entrepreneurial ecosystem (EE) structure, stakeholders, and interactions between them. However, the literature linking these three elements within the entrepreneurial ecosystem has yet to reach a consensus regarding how interactions between stakeholders occur within the ecosystem and beyond. We apply the jazz jam session model used by jazz musicians for improvisation to demonstrate that within a given structure of improvisation, stakeholders may improve their level and intensity of engagement, increasing the quality of the entire entrepreneurial ecosystem. The jazz jam session model explains how and why the interactions can matter and how to organize them effectively between stakeholders.

KEYWORDS

Entrepreneurial ecosystem; stakeholders; jazz jam session; improvisation; interactions; region

Introduction

Entrepreneurship ecosystems (EEs) are an emerging field of research (Brown & Mason, 2017; Cavallo et al., 2019; Isenberg, 2010). They are brought to life by individual-level interactions between multiple individual and organizational stakeholders that make up the ecosystem (Autio & Levie, 2017; Spigel, 2017). Despite its intuitive appeal and widespread adoption (Brown & Mason, 2017), the EE theory often overlooks a critical challenge: the interaction between ecosystem stakeholders remains poorly understood, and the lack of cohesive engagement models between ecosystem stakeholders limits the effectiveness of ecosystems in fostering entrepreneurial activity (Spigel & Harrison, 2018).

The extant literature predominantly emphasizes the systemic nature of EEs (Stam, 2015), treating them as integrated networks of interconnected stakeholders, such as entrepreneurs, investors, banks, policymakers, educational

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institutions, and entrepreneurship support organizations (Audretsch & Belitski, 2017; Feld, 2012; Mason & Brown, 2014). Albeit with a few exceptions (Belitski & Büyükbacı, 2021; Brown & Mason, 2017; Cavallo et al., 2023; Roundy et al., 2017), the diversity of complex and heterogeneity of interactions between stakeholders inherent in specific entrepreneurial ecosystems have been insufficiently addressed, leading to generalized models that fail to account for context-specific dynamics.

This gap calls for the development of new frameworks and models that can facilitate the connection and engagement between ecosystem stakeholders to bolster EE effectiveness (Autio & Thomas, 2020). By not addressing this gap, entrepreneurial ecosystems risk becoming fragmented (Autio & Levie, 2017), with stakeholders not talking to each other or working in silos rather than as a cohesive ecosystem (Cavallo, 2024).

We argue that the assumption that stakeholders in the EE are characterized by goal-directed behavior to accomplish some predetermined task and purpose (Pera et al., 2016) is incorrect or oversimplistic; it overlooks the inherently dynamic, emergent, and context-dependent nature of stakeholders' interactions. Instead, within ecosystems, due to high complexity, dynamism, and heterogeneity of ecosystem actors, uncertainty and unpredictability arise from the multiple interactions between agents (Gerwel Proches & Bodhanya, 2015; Marion & Uhl-Bien, 2001), with such interactions often being unstructured and unpredictable. They follow the principles of improvisation, akin to a jazz jam session model, and enable stakeholders within EEs to collaborate, adapt, and co-create value amidst high dynamism, uncertainty, and complexity.

In this study, drawing on the jazz jam session model for team improvisation (Herzig & Baker, 2014; Tsoukas, 1991), we explain how individual-level interactions between EE stakeholders can become more efficient. If EE stakeholders can adopt the main principles of improvisation that jazz musicians use (Audretsch et al., 2023), then the interconnectedness between ecosystem actors will be enhanced, and collaboration and value co-creation will be done more effectively, leading to higher EE outcomes (Spigel & Harrison, 2018; Theodoraki & Meseghem, 2017).

Improvisation is key in jazz and is characterized by a combination of structure and spontaneity (Moorman & Miner, 1998; Ott et al., 2017). It is a form of a dynamic capability that ecosystem stakeholders use to navigate and adapt to the complexities of entrepreneurial ecosystems (Zahra et al., 2006). In such ecosystems, stakeholders can use improvisation when establishing new firms and experimenting with new products, as well as in developing strategies (Weick, 1993). Entrepreneurs often combine improvisation with other learning processes like bricolage and trial-and-error (Ott et al., 2017). Similar to improvisation in jazz, the behavior of EE stakeholders is shaped by the context of the EE and the individual actions and decisions of each stakeholder

engaging in the process of co-creation and discovery (Spigel & Harrison, 2018; Theodoraki et al., 2022).

Thus, the aim of this study is to develop a theoretical framework of EE stakeholders' individual interactions, enabling them to integrate, build, and reconfigure internal and external competencies to address the dynamic and rapidly changing environments of EEs (Zahra et al., 2006).

Our study contributes to the emerging discourse on entrepreneurial ecosystems by demonstrating how various EE stakeholders can better engage with each other and the context to engage with all attributes of EE and achieve greater EE outcomes (Spigel & Harrison, 2018; Theodoraki & Messeghem, 2017). Our study draws on six elements of the jazz jam session model (Herzig, 2020; Herzig & Baker, 2014) that shape the mechanisms and structure of individual- and organizational-level interactions within EEs and uncover how better efficiency could be achieved through improvisation and coordination with stakeholders.

This approach can be applied to EEs at different levels of economic development, with any dominant stakeholder type and in multiple spatial scales, from counties and districts to cities, clusters, and regions.

The structure of this conceptual article is as follows. First, we discuss the theoretical background and introduce the genesis and elements of the jazz jam session model. The following section identifies the methodology and constructs that should be taken into account by entrepreneurs, policymakers, and managers when interacting with each other in the EE. Furthermore, we discuss the process, analyze the reviewed literature, and discuss key takeaways and future directions of EE research.

Genesis of entrepreneurial ecosystems research

EE research has gained increasing popularity in the field of entrepreneurship (Audretsch & Belitski, 2017; Cavallo, 2024; Malecki, 2018; Stam & Van de Ven, 2021). Its origin is rooted in several established research streams. The first research stream is the entrepreneurial context (Welter, 2011), which emphasizes the spatial, institutional, and socioeconomic contexts in which entrepreneurship occurs and where entrepreneurs interact with other entrepreneurs, policymakers, venture capitalists, banks, incumbent firms, and universities (Audretsch & Belitski, 2021; Mason & Brown, 2014).

