Routledge
Taylor & Francis Group

Industry and Innovation

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/ciai20

When opposites attract: a review and synthesis of corporate-startup collaboration

Ajlin Dizdarevic, Vareska van de Vrande & Justin Jansen

To cite this article: Ajlin Dizdarevic, Vareska van de Vrande & Justin Jansen (15 Nov 2023): When opposites attract: a review and synthesis of corporate-startup collaboration, Industry and Innovation, DOI: 10.1080/13662716.2023.2271853

To link to this article: https://doi.org/10.1080/13662716.2023.2271853

Published online: 15 Nov 2023.

INDUSTRY AND INNOVATION
https://doi.org/10.1080/13662716.2023.2271853

Routledge
Taylor & Francis Group

RESEARCH ARTICLE

OPEN ACCESS Check for updates

When opposites attract: a review and synthesis of corporate-startup collaboration

Ajlin Dizdarevic, Vareska van de Vrande and Justin Jansen

Rotterdam School of Management, Erasmus University, Rotterdam, The Netherlands

ABSTRACT

Research on corporate-startup coll aboration has accelerated during the last two decades, and scholars have started to distinguish underlying drivers and challenges when these two types of partners engage to innovate. Despite accumulating insights, however, the body of literature on corporate-startup collaboration is rather fragmented with little integration, impeding the extent to which different perspectives can inform and draw from each other in finding ways to improve the collaboration between corporates and startups. In this paper, we conduct a systematic literature review and apply a paradox perspective to bring together separated domains of research about corporate-startup collaboration. In particular, our framework identifies four organisational tensions that manifest in corporate-startup collaboration and explains distinct coping mechanisms across different levels of analysis. Our emergent framework highlights the multifaceted nature of corporate-startup collaboration and provides various new avenues of research moving forward.

KEYWORDS

Corporate-startup collaboration; open innovation; corporate venturing; external (knowledge) sourcing; paradox lens

1. Introduction

'We believe that by pairing Pfizer's development, regulatory and commercial capabilities with BioNTech's mRNA vaccine technology and expertise as one of the industry leaders, we are reinforcing our commitment to do everything we can to combat this escalating pandemic, as quickly as possible.'- Mikael Dolsten, Chief Scientific Officer and President, Worldwide Research, Development and Medical, Pfizer[1]

Collaboration between corporates and startups is on the rise. Corporate-startup collaboration is a unique inter-organisational relationship involving two decidedly different partners: a large and established incumbent organisation and a small and novice venture who engage with each other to innovate (Weiblen and Chesbrough 2015). Corporate-startup collaboration can take many different forms, including corporate venture capital, corporate incubation, accelerator programmes, and buyer-supplier relations. Also referred to as open innovation (Chesbrough 2003), this type of engagement plays an increasingly important role in the corporate

CONTACT Ajlin Dizdarevic dizdarevic@rsm.nl Rotterdam School of Management, Erasmus University Burgemeester Oudlaan 50, 3062 PA Rotterdam, The Netherlands

[1]https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-biontech-co-develop-potential-covid-19-vaccine

innovation process and the development of new business. Indeed, as of 2019, many corporates have already collaborated with startups in some way, or are interested in doing so (Arthur D. Little 2019). However, despite the increasing importance of corporate-startup collaboration, its success remains difficult, with many corporate-startup collaborations turning out to be unsuccessful (World Economic Forum 2018), leaving corporates and startups dissatisfied with their partnerships (Boston Consulting Group 2019). Considering the increasing importance of corporate-startup collaboration on the one hand and its' still significant portion of ineffectiveness on the other, an in-depth understanding of the drivers and challenges of corporate-startup collaboration's success has become more relevant.

Although corporate-startup collaboration has been gaining much traction in practice and academia over the past decade (e.g. Morgan, Anokhin, and Wincent 2018; Homfeldt, Rese, and Simon 2019; Kurpjuweit and Wagner 2020; Shankar and Shepherd 2019; Weiblen and Chesbrough 2015), research remains scattered covering different topics across levels of analysis independently. For instance, studies have explored openness versus protection from the perspective of the incumbent (Dushnitsky and Lenox 2005a), the startup (Gans and Stern 2003; Greul, West, and Bock 2018; Maula, Autio, and Murray 2009), at the dyad-level (Colombo and Shafi 2016; Dushnitsky and Shaver 2009) and at the network level (Anokhin et al. 2011). At the same time, research covers various literatures such as innovation, technology diffusion, external knowledge sourcing, inter-firm collaboration, alliances and networks, strategy, and entrepreneurship, among other domains. With that, accumulating insights about corporate-startup collaboration have been developing rather fragmented and potential cross-fertilisation of insights has been largely ignored. However, research about conditions for investment preferred by corporates (Dushnitsky and Lenox 2005a) may have important implications for understanding collaboration motives for startups (Colombo, Grilli, and Piva 2006) as well as decision-making processes when working with startups (Hogenhuis, van den Hende, and Hultink 2016). In order to assess and bring together fragmented literatures about corporate-startup collaboration into a consolidated framework, we use paradox theory (Smith and Lewis 2011) to identify collaboration tensions and coping mechanisms as unifying themes and patterns across studies. We perform a systematic literature review (Denyer and Tranfield 2009; Fisch and Block 2018; Krauss, Breier, and Dasi-Rodriguez 2020; Tranfield et al. 2003) considering research on corporate-startup collaboration spanning more than three decades of research (1990–2022).

Our review contributes to research on corporate-startup collaboration in at least two important ways. First, by systematically comparing and analysing prior studies on corporate-startup collaboration, our review provides a nuanced unpacking of collaboration tensions that characterise corporate-startup collaborations. By so doing, we provide a basis for critical analysis of rather distinct yet overlapping areas of research and stimulate future theoretical development and empirical research. Second, our framework offers opportunities to enrich existing research explaining the success of corporate-startup collaboration by linking the complex, multi-faceted and temporal nature of coping mechanisms to the success of corporate-startup collaborations. Our findings allow us to identify several future research directions to advance our current

understanding about non-equal, asymmetric firms' interactions to develop and commercialise innovation.

2. Methodological approach

To uncover the determinants of the corporate-startup collaboration, we adopted a systematic review (Denyer and Tranfield 2009; Fisch and Block 2018; Krauss, Breier, and Dasi-Rodriguez 2020; Tranfield et al. 2003) in which we proceeded in five steps: question formulation, locating studies, study selection and evaluation, analysis and synthesis, and reporting and using results (Appendix 1). We follow the strategic alliance literature to define corporate-startup collaboration. Strategic alliances can be defined as an interfirm cooperative arrangement aimed at pursuing mutual strategic objectives and includes various forms such as joint ventures, direct equity investments, R&D agreements, research consortia, joint-marketing agreements, buyer-supplier relationships, and others (Das and Teng 2000; Hagedoorn and Schakenraad 1994). Corporate-startup engagement is a specific type of such a cooperative arrangement, in which a large incumbent firm joins forces with a small and novice venture. There are many ways of corporate-startup engagement depending on the direction of innovation flow and equity involvement – each with its distinct purpose, key characteristics, challenges, and success factors such as corporate venturing (including corporate venturing capital), corporate incubation, outside-in startup programmes (including corporate accelerators and startup-supplier programmes), and startup programme platform, among others (Weiblen and Chesbrough 2015). For this study, we aim to be comprehensive and include a broad range of corporate-startup collaboration modes, including the afore-mentioned and any evolving modes inherent to this particular type of relationship.