Candeias and Sarkar (2024) emphasized the need for well-structured policies that consider dynamic interactions among various ecosystem actors, helping to create a conducive environment for entrepreneurship by aligning policy measures with ecosystem needs in a specific context. They proposed a conceptual framework for policy formulation in entrepreneurial ecosystems. Cosenz et al. (2023) advocated for a value-based method to understand

interactions within the entrepreneurship context. This approach underscores the importance of individual and collective actions contributing to overall value creation within the ecosystem, offering a more granular understanding of how ecosystems evolve and function.

The second research stream focuses on the interaction between EE stakeholders as a key mechanism in linking entrepreneurial inputs to outputs (Leendertse et al., 2022). The authors demonstrated that EE outcomes are influenced by various ecosystem elements, such as entrepreneurship support services, networks of entrepreneurship-related actors, financing, accumulated knowledge in a region, and domestic market size.

Hruskova (2024) introduced the concept of ecosystem pipelines, focusing on collective action within ecosystems. This study highlights how coordinated efforts among participants lead to more effective outcomes, particularly regarding resource allocation and innovation.

The third literature stream on EEs relates to the role of economic geography and knowledge localization for EEs. Drawing on the historical economic specialization and clusters literature (Delgado et al., 2010), it highlights the importance of spatial proximity for learning, innovation, and productivity (Arrow, 1962; Jacobs, 1969; Marshall, 1890), as well as the role of the geographic location of entrepreneurs (Stam & Spigel, 2018) and their colocation with universities (Wright et al., 2006) and incumbent firms (O'Connor & Audretsch, 2023). Within this perspective, EE research initially explored case studies of specific places (M. P. Feldman, 2014; Isenberg, 2010; Stam & Bosma, 2015), while recent research on EEs aims to measure elements of EE performance, such as productive entrepreneurship, number of startups, startup rate, and growth-oriented entrepreneurship (Motoyama & Knowlton, 2017; Spigel, 2017; Stam, 2018). Research on EEs has also evolved and uses multiple data sources to measure EE inputs and outputs (Leendertse et al., 2022; Wurth et al., 2022).

This third stream of literature focuses on the role of EEs as enablers of regional economic development (Audretsch et al., 2021; Spigel, 2017). In this respect, one can identify a distinct EE structure that includes systemic and framework elements and how they interact (Audretsch & Belitski, 2017; Stam & Van de Ven, 2021). The attributes (Spigel & Harrison, 2018) of EEs that are most valuable in facilitating productive entrepreneurship are also discussed in the work of Theodoraki et al. (2023). More recently, Audretsch et al. (2024) explored the role of entrepreneurial ecosystems in fostering sustainable development. Their findings suggest that well-developed ecosystems support sustainable business practices, contributing to broader socioeconomic goals.

The third literature stream has been challenged recently by the advancement of research on digital entrepreneurial ecosystems and digital technologies (Autio et al., 2018; Belitski et al., 2023; Sussan & Acs, 2017). The digital entrepreneurial ecosystem demonstrates how stakeholders could connect

across EEs (Xu et al., 2023) to create entrepreneurial opportunities, significantly enhancing the speed and reach of networks. Digital affordances represent an additional layer of the local context for entrepreneurs (Autio et al., 2018) enabled by digital infrastructure and platforms in fostering entrepreneurial activities.

The systemic interpretation of the entrepreneurial context aligns EEs with theories on systemic territorial development, such as regional innovation systems (Autio et al., 2014), which were initially developed independently from entrepreneurship research but later applied to explain entrepreneurship (Autio et al., 2014; Kuckertz, 2019; Neck et al., 2004).

The fourth stream of literature has focused on stakeholder types in shaping EE inputs and outputs (Hechavarría & Ingram, 2019) and how stakeholders collaborate to jointly shape entrepreneurial outcomes in the ecosystem (Ferreira et al., 2023; Ghio et al., 2019; Leendertse et al., 2022).

Examples of this literature stream include analysis of the contributions of specific stakeholders in EEs. For example, Casper and West (2024) examined the role of university innovation in the emergence of entrepreneurial ecosystems in California. They illustrated how universities act as hubs of knowledge and innovation, significantly contributing to regional ecosystem development. Cavallo (2024) discussed how different regions develop unique ecosystem characteristics based on their socioeconomic contexts, offering insights into the diverse pathways through which ecosystems evolve and support entrepreneurship. Kromidha et al. (2024) investigated the influence of policymakers on ecosystem governance and proposed a generative institutional discourse approach to understand how political dynamics shape ecosystem governance and entrepreneurial outcomes. Together, these literature streams have contributed to a deeper understanding of how entrepreneurial ecosystems evolve, function, and support entrepreneurial activities.

While the development of EE theory has evolved significantly over the years (Acs et al., 2017; Candeias & Sarkar, 2024; Cosenz et al., 2023; Spigel & Stam, 2018; Welter, 2011), researchers still seek to better understand the interconnectedness of collective actions and EE stakeholders and learn how their interactions within ecosystems make the development of productive entrepreneurship quicker and more efficient (Audretsch et al., 2023; Hruskova, 2024; Wurth et al., 2022). The review of the three streams of literature on EE reveals that the intricate dynamics and interactions among various ecosystem stakeholders are important; however, the extent to which efforts for effective resource allocation and innovation are coordinated remains unclear.

Stakeholders in entrepreneurship ecosystems

Introducing entrepreneurial ecosystem stakeholders

The entrepreneurial landscape in a city or region is largely influenced by ecosystem stakeholders, as highlighted by Senor and Singer (2011) and Kemeny and Storper (2015). These stakeholders, who possess substantial social, financial, and technological capital, represent various groups in the ecosystem, such as local communities, universities, incubators and accelerators, venture capital firms, industrial associations, and professional associations including journalists, accountants, and lawyers (Theodoraki et al., 2020) as well as entrepreneurs, dealmakers or connectors, banks and debt capital associations, policymakers, and local government (Audretsch et al., 2022; Brown & Mason, 2017).

Stakeholders in an ecosystem are deeply integrated into the regional entrepreneurial landscape, acting as catalysts or connectors that hold each factor and element of the ecosystem together (Leendertse et al., 2022). This is particularly evident in hubs like Silicon Valley, Austin, Boston, Rotterdam, London, and other global ecosystems. As major actors and organizations in EEs, stakeholders use specific cues and models to change entrepreneurial behavior in an EE, incentivizing or limiting entrepreneurial aspirations to start and grow businesses in a region.

The primary role of stakeholders is to mediate relationships among entrepreneurs and between entrepreneurs and other stakeholders within and across the ecosystem. Though sometimes stakeholders may act directly as mediators, as Brown and Mason (2017) note, they may also act indirectly in forging new networks and aiding in the establishment of new businesses (M. Feldman & Zoller, 2012) via their formal and informal representatives, dealmakers, local governments, and business angels in other ecosystems with a higher degree of connectivity. Their objectives could include increasing the quantity and quality of entrepreneurship, facilitating knowledge transfer, and shaping entrepreneurial behavior in a region.

In emerging entrepreneurial regions, the presence and intensity of collaboration between stakeholders is less concentrated and more dispersed. The complementarity between stakeholders and their resources is crucial, as not all resources are readily available for entrepreneurs within one EE and from one stakeholder (Belitski & Godley, 2020). Entrepreneurs must seek matching resources from stakeholders within their EE and in other EEs (Xu et al., 2023). Many hybrid stakeholders emerge who “wear a few hats,” meaning they perform the function of entrepreneur and investor, investor and dealmaker, financial resource provider, and university, to name a few (Mason & Brown, 2014). Stakeholders may not only invest in various entrepreneurial ventures locally, but also serve on boards or be role models and provide

mentorship, financial and intellectual support, and networking connections to younger and less experienced entrepreneurs (Belitski & Büyükbacı, 2021).

Drawing on the studies of M. Feldman and Zoller (2012) and Leendertse et al. (2022), we include public policymakers, multinational enterprises (MNEs), professors, managers, journalists, venture capitalists, other financial resource providers, and incubators among EE stakeholders. Policymakers often seek the entry of incumbent firms, such as MNEs with substantial R&D investment, and increase tax revenue to generate knowledge transfer and spillovers to local firms. This stimulates innovation, leading to new products and service creation (Bhawe & Zahra, 2019). Policymakers, along with other EE stakeholders, can promote knowledge and cultural collaboration across cities and stakeholders, integrating large incumbents and scale-ups from other regions, including MNEs (Brown & Mason, 2017; Ratten, 2022, 2023). They can also facilitate corporate entrepreneurship within MNEs or exploit knowledge externalities in the ecosystems (Castellani et al., 2024). Universities and higher educational establishments enable the knowledge spillover of entrepreneurship in EEs (Guerrero & Urbano, 2019; Wright et al., 2006). Universities aim to collaborate with industry and local government (Audretsch & Belitski, 2022; Cloitre et al., 2023) to start businesses and facilitate knowledge transfer to industry by starting new firms and licensing. Universities support local networks, increase graduate employability and retention rates, engage with nonprofit companies and small businesses (Audretsch et al., 2022), participate in the triple helix (Miller et al., 2018), engage in university–industry collaborations and R&D alliances, and participate in on-campus and industrial science parks (Audretsch & Belitski, 2019), business incubators and accelerators (Sohail et al., 2023), and grant applications (Cloitre et al., 2023; Prencipe et al., 2020).

The objectives of venture capital (VC) in the entrepreneurial ecosystem are multifaceted, aiming to support and enhance the growth and success of startups and early-stage companies, ultimately contributing to broader economic development and technological advancement.

Venture capital provides essential funding to startups that often lack access to traditional financing. This funding helps startups cover initial costs, scale operations, and develop new products or services (Gompers & Lerner, 2001). Venture capitalists help mitigate the risks associated with new ventures by spreading investments across a portfolio of startups and bringing industry expertise, strategic guidance, mentorship, and networking opportunities (Cumming et al., 2019), allowing some to fail while others succeed (Kaplan & Strömberg, 2004). Finally, by selecting and funding the most promising ventures, VCs help enhance market efficiency and allocate resources to the most productive uses.

The stakeholder model described by Pittz et al. (2019) and Senor and Singer (2011) explores the impact of so-called “dealmakers” in the EE and how they connect with various stakeholders. While high-performing EEs have

significant concentrations of entrepreneurs and investors, the fastest-growing entrepreneurship regions would have dealmakers, who may be serial entrepreneurs or serial investors, who combine various characteristics and emerge as hybrid stakeholders. From prior research, we know that these hybrid stakeholders not only possess dense networks of entrepreneurs and investors, but their networks are also more cohesive and their interactions are more complex: they are characterized by highly interconnected activities across EEs (Xu et al., 2023)

Finally, entrepreneurs are key stakeholders of EEs (Isenberg, 2010; Mason & Brown, 2014). M. Feldman and Zoller (2012), and more recently, Prenzel et al. (2022), found a strong association between the presence of multiple and diverse stakeholders and startup rates and innovation activity. Stakeholders with the ability to communicate within and across EEs impact the quantity and quality of entrepreneurial activity and decision-making across various stages of the EE life cycle (Spigel & Harrison, 2018).

Table A1 in Appendix illustrates the key stakeholders and their roles within the EE, while Figure 1 illustrates the key stakeholders of EEs.