We searched for studies published from 1990 to 2022 across 39 top journals in the areas of management, innovation and entrepreneurship. The list of journals to be included in the literature search was derived using well-known journal lists such as the FT50 and the Academic Journal Guide, enriched with several journals of high standing in the specific domains of management, innovation, and entrepreneurship.[2] These premier journals reflect diverse domains to provide search breadth. As we wanted to ensure using the most potent research engine for premier publications, we searched the Web of Science database. Given that corporate-startup collaboration is such a vast field, including diverse forms of partnering and involving a wide range of actors in the startup support ecosystem, we spent a significant amount of time on search keywords and string construction to assure optimal inclusivity of studies. Keywords included collaboration, corporates, startups, and their many synonyms to produce the corporate-startup

[2]The journals included in our search include: Academy of Management Annals, Academy of Management Journal, Academy of Management Perspectives, Academy of Management Review, Administrative Science Quarterly, British Journal of Management, California Management Review, Entrepreneurship Theory and Practice, European Management Journal, Harvard Business Review, Industry and Innovation, International Journal of Management Reviews, International Small Business Journal, Journal of Business Research, Journal of Business Venturing, Journal of International Business Studies, Journal of Management, Journal of Management Studies, Journal of Marketing, Journal of Operations Management, Journal of Organizational Behavior, Journal of Product Innovation Management, Journal of Marketing Research, Journal of Small Business Management, Journal of Technology Transfer, Long Range Planning, Management Decision, Management Science, MIT Sloan Management Review, Organization Science, Organization Studies, R&D Management, Research Policy, Research Technology Management, Small Business Economics, Strategic Entrepreneurship Journal, Strategic Management Journal, Strategic Organization, Technovation.

collaboration string capturing the topic's great breadth. This initial search was then extended to include open innovation and collaborative innovation linked explicitly to startups, diverse engagement modes commonly used in corporate-startup collaborations, such as corporate venturing, incubators, accelerators, and startup programmes. In fact, other keywords included corporate venturing, corporate venture capital, corporate incubator, and corporate accelerator. In this way, the literature search also included single collaboration modes that might not appear in the original keyword string search. This exercise helped us sharpen the scope and conceptual boundaries of our review. After an extensive search, we found 455 papers which we then reviewed by reading their title, abstracts, and keywords. The study selection and evaluation phase reflected the 'fit for purpose' criterion (Denyer and Tranfield 2009), where we focused on assessing if each study's contribution addressed the research question. It was our fundamental guide for inclusion and exclusion decisions. First exclusion left 137 papers in the dataset that were read in detail and consequently extensively analysed to understand if they fulfil our inclusivity parameter. After this step, we retained a conclusive dataset of 110 studies from 25 journals (Table 1). The list of the most representative studies from this dataset is provided in the Appendix 2.

Following a systematic literature review (Denyer and Tranfield 2009; Krauss, Breier, and Dasi-Rodriguez 2020; Tranfield et al. 2003), we organised the papers in detailed data extraction form. First, we coded extensive information about the study type, research questions, contexts, methodology, research design, sample, data collection and analysis methods, key findings, and theoretical backgrounds. We then proceeded with analysis and interpretative and explanatory synthesis, extracting descriptive data and exemplars

Table 1. List of journals represented in the study's dataset.

Journal	Number of studies
Journal of Business Venturing	17
Strategic Management Journal	10
Strategic Entrepreneurship Journal	9
Research Technology Management	9
California Management Review	7
Research Policy	6
Entrepreneurship Theory and Practice	5
Journal of Business Research	5
Academy of Management	4
Organisation Science	4
Harvard Business Review	4
Technovation	4
Small Business Economics	3
European Management Journal	3
R&D Management	3
Long Range Planning	2
Journal of Business Research	2
Journal of Product Innovation Management	2
Journal of Technology Transfer	2
Management Decision	2
Jounral of Management	2
Journal of Management Studies	2
Administrative Science Quarterly	1
Industry and Innovation	1
Strategic Organization	1
Total:	110

from single studies, building them into a mosaic or map, and juxtaposing the evidence from various studies (Denyer and Tranfield 2009). In this way, we composed a bigger picture of corporate-startup collaboration research focusing on concepts (Denyer and Tranfield 2009; Fisch and Block 2018).

This extensive analysis and synthesis helped us to identify overall divergence and convergence patterns and to derive new dimensions (Figure 1) assisted by integration strategy in theorising (Patriotta 2020). Specifically, we clarified key dimensions of