Identifying the gaps in the stakeholder literature

Hechavarria and Ingram (2014) suggested policies for stimulating entrepreneurship at various stages, while Qian (2018) focused on policymakers without specifying the drivers of these policies or whether they address all entrepreneurial needs. Policies like reducing noncompete covenants are suggested, but the

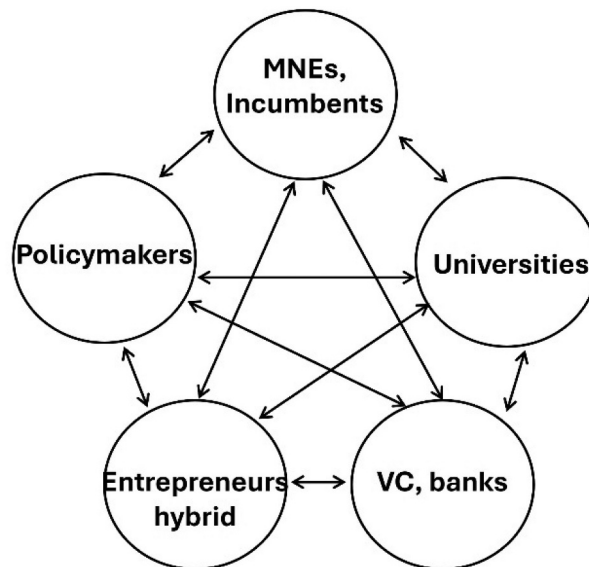


Figure 1. Entrepreneurial ecosystem key stakeholders.

development mechanisms and policymaker engagement with EE stakeholders remain vague. While facilitating networking opportunities among stakeholders is crucial, the means by which weak and strong network ties are created and developed are not explored in the literature (Qian, 2018). Similarly, Cavallo et al. (2023) discussed public policy boundaries for EEs and between stakeholders, and Cloitre et al. (2023) addressed this theoretical gap by relying on the quadruple/quintuple helix model to contextualize the dynamics fueling the development of EEs drawing on multiple collaborations between stakeholders. Pittz et al. (2021) noted that ecosystems generating new firms often have dense, well-connected networks, but the development of these connections is not detailed. Furthermore, our understanding of the specific role each stakeholder plays in leveraging gaps in EE resource allocation and how these stakeholders take action to change their behavior in the EE with different connectivity levels is missing (Radko et al., 2023; Theodoraki & Catanzaro, 2022; Xu et al., 2023). This is often the reason, as prior studies of EEs have meticulously focused on measurements rather than concepts (Leendertse et al., 2022; Stam & Bosma, 2015; Stam & Van de Ven, 2021). In addition, prior research on EE input–output relationships has often focused on start-up rates as a result of changes in a specific parameter of systemic or framework conditions (Stam, 2015), which can be driven by imitative and necessity-oriented entrepreneurship or government policies (Audretsch et al., 2021). Thus, research has triggered more research on institutions and entrepreneurship quality (Chowdhury et al., 2019), growth aspirations of entrepreneurs (Hessels et al., 2008; Spigel & Stam, 2018), and the promotion of productive entrepreneurship, as opposed to simply increasing quantity. Thus, developing efficient mechanisms for interactions between stakeholders and enabling such mechanisms to work for productive entrepreneurship is a desirable objective (Spigel & Harrison, 2018), as EEs are fundamentally about stakeholders’ behavior and decision-making. Mastering a system of interactions between EE stakeholders in a city or region has important implications for regional economic development and other socio-economic objectives, such as reducing imitative entrepreneurship, mobilizing resources and talent for new ventures and job creation (Brown & Mason, 2017), and enhancing the quality of entrepreneurship by encouraging innovative and growth-oriented startups (Spigel, 2017).

Although each EE stakeholder is unique, behavioral trends and interactions among them should follow a certain structure, including random and spontaneous interactions combined with planned behavior, which should be formalized to enable stakeholders to develop efficient networks within EE, reducing the risk and uncertainty of doing business.

The search for alternative models of effective frameworks of resource allocation and more collaborative and engaged interactions between stakeholders drew our attention to the jazz jam session model (Herzig & Baker, 2014). The jazz jam model explains how the coordination and

communication structure of interactions among jazz musicians jamming in an intimate and small setting (Belitski & Herzig, 2018) can be used as a useful tool for EE stakeholders who wish to learn how the structure of interactions is set up and how the diversity of interactions between stakeholders may be used to facilitate improvisation and thus innovation in the ecosystem.

In the next section, we will explain how applying the jazz jam session model of improvisation to stakeholders' interactions in EE can further enrich ecosystems by emphasizing the value of spontaneous, dynamic, and collaborative interactions among ecosystem actors (Ott et al., 2017).

Jazz jam session model and entrepreneurship

The role of improvisation in jazz and entrepreneurial ecosystems

Just as jazz musicians co-create in real time, entrepreneurs and other EE stakeholders can leverage improvisation to navigate uncertainties, foster innovation, and adapt to evolving market conditions.

Improvisation enables stakeholders to adapt and respond spontaneously to unforeseen challenges and opportunities, fostering meaningful interactions and collaborations as a form of dynamic capability (Zahra et al., 2006). Improvisation facilitates the learning process, and Ott et al. (2017) define it as “the deliberate fusing of the design and execution.” Actors who improvise apply it as a form strategy “do so on the fly” with activities that may or may not become permanent (Baker et al., 2003). Improvisation can be especially effective in entrepreneurial ecosystems because it takes advantage of the unexpected events and contingencies that are associated with innovation and new market entry settings.

Unlike substantive capabilities involving routine and operationalized tasks, improvisation allows stakeholders to address unique and emergent situations flexibly. This adaptability is moderated by factors such as stakeholders' knowledge, skills, and collective experience (Ott et al., 2017; Zahra et al., 2006). For instance, the ability to improvise effectively in an EE depends on the stakeholders' understanding of the ecosystem's norms, values, and dynamics, which are often context-specific. Improvisation facilitates EE stakeholders' engagement by enabling real-time problem-solving and innovation, particularly in volatile and uncertain environments such as starting a business or experimenting with new products.

Improvisation as a dynamic capability is particularly relevant for younger and less established stakeholders in an ecosystem, as their agility and openness to learning can enable faster adoption of innovative practices. In contrast, incumbents may leverage improvisation through structured but flexible processes, integrating their existing knowledge to facilitate ecosystem growth. In highly dynamic ecosystems, the improvisational capability of stakeholders

becomes even more critical, as it allows for quick adaptation to external changes, strengthening the overall resilience and effectiveness of the ecosystem.

The jazz jam session model has improvisation at the core of music co-creation by jazz musicians, which has emerged historically as a “gumbo” of diverse musical codes, instruments, styles, and interactions among musicians and between musicians and audiences, is useful in understanding the structure of improvisation that all stakeholders may follow to rapidly co-create new value and be creative in collaborative decision-making in teams and organizations. We argue that improvisation is a form of dynamic capability (Zahra et al., 2006), and it is important in enhancing ecosystem stakeholders’ interactive and adaptive capacity. This perspective shows the importance of improvisational skills and engagement within EEs to enable stakeholders to co-create value, sustain competitive advantage, and form strategies by taking action and then learning from their experience (Ott et al., 2017).

Historical overview of jam jazz session model

The origins of jazz, marked by resistance and social challenges like racism and sexism, reflect the struggles of early jazz musicians and their noncommercial, improvisational art form. The development of jam sessions in various venues across the United States and their evolution into organized events like the “Jazz at the Philharmonic” series illustrate the genre’s growth and societal impact.

The early jazz session culture, often idealized as an informal, noncommercial art form, played a significant role in the artistic lives of both untrained and professional black musicians. As jazz evolved from entertainment to art in the 1930s, enthusiasts and collectors of “hot” jazz records emerged, signifying a shift in perception.

The jazz jam session model brings us closer to understanding how improvisation happens in small groups of jazz musicians, as described in Herzig and Baker’s (2014) work, which showed a shift in jam sessions’ roles from skill evaluation to fostering musician networks, audience interaction, and on-the-fly improvisation. The model, refined through surveys and personal interactions with musicians in various U.S. cities, now offers valuable insights for the study of entrepreneurship and management, linking the creative processes used in jazz to those used in small business teams. The model extends prior research on what we can borrow from jazz for entrepreneurship and improvisation in organizations (Gioia, 1989; Stacey et al., 2000; Voyer & Faulkner, 1989; Weick, 1998).

Application of the jazz jam session model to entrepreneurship ecosystem research

Herzig and Baker's foundational work in 2014, supported by earlier insights from Hatch and Weick (1998), and Humphreys et al. (2012), laid the groundwork for the jazz jam session model's application to business and entrepreneurship. Herzig and Baker's (2014) study collected data from 370 jazz musicians across the three largest cities in the United States—Indianapolis, New York City, and New Orleans—highlighting the evolving function of the jazz jam sessions. These sessions, once arenas for showcasing skills and hosting “cutting contests,” now primarily foster musician networks, mentor young players, and cultivate new styles. Their research culminated in a seven-factor model that delineates the elements that are essential for a successful jazz jam session. The jazz metaphor for entrepreneurship has been a focus of discussion for decades, with scholars like Cunha et al. (2006) and Kamoche et al. (2003) exploring various facets of improvisations in teams. In particular, they emphasized the use of jazz sessions as a metaphor for understanding complex phenomena and the importance of sensemaking in leadership, which are crucial in both jazz and business contexts (Tsoukas, 1991).

Most of the recent literature on the effect of improvisation on entrepreneurship (Audretsch et al., 2023) demonstrates that improvisation in jazz bands, when creating new repertoire, may be compared to the ability and willingness of EE stakeholders to embark randomly and together on co-creating new combinations of knowledge, resources, and value through improvised structural communication. If EE stakeholders adopt the system of interactions as described in the jazz jam session framework (Herzig, 2020), it will enable stakeholders to identify entrepreneurial opportunities within an ecosystem more rapidly, if working together toward co-creating new knowledge following this improvisation approach.

As jazz musicians follow a structured procedure to enable improvisation in teams during jazz jam sessions, connecting musicians to each other and to the audience is important, so stakeholders in EEs may work together and improvise in the process of knowledge exchange and co-creation as jazz musicians do. They must follow special signs and frameworks that enable them to take calculated risks and improvise (Herzig & Baker, 2014). Interactions among jazz musicians serve as an excellent example for EE stakeholders of effective ways to engage. The jazz jam session framework led us to focus on how its elements related to musical improvisation could be assembled and offer a structure of interactions between EE stakeholders, fostering the co-creation of value (Cavallo et al., 2023).

The jazz jam session model visualizes the unique nature of team improvisation and offers a structure of interactions between musicians and musicians

and the audience by a system of codes, signs, and words while keeping the team relatively small (up to eight participants) when improvising (Herzig, 2020).

Theorizing the jazz jam session model of stakeholder engagement

In this section, we develop six theoretical propositions to showcase various aspects of EE stakeholders' engagement and conditions that should be adopted from the jazz jam session model to enable greater engagement and improvisation between EE stakeholders. In doing so, we draw on the prior research of Herzig and Baker (2014) on jazz jam session improvisation as well as prior discourse on productive entrepreneurship in the EE literature (Brown & Mason, 2017; Spigel, 2017).

The jazz jam session model acknowledges the role of individual competencies, experience, and knowledge of the field of music. In jazz, the quality of a performance depends on the quality of each participant contributing to the session. In the same way as jazz musicians spend hours every day listening to, imitating, and transcribing jazz icons (Berliner, 1994), EE stakeholders should regularly train themselves and learn from other stakeholders in the ecosystem. They should learn how to combine the necessary knowledge and resources to facilitate the performance of entrepreneurs in the ecosystem.

In the knowledge spillover theory of entrepreneurship and innovation, Audretsch and Belitski (2022) argue that individuals or firms investing in knowledge—such as investment in training and skills, development of competencies, or industry experience—may generate significant knowledge co-creation through intense knowledge exchange. This concept, initially introduced by Audretsch (1995), demonstrates that entrepreneurial opportunities could be created as a result of knowledge exchange in an improvisational way (Kamoche et al., 2003).