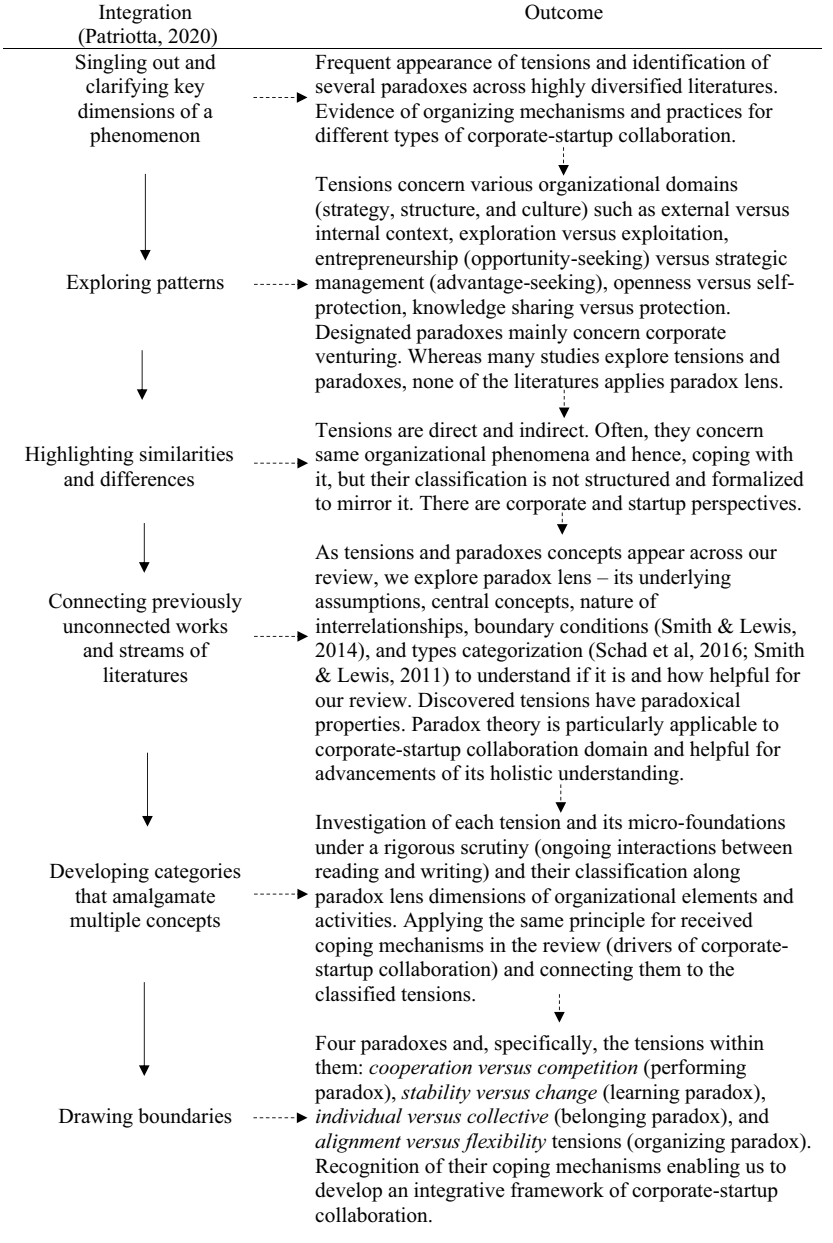


Figure 1. Dimensions derivation.

corporate-startup collaboration, explored patterns, highlighting similarities and differences, connected previously unconnected works and streams of literatures, and developed categories that amalgamate multiple concepts and draw boundaries (Patriotta 2020). In doing so, we derived novel dimensions of corporate-startup collaboration – its four paradoxes, specific tensions, and coping mechanisms, which we combine in a single, overarching framework for corporate-startup collaboration.

3. Corporate-startup collaboration: A Review

Early research about corporate-startup collaboration emerged in the 1990s within the literature on alliances and (internal) corporate venturing. For instance, scholars explored differences in technology strategy and performance of independent and corporate ventures (Zahra 1996) and the role of relatedness (shared plant, equipment, and production personnel, shared marketing programmes and activities, and shared immediate customers) on the performance of corporate venturing (Sorrentino and Williams 1997). These early studies revealed the diverse and intricate nature of venturing.

The first decade of the 2000s marks a steep increase in corporate-startup collaboration research. As large-scale data on corporate venture capital (CVC) investments became available, important developments were rooted in the analyses of large datasets, hence focusing primarily on CVC as a specific form of corporate-startup collaboration. This becomes progressively evident at the end of the decade and remains strong afterwards. Although there were some studies providing the startup perspective (e.g. Colombo, Grilli, and Piva 2006; Dushnitsky and Shaver 2009; Maula, Autio, and Murray 2009; Walter et al. 2006), the research focus was mainly on corporate benefits. Scholars explored the reasons for collaboration – why and when corporates collaborate with startups and how particular industry, technology, and firm conditions affect the investment decision of corporates (e.g. Benson and Ziedonis 2009; Chesbrough and Garman 2009; Coombs, Mudambi, and Deeds 2006; Dushnitsky and Lenox 2005a; Keil et al. 2008; Prevezer 2001). The first important signs of attention to the tensions within corporate-startup collaboration emerged; startups' 'swimming with sharks' tensions of simultaneous needs for cooperation and control (Benson and Ziedonis 2009; Maula, Autio, and Murray 2009) and limitations of interorganisational knowledge acquisition reflected in the paradoxes of disclosure and CVC (Dushnitsky and Shaver 2009; Gans and Stern 2003). Finally, research distinguished between two separate innovation models, corporate and entrepreneurial, and indicated the importance of an emerging collaboration pattern between startups, venture capitalists, and corporates (Freeman and Engel 2007).

The research output doubled in the decade thereafter (2010–2020) with attention shifting from *why* and *when* to *what* mode of engagement and *how* to collaborate. The literature became more balanced using both corporate and startup perspectives, and the first qualitative studies on other organisation forms (beyond CVC) start to appear and increase over time. Startups' rise advanced, and its ecosystem grew bigger and more dispersed globally (Weiblen and Chesbrough 2015). Research explored this broader ecosystem of diverse innovation actors adding venture and incubator models of innovation, indicating the possibility of their innovation in concert with corporates by collaborating with startups (Minshall et al. 2010; Morgan 2014), and showing the distinct institutional logic of each model, and how startups'

choice of different funding partners influences technical and commercial innovation in young firms (Colombo, Grilli, and Piva 2006; Pahnke, Katila, and Eisenhardt, 2015). Based on the direction of innovation flow and equity involvement, four main types of corporate-startup collaboration emerged, each with its distinct purpose, key characteristics, challenges, and success factors: corporate venturing, corporate incubation, startup programme outside-in (corporate accelerator), and startup programme platform (Weiblen and Chesbrough 2015). In addition, we witness a growing interest in more lightweight governance modes such as accelerators and startup supplier programmes (Ben Mahmoud-Jouini, Duvert, and Esquirol 2018; Chesbrough 2012; Kurpjuweit and Wagner 2020; Shankar and Shepherd 2019; Weiblen and Chesbrough 2015). Consequently, scholars became more and more interested in how to collaborate effectively – the majority of the literature addressed this essential issue.

4. Framework of corporate-startup collaboration

The previous discussion shows that research on corporate-startup collaboration is rather diverse and practice-oriented but fragmented. Despite many independent contributions, we discovered one unifying, converging theme for all kinds of partnering: the existence of multiple opposing demands or tensions and their coping mechanisms. Generally, tensions are present in organisations in many ways – from contradictory demands of various projects to individual (employee) versus collective (firm) interests. On top of that, the unbalanced nature of corporate-startup collaboration adds another layer of complication since a large incumbent and a venture differ substantially in their organisational profiles, motivations, and dynamics.

The tensions we found are conflicting but interdependent, simultaneous, and persistent throughout corporate-startup collaboration. As such, we anchor them within the paradox perspective. Schad et al. (2016, 10) define a paradox as a 'persistent contradiction between interdependent elements.' Smith and Lewis (2011, 382) define it as 'contradictory yet interrelated elements that exist simultaneously and persist over time.' Lewis and Smith (2014) explain that paradox theory approaches tensions as ubiquitous and persistent forces that challenge and fuel long-term success. They follow that its core premise is coexistence – acceptance and engagement enable actors to live and thrive with tensions. Its overarching question is how to engage both A and B simultaneously, and the paradoxical thinking entails a 'both/and' mindset that is holistic and dynamic, exploring synergistic possibilities for coping with enduring tensions (Lewis and Smith, 2014). Paradox theory is particularly salient for the corporate-startup collaboration because of the nature of the relationships and the partners involved. Two decidedly different partners bring together their contradictory and enduring organisational particularities (Weiblen and Chesbrough 2015), which means that prominent differences coexist and explain the success of the collaboration.

There are four main paradoxes representing core activities and elements of an organisation: performing (goals), learning (knowledge), belonging (identity/interpersonal relationships), and organising (processes) (Smith and Lewis 2011). Our review directed us into these four paradoxes and, specifically, the tensions within them. Accordingly, we identified *cooperation versus competition* (performing paradox),

Table 2. Tensions and coping mechanisms in corporate-startup collaborations.

TENSIONS	COPING MECHANISMS
The performing paradox: Cooperation vs Competition	- Clarify the value proposition - Avoid strategic misfit - Choose an appropriate IP strategy and collaboration model - Put defence mechanisms in place to avoid opportunistic behaviour
The learning paradox: Stability vs Change	- Build collaboration resources and capabilities - Coordinate various dimensions of technology portfolio to assure resource integration - Set-up and implement a stage gate process to optimise resource allocation - Experiment with new innovation approaches - Have a robust innovation knowledge base (absorptive capacity) - Achieve ambidexterity
The belonging paradox: Individual vs Collective	- Measure partners' complementarity versus substitution - Account for institutional logic of all partners - Set collaboration governance - Address the corporate's internal context to mitigate insularity - Use boundary spanners to learn about partners on both sides and reduce information asymmetry
The organising paradox: Alignment vs Flexibility	- Pursue active involvement early on - Adopt differential processes for simultaneous search and integration - Develop a specific process inherent to a distinct collaboration type - Organize a smooth deal setup and ongoing management

stability versus change (learning paradox), *individual versus collective* (belonging paradox), and *alignment versus flexibility* tensions (organising paradox). Identification of paradoxes helped us recognise inherent tensions and potential coping mechanisms, and enabled us to classify them in a unifying framework of corporate-startup collaboration (Table 2).

4.1. The performing paradox: cooperation versus competition

Performing paradoxes are related to pursuing competing goals or strategies (Smith and Lewis 2011) because organisations need to respond to the needs and demands of a plurality of stakeholders (Schad et al. 2016). Cooperation versus competition is a performing paradox that deals with the varied goals and outcomes stemming from different internal and external demands a company faces or tensions between stakeholders interpreting organisational outcomes differently (Schad et al. 2016). In this respect, Lado et al. (1997) highlight that success often requires firms to pursue competitive and cooperative strategies simultaneously. For instance, to enhance their competitiveness, firms need to compete for competencies generated through strategic alliances, while on the other hand, to be effective collaborators, they need to adopt behaviours supporting cooperation and trust.

The performing paradox manifests around value, its disclosure, and technological proximity considerations. Both partners seek collaboration because of the potential value for commercialising innovation. When pursuing a collaboration with corporates, start-ups have two options – to collaborate with value creation focused corporates who emphasise technology and R&D or with those focused on value appropriation pushing marketing and advertising (Morgan, Anokhin, and Wincent 2018). They may however be cautious about entering into an equity partnership and are unwilling to partner with

corporates that potentially have the most to offer in terms of technological expertise if there is insufficient information about the corporate's intentions. If the information asymmetry is high, startups may not choose the value creation option but will instead select a safer route of value appropriation (Morgan, Anokhin, and Wincent 2018). This strategic choice then could compromise the collaboration from its start and result into competing tensions around performing.

The issue of disclosure is particularly controversial in the context of technological proximity. Whereas technological links are an important antecedent of corporate-startup collaboration, these links also increase the incumbents' abilities to misappropriate new ventures' knowledge (Kim, Steensma, and Park 2019). They may trigger the 'paradox of corporate venture capital' – while a startup's technology disclosure helps a corporate assess and benefit from CVC activity, it also inhibits investment relationship as the startup is reluctant to disclose for fear of imitation (Dushnitsky and Shaver 2009). This paradox is particularly evident under a weak IPP regime with insufficient technology protection resulting in significant imitation concerns. Indeed, corporates prefer investments in low protected IPP regimes with high technological ferment and a marked need for complementary assets (Dushnitsky and Lenox 2005a). In such a context, corporate-startup relationships often compare to a 'swimming with sharks' situation for new ventures (Benson and Ziedonis 2009; Colombo, Grilli, and Piva 2006; Hallen, Katila, and Rosenberger 2014; Maula, Autio, and Murray 2009). It is paradoxical since the experienced and resourceful corporate 'sharks' are potentially the best (having most to offer) and the worst (being the most dangerous) partners simultaneously. The disclosure tension also exists on a network level in CVC investment syndication as the 'information exchange paradox'; a network's knowledge-spillovers are simultaneously beneficial and risky and corporates must balance cooperative and competitive innovation forces, being open and closed simultaneously (Anokhin et al. 2011).

4.2. Coping mechanisms for cooperation versus competition tension

4.2.1. Clarify the value proposition

As value is a focal concern of both partners, they should be clear on the value proposition of the collaboration (Weiblen and Chesbrough 2015; Wouters, Anderson, and Kirchberger 2018) and reduce information asymmetry (Morgan, Anokhin, and Wincent 2018). Corporates may create differentiated value propositions to startups – designing a specific value proposition that considers the corporation's specific resources and assets (Ben Mahmoud-Jouini, Duvert, and Esquirol 2018). In addition, they should provide 'smart capital' to startups as it positively affects the success and sustainability of startup activities (Gutmann, Schmeiss, and Stubner 2019). Hence, corporates should identify and evaluate the intensity of all value creation and value capture services, and configure their collaborations accordingly.

Similarly, startups are recommended to tailor value propositions to their specific context and deliver two sequential value propositions – the value of their offering to a corporate (Innovative Offer Value Proposition) and what resources and support they will need from the corporate to obtain the offering (Leveraging Assistance Value Proposition) (Wouters, Anderson, and Kirchberger 2018). Moreover, as early-stage startups usually consider several options for value creation, they shall present all of

them to a potential corporate partner to facilitate the identification of different opportunity areas (Minshall et al. 2010). Finally, they should be aware of three ways in which collaboration impacts strategy: access to complementary assets, opening new opportunities, and restricting future options; their partnering strategy shall reflect it and remain in flux as the startup's needs evolve (Minshall et al. 2010).