The quality of EE as a whole and the quality of individual firms, universities, and individual stakeholders is directly related to investment in knowledge and competencies, which enables necessary expertise to be developed and exchanged. The exchange of skills and competencies between stakeholders within an EE facilitates the recombination of existing knowledge and allows for new “cross-fertilization of ideas” and knowledge to be co-created by stakeholders (Eden et al., 1997), leading to higher ambitions, aspirations, and quality of entrepreneurship in the EE (Belitski & Desai, 2024). Mastery in jazz, akin to knowledge investment by stakeholders in learning, education, and skills, often requires long-term planning and the accumulation of human capital through extensive practice and study of theory. We propose:

Proposition 1: *Stakeholders' knowledge and competencies in the field are positively associated with entrepreneurial ecosystem quality.*

The willingness to embrace risks is fueled by training and learning with stakeholders, as well as the attitude of believing in one's capability of finding new solutions and being exposed to multiple shocks in the past. Musicians in a jam session enter the group with an attitude of openness toward new ideas and solutions for the musical task at hand (Herzig, 2020). This element enables stakeholders in EEs to take risks in identifying and pursuing new opportunities, or in searching for and developing new products to market. Entrepreneurs, accustomed to uncertainty, often take risks in reaching out to new stakeholders and learning with them (Belitski & Büyükbacı, 2021), investing in R&D, or developing new products or services. Incumbent firms as stakeholders, in contrast, require clear risk calculations and probability payoffs before undertaking such risks. Effective improvisation in EEs requires stakeholders to overcome self-consciousness and embrace the risks inherent in the promotion and development of new ideas, fostering creativity and new product development. This approach to risk, akin to the behavior of jazz musicians comfortable with uncertainty (Sarasvathy, 2009), is supported by Krakovsky's (2015) findings on the power of attitude and Limb's et al. (2008) research on brain activity during improvisation, where stakeholders rely on cues, prior experience, and intuition in decision-making under high uncertainty. We propose:

Proposition 2: *Stakeholders' ability to take risks and overcome self-consciousness is positively associated with entrepreneurial ecosystem quality.*

The third element of the jazz jam session model for stakeholder engagement is the existence of role models within an EE, where stakeholders could mentor and learn from each other directly. As jazz musicians believe that engaging in jam sessions is a crucial activity where novices can learn from more experienced players (Herzig & Baker, 2014), mentorship and role models made available to EE stakeholders inspire pathbreaking ideas and help stakeholders to learn through examples and cases, engaging with other stakeholders within an ecosystem or beyond. Similar to how jazz jam sessions historically served as platforms for learning through oral imitation, diverse mentors, as shown in Johnson-Laird's (2002) work, are crucial for fostering success. Established stakeholders in EEs, coming from various backgrounds and experiences, are expected to pass on their knowledge and understanding of the ecosystem's culture to new entrants. Experienced stakeholders function as role models, guiding younger entrepreneurs and others on expectations, the workings of formal and informal institutions, and necessary adjustments to ecosystem rules. Just as experienced musicians lead jam sessions by coordinating performances and setting examples, ecosystem stakeholders provide necessary competencies and share knowledge to ensure the discovery of entrepreneurial

opportunities and improve EE quality through teamwork and complementary knowledge. We propose:

Proposition 3: *Stakeholders' role models and mentorship are positively associated with entrepreneurial ecosystem quality.*

EE stakeholders face a choice between a more vertical vs. a more horizontal organization of collaboration. Democratic collaboration between stakeholders and learning in an ecosystem is more likely to take place in a horizontal organization of engagement. In this setting, no stakeholder enforces decisions on others; instead, interactions ensure a climate of collaboration, democracy, and “healthy” competition. Hierarchical interactions, as described by Colombelli et al. (2019), enable shared leadership, facilitating brainstorming and ideation for new product creation. From a knowledge-based view, stakeholders collaborate to expand their knowledge about the ecosystem, its demands, and the customers. Horizontal and nonhierarchical structures ease knowledge flow, eliminating the fear of faults and punishment. This organization may draw on strong and weak ties, including with non-industry partners like customers and universities, allowing access to novel knowledge and resources. Such an organizational structure enables the expansion of the market for collaboratively developed products and services, spreading the costs of collaboration to a greater number of participants and allowing for complementarities. Successful collaborations during the jazz jam session, marked by equal participation and role exchange, counters historic racial biases, with listening and leadership training as key elements (Hatch & Weick, 1998). We propose:

Proposition 4: *Democracy and collaboration in engagement between stakeholders are positively associated with entrepreneurial ecosystem quality.*

In jazz, the broader environment, including the audience, venue, and community support, significantly influences musical outcomes. The vibrant jazz scenes on Indiana Avenue in Indianapolis during the 1930s and 1940s, and the French Quarter and Frenchmen Street in New Orleans, with their numerous jazz venues and shops, exemplify the importance of community support for the creativity of performers and venue owners (Herzig & Baker, 2014). In addition to engagement with immediate stakeholders within an EE over time, entrepreneurs rely on and leverage local community knowledge to develop and sell new products and services, as well as gather new ideas from potential customers. Stakeholders need to talk to community leaders to address the community's immediate and long-term demands. Community support, whether as customers for entrepreneurs or other stakeholders, develops positive attitudes toward entrepreneurship and overlaps with knowledge spillovers

from industry partners, supplying vital information about local tastes, preferences, and culture. This aids entrepreneurs in crossing the “chasm” to fast product adoption (Clarysse et al., 2014). Building relationships with community leaders and facilitating sustainable development goals help communities appreciate the value added by entrepreneurship in the community and for non-economic needs (Theodoraki et al., 2022). Ecosystem communities and stakeholders, often located in adjacent ecosystems, could be an immense source of continuous learning about customer diversity and aspirations, as well as technologies and innovation (Prenzel et al., 2022), contributing to socioeconomic and cultural life improvements through various community engagements.