4.2.2. Avoid strategic misfit

A strategic fit in corporate-startup collaboration is essential (Keil et al. 2008) and partners should avoid strategic misfit by focusing on the strategic potential for knowledge transfer and learning (Weber and Weber 2011).There are various fit dimensions that both partners should consider. For example, there should be a match between aspiration and programme investing, monitoring, and harvesting capacities (Allen and Hevert 2007). Moreover, there is an importance of fit between the industry of the startup and the knowledge they possess concerning the extension of the existing business of the corporate partner (Lee, Park, and Kang 2018).

This fit also has implications for the desired level of autonomy: when unrelated, a high level of autonomy is a better strategy for achieving a high explorative innovation performance; otherwise, corporates should choose to pursue close relationships with their startup partners (Lee, Park, and Kang 2018). Finally, the concept of fit is evolving and dynamic. For example, corporate investors may achieve a strategic fit with startups by adjusting the design of accelerators and incubators over time (Riikkinen and Pihlajamaa 2022). Strategic fit can thus be seen as an iterative process fuelled by the accumulation of startups' technological and market knowledge. Consequently, partners need to regularly revisit their joint aspirations in order to avoid strategic misfit over time.

4.2.3. Choose an appropriate IP strategy and collaboration model

Firms that leverage external technology can access markets more quickly, yet their innovation options remain limited unless they have capabilities for proprietary innovation (Greul, West, and Bock 2018). In addition to choosing to be open, in what direction and with whom, startups can choose what part of the value proposition knowledge flows outside or inside the firm (Greul, West, and Bock 2018). Considering the level of partners' complementarity, they shall distinguish between knowledge disclosure and knowledge broadcasting (Veer, Yang, and Riepe 2022). The first is conscious, calculated disclosure considering the degree to which a startup discloses its knowledge, which is appropriate for close, complementary partnerships. Instead, knowledge broadcasting is a conscious knowledge disclosure to the general public, including competitors that can derive performance effects for startups without complementary partners (Veer, Yang, and Riepe 2022). Albeit an interesting strategy, knowledge broadcasting can also hurt the relationship, and should thus be exercised with care.

Furthermore, startups need to consider the interaction between their IP strategy (preclusion of technology development by incumbent) and the incumbent's complementary assets (adding to the value proposition of the new technology), as these two variables shape the effective commercialisation strategy and competitive advantage (Gans and Stern 2003). Competitive interaction between corporates and startups depends on the presence or absence of a market for ideas (cooperation) (Gans and Stern 2003). Starting cooperation when technological uncertainty is sufficiently low but sunk investment costs

have not yet become substantial is crucial for an effective cooperation strategy (Gans and Stern 2003). The study concludes that to achieve this delicate equilibrium, startups should assess their commercialisation strategy at each stage, weighing the continued independence's bargaining advantages against the collaboration's cost advantages.

In addition, both partners should be aware of the importance of the optimal partnering strategy selection. The corporations' strategic goals should determine the suitable model of engagement they employ in working with startups (Weiblen and Chesbrough 2015). The study illustrates it in the following way. First, corporate venturing is the optimal route when a corporate aims at financial returns, insights into non-core markets, and influence. If, instead, it focuses on the commercialisation of non-core technologies and financial returns, corporate incubation is a better alternative. Furthermore, a startup programme (outside-in) is suitable for product innovations and first-mover advantage goals. Finally, the startup programme platform is the best way for the corporation focused on platform establishment and future customers (Weiblen and Chesbrough 2015). Moreover, in their partnering efforts, corporates shall consider the trade-off between the number of ventures to support and the position within the network. Within a syndication network, the two most effective strategies in converting CVC investments into corporate innovation are maximising isolationist (corporates support many ventures but stay away from the network centre) and minimising centralist (corporates support few ventures but occupy a central network position, and this is especially true within highly concentrated industries (Anokhin et al. 2011). Choosing the appropriate way to collaborate is critical to offset competing goals and strategies.

4.2.4. Put defence mechanisms in place to avoid opportunistic behaviour

Startups fear that corporates with opportunistic tendencies may attempt to take away their technology, and this misappropriation risk is a substantial threat to a startup's existence. The intellectual property protection (IPP) regime, timing, social defences, together with the importance of the legal environment, stock markets, and social cognitive considerations, weaken the misappropriation risk (Colombo and Shafi 2016). The effectiveness of legal defence mechanisms such as IPP (Idelchick and Kogan 2012; Weiblen and Chesbrough 2015) depends on the legal environment and can involve a more robust IPP regime like the USA or the weaker ones like Europe (Colombo and Shafi 2016). Timing defences involve practicing temporal sequencing in corporate-startup relations – the best performing startups first form board interlocks with promising partners and add a strategic alliance later (Knoben and Bakker 2019).

The reputation of trustworthiness and stability are social defence mechanisms (Benson and Ziedonis 2009). Establishing sustained, credible commitments through prior investment quantity and continuity and calculative trust helps alleviate misappropriation concerns especially true in the same industries context (Sears et al. 2022). Different types of reputation, such as experience, involvement, and misconduct reputation, do influence corporates' ability to attract potential partners. Interestingly, the reputation for misconduct does not deter startups from collaborating when the corporate has a reputation for experience (i.e. the corporate is an experienced investor, determined by the age of the CVC programme), but it does so when the corporate has a reputation for active engagement (i.e. the corporate generally takes a board seat in the companies it invests in) (Anokhin et al. 2022). Another example of social defence can be building

firewalls to prevent IPP cross-contamination: employing only commercial people in due diligence efforts and corporate technologists rather than business-only technologists to interact with startups (Markham et al. 2005).

Social ties validate the incumbent firm's trustworthiness and the potential for productive collaboration (Kim, Steensma, and Park 2019). When engaging with corporates, startups should fine-tune social interactions (interaction's frequency, personal level knowledge of people, and relationship's closeness) with relational safeguards (granting only minor equity stakes, no board seat, and making the first investment only at a later stage of development) (Maula, Autio, and Murray 2009). They posit that the first contributes to realised learning benefits while the second is negatively related to realised relationship risks and social interaction. Finally, centrally positioned third parties (such as VC investors) are potent social defences especially significant when more traditional defences are unavailable (Hallen, Katila, and Rosenberger 2014). In fact, with their centrality and power-equalising effect through disciplining and aligning mechanisms, these third-party chaperones play a crucial role in helping young startups mitigate and navigate their weaknesses when gaining the necessary resources. These defence mechanisms thus play an important role in overcoming the cooperation-competition paradox.

4.3. The learning paradox: stability versus change

Learning paradoxes represent an organisation's knowledge and surface as dynamic systems change, renew, and innovate (Smith and Lewis 2011). These learning tensions arise when organisations consider the time horizon of their actions – today and tomorrow or looking backward and looking forward. The stability versus change tension, together with old and new, short-term and long-term, or exploitation and exploration, appertains to this category of organisational paradoxes (Schad et al. 2016). In corporate-startup collaborations, these tensions are prominent as collaborating on innovation brings change to the stability of the core businesses of both partners. This adjustment concerns respective resources and capabilities, where knowledge of both partners resides, as the collaborative innovation between a corporate and a startup involves external knowledge and technology sourcing. Such transitions result in stability versus change tension.