Beyond the jazz jam sessions, the quality of the musical products depends on contextual factors such as the room, audience, sound, economic support, broader community influence, other surrounding factors, and interaction with the audience’s expectations and feedback during the sessions (Herzig & Baker, 2014). Ecosystem communities continuously inform entrepreneurs about customer diversity, services, cultures, and needs, and vice versa, they inform communities what entrepreneurs and other stakeholders do. Innovations are most successful when created around community needs and the sociocultural context (Welter, 2011). Stakeholders entering or growing with other EE stakeholders demand community support, particularly in rural ecosystems and small cities where resources are limited (Spigel & Stam, 2018). We propose:

Proposition 5: *Stakeholders’ engagement with localized communities is positively associated with entrepreneurial ecosystem quality.*

While long-term responses may guide stakeholders’ strategies over time, in an EE stakeholders need to prioritize timely and immediate feedback that can spur the creation of new ideas within a short time. Improvisation may include closer engagement with the audience, including perception of their signals and learning how to interpret body language, cues, and other signs (Herzig, 2020). As jazz musicians, stakeholders in the ecosystem require continuous performance evaluation and strategic adaptation to changing ecosystem conditions, including assessment and guidance on exogenous shocks. Stakeholders must continuously evaluate each other’s performance, competitive advantage, and market opportunities and develop strategy (Ott et al., 2017). Evaluating feedback from stakeholders, including communities and customers, may occur through immediate and long-term responses. Immediate responses address the community’s and other stakeholders’ current needs, focusing on problem-solving for immediate customer needs. In contrast, long-term evaluation of feedback can influence the long-term strategy of innovation, market entry, or internationalization, whether the feedback comes from fellow stakeholders or

the community. O'Connor et al. (2018) highlight that continuous evaluation of responses and cues from stakeholders shape the direction and quality of interactions, ultimately affecting the quality of an ecosystem. Consistent evaluation and timely responses to contingencies build trust among stakeholders, crucial for enabling horizontal and transparent collaboration (Audretsch & Belitski, 2020), reducing transaction costs, and facilitating resource sharing in collaboration. One of the most effective ways to evaluate stakeholder performance and test ideas is through brainstorming, a key element of design thinking techniques often applied by stakeholders in the ecosystem to develop new solutions to complex problems faced by communities and customers. We propose:

Proposition 6: *Stakeholders' continuous performance evaluation and strategic adaptation to the EE context are positively associated with entrepreneurial ecosystem quality.*

Discussion

Building on the extant literature on entrepreneurial ecosystems (Huggins et al., 2024; Spigel & Harrison, 2018; Xu et al., 2023) and stakeholder engagement (Brown & Mason, 2017; Lo & Theodoraki, 2020; Ratten, 2022), this study offers a novel perspective by applying the six elements of improvisation used by jazz musicians to design and examine stakeholders' interactions in entrepreneurial ecosystems. In doing so, it shifts away from conventional static models of interaction toward more dynamic models, extending the prior research of Theodoraki and Messeghem (2017) on the processes required to provide support to entrepreneurs in the ecosystem. These elements—including stakeholder knowledge, risk-taking, role models, democratic collaboration, community engagement, and continuous adaptation—can provide a lens for EE stakeholders to design, engage, and develop knowledge collaborations aimed at supporting startup activity and higher-quality entrepreneurship. In doing this, we hope to enrich entrepreneurial ecosystem theory by introducing a more dynamic and improvisational approach to stakeholder engagement, which is particularly relevant for the emergence of performance-oriented ecosystems with high-aspiration entrepreneurs (Prenzel et al., 2022; Spigel & Stam, 2018). Finally, our study challenges the extant literature to consider the adaptive and creative capacities of ecosystems, where stakeholder interactions play a foundational role in ecosystem elements and their inter-connectedness, entrepreneurial outputs, and performance. In this, we contribute to Stam and Van de Ven (2021), who developed effective metrics with which to measure entrepreneurial ecosystem quality and performance.

This study contends that our novel approach may advance the theoretical dialogue on the co-creation of value in entrepreneurial ecosystems (Autio & Thomas, 2020). We call for further empirical validation of this model across different cultural, geographical, economic, and institutional contexts (Balland et al., 2022; Theodoraki et al., 2023), extending prior knowledge on localized affordances, proximity, and the role of context for entrepreneurship quality (Autio et al., 2018; Belitski & Desai, 2024).

Six propositions developed in this study directly link to the literature on the quality of EE outcomes (Cavallo et al., 2019, 2023) and how adopting the jazz jam session model (Herzig & Baker, 2014) may facilitate the role of improvisation in interactions between EE stakeholders as if they were teams (Kamoche et al., 2002, 2003). We argue that stakeholder interactions are the basis for the formation of productive entrepreneurship in the ecosystem, and the more organized and transparent the relationship between stakeholders, and the more they offer feedback and reflect on ideas and knowledge flows between each other, the higher the knowledge spillover of entrepreneurship. In this regard, the jazz jam session setting is geographically and culturally close, intimate, informal, and open to new ideas. It allows for immediate response to improvisation and trials between the performers (entrepreneurs) and the performance and the audience (entrepreneurs and community). This allows for more creative ideas and increases the capacity to absorb them through such interactions. As in the jazz jam session model, where performers follow musical structures, rules, and cues while adding the atmosphere of openness to new ideas through improvisation, risk-taking, and overcoming self-consciousness, it can enable an effective setting for ecosystem stakeholders when the ecosystem is being created or requires certain modifications and pivoting. Unlike previous studies on organizational and team improvisation, which mainly discuss how improvisation takes place (Audretsch et al., 2023; Kamoche et al., 2002, 2003), we emphasize the importance of the foundations of interactions and the way improvisation could be a tool for value co-creation in ecosystems. The efficiency of employing such a model is conditional on the social, material, and cultural attributes the ecosystem has inherited (Spigel & Harrison, 2018).

Implications for policymakers

For policymakers to adopt this model as a tool to facilitate stakeholders' engagement and regional economic development, the following implications in the model must be considered. First, the model, originally described as the jazz jam model of improvisation, can be adapted to interactions between stakeholders to facilitate their engagement and improve how knowledge can be accumulated and transferred. The jazz jam session model aims to teach

stakeholders how to achieve novel outcomes by creatively combining existing knowledge while embracing experimentation risks.

Second, emphasizing stakeholder-specific factors, as well as factors associated with the support of communities, underlines the importance of accounting for internal and external factors within an EE. The jazz jam session model of improvisation underscores the role of various resources that can be used in starting up a firm beyond the founder by reaching out to an external community of stakeholders.

Third, dealmakers and community mediators (Senor & Singer, 2011), having strong network capabilities and complementary resources, including social capital, play a crucial role in facilitating entrepreneurial activity in the ecosystem. This is manifested via leveraging financial and human resources within and between ecosystems (Xu et al., 2023) and by offering mentorship and local support to entrepreneurs, as older jazz musicians tend to help junior, less experienced musicians by encouraging them to take risks and providing them with training and resources.

Finally, the way improvisation is organized in the jazz jam session model may inform various stakeholders on how the interaction process of knowledge exchange could be organized. Stakeholders, and in particular policymakers, need to be as open as jazz musicians in applying various models of improvisation, cues, and rules related to regional economic development and fostering entrepreneurship through specific programs (Wurth et al., 2022). These models may be directly related to the stage of EE evolution and whether it is a nascent EE or an established EE (Roundy & Bayer, 2019).

The above-mentioned argument may help policymakers to understand that leadership in entrepreneurial ecosystems often demands quick, decisive action, and this may not always come from policymakers, but from entrepreneurs themselves and talent working on new ideas. In such scenarios, policymakers may not be ecosystem leaders, but it is their responsibility to create a system of engagement and rules of such engagement to draw inspiration from entrepreneurs and other stakeholders, in particular venture capital. For example, in fast-growing tech clusters, leaders may need to make rapid investments and value co-creation between stakeholders, particularly venture capital, that understand the value and application of technology developed in the cluster. When leadership responsibilities are shared, as in the team improvisation process of jazz, and when collaboration is a necessary condition, the jazz jam-type interactions may become more relevant in clusters or co-working spaces, the innovation hubs where knowledge is nascent and needs to spill over.

The jazz jam session model fosters a competitive yet democratic environment, making it ideal for balancing individual excellence and team support. While solo musicians as solo entrepreneurs might have a ground-breaking idea by improvising independently, the value of co-creation in the ecosystem depends on collaborative effort, resource complementarity, and synergies

between stakeholders. For instance, the creation of new firms involves not just the entrepreneur but also external innovation partners, investors, and mentors. The jazz jam session model underscores the value of open innovation (Chesbrough et al., 2018) and the importance of building relationships between stakeholders with complementary knowledge and resources across the ecosystem to excel a product development. A tech startup, for example, collaborates with local universities on R&D or is a spinout of a university, with multiple examples from the special programs in the United States (Fini et al., 2023) and with venture capitalists for funding and networks (Wright et al., 2006). It also requires mentors and role models within entrepreneurial ecosystems to offer advice and practical insights. Together, these interactions create a powerful synergetic network and resource that is used for knowledge spillover of entrepreneurship and innovation. Thus, improvisation, as exemplified in jazz, should be viewed as a key tool for engaging stakeholders in entrepreneurial ecosystems.

Conclusion

Our framework can inform EE stakeholders such as entrepreneurs, banks, policymakers, academics, investors, and entrepreneurial support organizations how improvisation and coordination could be used to facilitate both EE attributes and outcomes.

Future research can investigate how the underlying processes of EEs change as different stakeholders become more present in the ecosystem. For example, universities may enhance knowledge creation, spillovers, spinouts, and talent concentration. Alternatively, venture capital may focus on providing financial resources for starting a business. As the EE evolves and the interactions between stakeholders become more complex, this may lead the structure and process of value co-creation to change. In contrast, interactions between stakeholders may result in various productive entrepreneurship outputs.

Future research should include the empirical validation of our propositions across ecosystems at different stages of evolution, specialization, and institutional contexts. Empirical validation may involve testing the framework of stakeholder interactions in this study across different counties, cities, and regions. Using advanced longitudinal data will help us understand the evolving influence of internal and external factors.

Given the limitation in generalizing our elements across different contexts, applying the jazz jam session model in this study may exhibit idiosyncrasies that affect the model's universal applicability. The jazz jam session framework for EE stakeholders should be tested in diverse contexts, with consideration given to local variations in stakeholder interactions to refine the model and make it more versatile. For example,

future research should focus on cross-country and cross-industry analysis and EE stakeholder interactions within specific industries, as technologies that differ significantly (information technology vs. heavy manufacturing) may constrain the use of some elements. This study explores how improvisation techniques and mechanisms foster entrepreneurship activity in EEs, leaving individual characteristics and the role of context as a boundary condition.

Disclosure statement

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Appendix A

Table A1. Stakeholders' objectives in entrepreneurial ecosystems.

Stakeholder type	Objectives in the ecosystem	Literature
Polymakers	Seek the entry of incumbent firms, such as MNEs; R&D investment; tax revenues and expenses; knowledge spillovers and innovation	Brown and Mason (2017), Bhawe and Zahra (2019).
MNEs, incumbents	Knowledge spillovers from MNEs and other local firms; tax reductions or preferential treatment in the host country; access to markets; financial and human capital; high quality of labor and management, creating scale-ups	Belitski et al., 2024, Ratten (2022), Castellani et al. (2024).
Universities and research labs	Collaboration with local government and communities; engage with nonprofit companies; enhance knowledge transfer to industry, including small and medium-sized firms, government, triple helix; establish university incubators and business accelerators; increase graduate employability and retention rate; establish science parks	Audretsch and Belitski (2022), Audretsch and Belitski, 2023, Audretsch et al. (2022), 2024 Radko et al. (2023), Cloitre et al. (2023).
Venture capital, other equity capital providers, banks	Invest and lend to startups that often lack access to financing and traditional financing; Share industry expertise, strategic guidance, mentorship, and networking; Develop a culture of risk taking and innovation; Accelerate growth, enhancing market efficiency	Gompers and Lerner (2001), Kaplan and Strömberg (2004), Hellmann and Puri (2002), Kortum and Lerner (2000), Audretsch and Belitski (2022), Cumming et al. (2019)
Hybrid (dealmakers, serial entrepreneurs)	Connect entrepreneurs with other stakeholders, specifically VCs within an EE and across EEs; Grow entrepreneurship activity; Increase density of contacts and connections between stakeholders; grow serial investors that combine various characteristics; Develop more networks cohesive interactions and more complex interconnectedness for bricolage and resource accumulation	Pittz et al. (2019), Senor and Singer (2011), Xu et al. (2023), Brown and Mason (2017)

Source: Authors.