The inherent nature of corporate-startup collaboration is innovation and exploration. As a consequence, the potential outcome of such collaboration is more uncertain and future-oriented, triggering much stability vs. change organisational tensions. Due to its explorative rationale, investments in corporate-startup relations typically get limited organisational resources from the start (Wadhwa and Kotha 2006) as firms prefer to focus on their existing business knowledge base retaining it safer during uncertain times (Basu, Phelps, and Kotha 2011). However, activities like partner selection and valuation of the startup portfolio are complex, requiring much involvement that, due to the resource constraints, may lack and hence impact the cognitive capabilities of managers and the performance of the overall collaboration (Wadhwa and Kotha 2006). Moreover, the authors point out that more knowledge comes from bigger startup portfolios, but these paradoxically restrain the resources even more (Wadhwa and Kotha 2006). Similarly, successful startups may be seen as a potential threat to internal resources since their greater success triggers greater resource needs which then potentially diminish

the amount of corporate resources available to other business in the firm (Chesbrough 2000). For example, increases in a firm's CVC investment mean that the proportion of resources spent on R&D and exploration is necessarily reduced (Lee and Kang 2015).

Another manifestation of paradox emerges in the case of co-evolution of exploitation and exploration within where a corporate may be exploring while its portfolio startups may be much in the exploitation stage trying commercialisation (Yang, Narayanan, and De Carolis 2014). Moreover, although corporate venturing activities are exploratory vehicles by nature, they rely on existing capabilities and hence need to balance exploration and exploitation (Hill and Birkinshaw 2014). In effect, the biggest challenge of ambidexterity is resource scarcity. We now look at these examples from each side's perspective: resource access for the startup and resource commitment for the corporate.

Resource access for the startup and resource commitment for the corporate are two important resource mobility properties that are simultaneously necessary but could destabilise the core. The tension between the core business focus and true innovation remains an underlying concern within adaptation complexity consideration in collaboration (Keil et al. 2008). Successful commercialisation of innovation in startups requires the disposal of complementary assets (Paradkar, Knight, and Hansen 2015). Complementarity exists when the resources of one party directly enhance the effectiveness of the resources of the other party (Maula, Autio, and Murray 2009). The combination of specialised complementary assets appears to be a vital driver of forming exploitative commercial alliances by new technology-based firms (Colombo, Grilli, and Piva 2006). These complementary assets are sometimes so relevant that they can offset the cost of expropriation (Dushnitsky and Lenox 2005a).

The tensions also exist for the resources-abundant corporate as the new collaboration with a startup simultaneously brings opportunity and risk (Ganguly and Euchner 2018; Keil et al. 2008; Wadwha and Basu 2013). Partnering means that a corporation must commit its resources and capabilities to the shared innovation project. This commitment is a significant investment for an incumbent, but collaboration does not guarantee success. On the contrary, as we pointed out in our introduction, evidence from the practice has shown that almost half of the collaborative efforts fail (World Economic Forum 2018). So, it means that the corporate must commit its resources, knowing that it brings high uncertainty around the delivery of expectations in terms of new capabilities, performance, responsiveness, supply, and support (Ganguly and Euchner 2018). From a real options point of view, the risk can decrease if the corporate does not commit fully to a single startup, but it diversifies its effort and risk amidst the project portfolio (Wadwha and Basu 2013). However, the same study finds that it comes with a cost as from the inter-organisational learning perspective, such partial resource commitment can damage the collaboration.

4.4. Coping mechanisms for stability versus change tension

4.4.1. Build collaboration resources and capabilities

Corporations must screen, identify, work with, and monitor many startups (Weiblen and Chesbrough 2015). Therefore, corporates need to develop an external corporate venturing capability (Keil 2004), which is the ability to use external ventures to develop new capabilities and to reconfigure existing capabilities in the process of building new

business areas outside of the current business focus of the corporation. Such capability building occurs through acquisitive learning and learning-by-doing, which depend on firm's initial organisational structure and resource endowments. It consists of organisational structures, tangible and intangible resources the corporate can draw upon, processes, skills, knowledge, managerial systems of education and rewards, and values.

In addition, two different but complementary capabilities are critical 'must-have' competencies for corporate investors – selection and valuation, both depending on experience accumulation (coming from experience intensity, experience diversity, and acquisitive experience) and that are moderated by project uncertainty (Yang et al. 2009). Authors find that the industry diversity of the corporate's prior collaboration experience enhances the selection of portfolio companies for financial returns; its experience intensity, stage diversity, and syndication improve its selection for strategic benefits – innovation. Furthermore, as to the valuation capability, stage diversity negatively influences post-investment valuation capability, and experience accumulation is more effective when a corporate invests in a later-stage company (rather than an early stage). Corporates with consistent venture financing (investment experience) earn greater returns when acquiring startups than firms with irregular patterns of investing (Benson and Ziedonis 2009). Moreover, heterophilous relationships, the corporate's co-investment ties with prominent VCs, positively influence corporates' timely attention to discontinuous technologies (Maula, Keil, and Zahra 2013).

Finally, as knowledge and learning about choosing and managing collaboration are vital, startups should also invest in alliance capabilities. Best performing startups use relational pluralism (forming multiplex and multifaceted ties with partners) and outperform startups with no alliances or stand-alone alliances (Knoben and Bakker 2019). The study explains that this network relationship strategy mitigates the appropriation risk by offering startups increased legitimacy and a relational safeguard against resource misappropriation. In addition, the external collaboration also helps startups' internal collaboration (Howard et al. 2016). However, whereas alliance experience and investment intensity help a startup's innovation performance, there is also a significant moderator: investment complexity (Lin 2020). Hence, it is essential for both partners to carefully assess a startup's investment complexity (multi-partner ownership) as higher coordination and appropriation concerns (conflict management) lead to less-defined and more ambiguous innovation property rights creating a potential for opportunism, shirking, free riding, and other problematic situations (Lin 2020).

4.4.2. Coordinate various dimensions of technology portfolio to assure resource integration

Minshall et al. (2010) emphasise the importance of both partners assessing the startup's technology readiness level realistically early in the negotiations using multiple sources of information (including, for the startups, investors, advisors, mentors) to frame the business and technology 'ecosystem' and communicate this to potential partners. When corporates want to raise the technology readiness level as it poses much uncertainty, however, the startup is reluctant, exchange of people can help – transferring corporate's production engineers to startup or moving startup's people to corporate's production facilities was seen as a cost-effective mode also appreciated by investors (Minshall et al. 2010). They can share knowledge, enhance learning about technology

status, and allow for improvements reducing uncertainty. As to corporates, they should also consider innovation strategy within the firm's broader strategy, emphasising communication with startups. They could, for example, develop a de-sensitised, sharable Technology Roadmap (TRM) or portfolio map that positions the technological capabilities, the firm's needs (including criticality) and their links to opportunity areas (Minshall et al. 2010). With regards to technology acquisition, mapping all sources and mechanisms for internalising technologies (e.g. internal R&D, co-development, licencing, investment, acquisition), ensuring early engagement with key stakeholders in the technology acquisition process (R&D, procurement, legal/IP, production, and venturing), and de-risking through multiple internalising routes, were observed in the corporates (Minshall et al. 2010).

Moreover, to embrace both radical and incremental innovation, corporates may use a portfolio of startups (radical innovation) and suppliers (incremental innovation) (Homfeldt, Rese, and Simon 2019). Moderately diverse startup portfolios are found to have the greatest impact on the innovation performance of corporates (Wadhwa et al. 2016). In fact, a focused diversification strategy consisting of startups with little industry diversification and that are moderately related to the corporate creates the most value (Yang, Narayanan, and De Carolis 2014). Furthermore, geographic diversity in portfolios enhances innovation performance as long as firms avoid geographic overlaps with technological alliances and managerial complexity (Belderbos et al., 2018). Finally, CVC-backed startups tend not to use the knowledge base of the corporate unless inventors move from the corporate to the startup (Di Lorenzo and van de Vrande 2019). Thus, the mobility of employees can play an important role in shaping the innovation strategy of the corporate and developing the startup's innovation patterns.

4.4.3. Set up and implement a stage-gate process to optimise resource allocation

A stage-gate process is a valuable tool for the management of corporate-startup collaboration relationships as it ensures resource allocation to the most promising startups, and its transparent collaboration strategy can increase acceptance and commitment to the collaboration (Hogenhuis, van den Hende, and Hultink 2016; Kurpjuweit and Wagner 2020). This literature refers to Cooper's (1980) generic stage-gate model that divides the product development into different phases and gates where each phase marks a specific stage of development, and the gates serve as evaluation points to decide if the project continues or not. In addition to providing an overview of innovation and product development portfolios, the stage-gate process helps rank projects, aids more consistent and fair evaluation with its predetermined criteria applied to all projects, and reduces the risk of resources misallocation (Kurpjuweit and Wagner 2020). A startup-supplier stage-gate process with identification, internal matchmaking, pilot project, and transfer into the supply base phases can aid in selecting and integrating suppliers' innovation into their corporate acceleration efforts (Kurpjuweit and Wagner 2020). Hogenhuis, van den Hende, and Hultink (2016) anchor key desired startup capabilities of the collaboration (creativity, technology know-how, problem-solving skills, project management skills, and manufacturing capabilities) within a stage-gate process aiding the corporate to evaluate whether to collaborate or not. By matching the capabilities with development stages, considering commercialisation readiness, manufacturing capabilities needed, and who will manage the project, they uncover the project status (exploratory, front-end, or

focused, already in the stage-gate) and innovation feasibility. Finally, investment staging, as one of the crucial elements of VC investing, should be considered for the strategic performance of CVC activities (Hill et al. 2009).

4.4.4. Experiment with new innovation approaches

Corporates can identify promising startups by running well-designed partner business experiments as a validating tool measuring the uncertainty of new business model innovation (Ganguly and Euchner 2018). The study shows a correlation between running effective business experiments and designing effective business models as the experiments validate a priori (considering key factors, predictions, cost, and speed) whether partners can contribute in the ways demanded by the model. It argues that in this way, corporates can try to assess if their selected partners deliver expectations regarding delivering new capabilities, performance, responsiveness, supply, and support. Similarly, Howard (2014) addresses venture and incubator models' screening for disruption that uses rapid business prototyping – finding product/market fit by working with real customers. Keil, Autio, and George (2008) also examined how firms learn about their future capability needs in situations characterised by high decision-making uncertainty. They show how firms use startups' investments to actively engage in experimentation outside organisational boundaries, a learning process that they term as disembodied experimentation. It creates awareness of voids in an incumbent's capability base and helps overcome inertial restraints, thereby influencing the decision to invest in capability development.

Corporates may be changing their innovation strategy to exercise real options with their investments to practice a wait-and-see innovation strategy (purchasing an option in the markets of technology via CVC) (Ceccagnoli, Higgins, and Kang 2018). These authors find that the real option value of CVC is higher for investors with weaker scientific capabilities, engaging in distant technological fields, and with late-stage innovation pipelines. Furthermore, they point out that more market for technology activities together with less R&D output may have affected corporates' internal technological capabilities. Hence, their use of this new innovation strategy approach.

As for startups, recent research shows that due to their stark resource scarcity, the majority of startups prefer to develop new products internally, and of those who tend to form external linkages and collaborate, do not do both exploitation and exploration but choose only one specific path (Herrmann et al. 2022). The latter concerns startups' make-do approach, where they tend to use resources on hand and extend them instead of strategically calculating complementary assets needs. This strategy of extending the existing knowledge base instead of complementing it is termed bricolage and offers fascinating new insights for corporate-startup collaboration.

4.4.5. Have a robust internal innovation knowledge base (absorptive capacity)

For a corporate to learn from a startup, it must first possess sufficient absorptive capacity – a strong base in innovation founded in internal R&D that allows for the transfer and creation of knowledge through its interaction with startups, as the latter requires a sufficient technical understanding to both grasp and capitalise on that knowledge (Dushnitsky and Lenox 2005b). For example, the effect of CVC investing on acquisition performance is found to hinge critically on the strength of the acquirer's

internal knowledge base (absorptive capacity); as CVC investments increase relative to an acquirer's total R&D expenditures, acquisition performance improves at a diminishing rate (Benson and Ziedonis 2009). Moreover, absorptive capacity may moderate the limiting effect of larger investment scale and portfolio diversification that increase the technology diversity only to a certain extent (U-shaped relationship) (Lee and Kang 2015). External venturing alone, hence, is not enough; performance relies on corporate investors's ability to recognise, assimilate, and apply new external knowledge and, as such, it plays a critical role in capturing value from corporate-startup relationships (Lee and Kang 2015).

4.4.6. Achieve ambidexterity

The literature has highlighted two ways in which corporates try to address the learning paradox. One way is to create ambidexterity within the unit responsible for corporate-startup collaboration. Hill and Birkinshaw (2014) show that CVC units endure by developing an ambidextrous orientation – they build new capabilities for the parent corporate while leveraging existing strengths. Their study explains that CVC units become ambidextrous by nurturing a supportive relational context, defined by the power of their relationships with three different sets of actors: corporate parent firm executives, business unit managers, and members of the venture capital community. They need to strike a delicate balance between exploring new opportunities and exploiting existing capabilities (through resource-brokering strategies); integrating their activities with those of other units will likely increase their chances of survival (Hill and Birkinshaw 2014).

Another example is the use of an Acquisition and Development (A&D) strategy in which a firm outsources exploration, while specialising in exploitation (Ferrary 2011). Comparing Cisco, who used this strategy, to Lucent, the study offers exciting reflections on the strategy and its successful performance. A&D strategy involves buying startups in transition (development phase) when they transition from exploration into exploitation; corporate in this way uses startup structure as the transitional organisation of innovation between exploration and exploitation (Ferrary 2011). The author argues that the success of an A&D strategy depends on the firm's embeddedness in the network organisations comprised of an open innovation system and supported by an inter-organisational process of innovation (ties to venture capital firms and startups). Moreover, it also depends on the absorptive capabilities of the acquiring firms – learning from acquisitions will only take place if knowledge, routines, skills, and people flow from the acquired firm to the acquiring company (Ferrary 2011).

4.5. The belonging paradox: individual versus collective tension

Belonging paradoxes concern competing identities within organisations, demonstrated by the tensions between individual and collective affiliations and these competing identities can also occur across organisations, particularly when they seek to cooperate and compete (Schad et al. 2016). These paradoxes or tensions of identity are driven by complexity and plurality and they arise between individual and the collective, as individuals and groups seek both homogeneity and distinction (Smith and Lewis 2011). Hence, they find opulent terroir in corporate-startup

collaboration as the latter represents the inter-organisational relationship of two very different partners. Specifically, there are two aspects of complexity. Firstly, each partner greatly differs from the other. Their identities are distinctly divergent, and logically their individual incentives reflect it. Secondly, as they come together to innovate, the collaboration demands the conjunction of such incentives. Hence, their different interests now must converge to reach their common collective innovation goal. If the incentives are misaligned, the innovation process slows down (Freeman and Engel 2007). This notion is a source of prominent tension.

Its most evident manifestation lies in the 'paradox of creativity and control' (Freeman and Engel 2007). The study describes two distinct identities: the entrepreneurial model enhancing innovation and a corporate model focusing on scale and maximisation of efficiency and profitability. As the authors point out, the innovation process requires both creativity and control as it involves invention and its commercialisation. The latter is often more challenging as it needs execution – planning, coordination, and ultimately discipline. Organisations with such discipline have properties that are the opposite of those enhancing creativity. Conversely, organisations that generate creative solutions are often not good at the rapid and precise execution of plans (Freeman and Engel 2007). This is prominent for corporate-startup collaboration as high-technology, innovation focused startups need to go to market as fast as possible. Once in concert with efficiency focused corporates, reconciling their different individual orientations within collective collaborative innovation raises complexity.

This fundamental difference in culture and management style presents real challenges in collaboration, such as the Not-invented-here (NIH) and Not-sold-here (NSH) problems, i.e. negative attitudes towards absorbing external knowledge and sharing internal knowledge externally (Amann et al. 2022; Katz and Allen 1982). It is not easy to recreate the entrepreneurial culture with its sense of urgency and survival and its passion for innovation within the context of corporate-startup collaborations (Markham et al. 2005). The study posits the challenge of HR issues, such as staffing and compensation inherent to CVC collaborations. Hiring the right people internally or externally is complex as, due to the nature of the job, they must exhibit diverse skills not easily found (private equity investment experience and corporate background, among others). Furthermore, offering incentivised pay, such as performance-linked compensation that is representative of VC investment culture, although attractive as it mitigates agency problems, is not easily repeatable within a corporate culture that already has adopted a more traditional type of pay (Hill et al. 2009).

In addition, corporate venturing units often face a liability of newness, stressing the search for a source of legitimacy. For these units, legitimacy can be found either internally towards a corporate parent or externally towards a startup and VCs (Souitaris, Zerbinati, and Liu 2012). Depending on the desired legitimacy, collaboration orients its resemblance internally (endomorphism) or externally (exomorphism). This orientation then respectively triggers mechanistic or organic organisational structures (Souitaris, Zerbinati, and Liu 2012) and integrated versus arm's length investment logics (Souitaris and Zerbinati 2014). With their competing logics, these

competing identities are simultaneously the drivers of the corporate-startup collaboration as these diverse partners need each other and, equally and paradoxically, maybe collaboration obstacles.

4.6. Coping mechanisms for individual versus collective tension

4.6.1. Measure partners' complementarity versus substitution

Entrepreneurs must discern true complementarity from relatedness, when choosing corporate partners – while complementarity exists when the resources of one party directly enhance the effectiveness of the resources of the other party, relatedness concerns the commonality of firm functions and may signal potential overlap or even substitutability between the two parties' resources (Maula, Autio, and Murray 2009). Complementarity (versus substitution) between two partners implies two firms' aligning interests – both firms need each other to gain a more significant benefit, which reduces the moral hazard. Resource relatedness, on the other hand, gives rise to potential substitution effects. Hence, determining the degree of complementarity and relatedness is crucial in assessing whether a relationship should start and how to manage it. Keil et al., (2008) find that moderate relatedness between a corporate and its new venture partners was associated with greater innovation rates.

4.6.2. Account for institutional logic of all partners

A choice among different types of partners may have unanticipated effects on a firm's innovation beyond the resources gained through the relationship (Pahnke, Katila, and Eisenhardt, 2015). Their study suggests that although CVCs are rich in technical and commercial resources, they are less effective than VCs due to the constraints arising from their institutional logic. The corporate logic is characterised by dispersed authority, complex and slow decision making, internally conflicting goals, focus on corporate strategic aims, and long-time horizon, and as such is unlikely to enhance the venture's innovation. In addition, many diverse actors may be a part of the broader and richer startup support ecosystem inherent to even seemingly simple dyad corporate-startup collaboration (Minshall et al. 2010). As these direct and indirect relationships shape the collaboration, both startups and corporates must consider their institutional logics (norms, structures, and practices).

4.6.3. Set collaboration governance

Identifying who has power and accountability and who makes decisions in collaboration is essential. Financial issues and corporate funding matter as money drives behaviour; for instance, assigning venture costs to business units and/or to the corporate depending on the nature of the objective (new products versus long-term) (Markham et al. 2005). Human resources issues and staffing also matter as hiring (internally and externally) the right people for the management team is crucial, mainly because of the rare blend of qualifications required such as entrepreneurial experience, profound professional background, and detailed knowledge of both the entrepreneurial and corporate context (Ademi, Schuhmacher, and Zacharakis 2022; Ernst, Witt, and Brachtendorf 2005; Gaba and Dokko 2016; Markham et al. 2005).

Autonomy and management control are other governance mechanisms significant for corporate-startup collaboration. There should be a clear organisational separation so that the corporate venturing unit can make its own decisions; such separation also stimulates the implementation of entrepreneurial culture and increases flexibility (Ernst, Witt, and Brachtendorf 2005). Depending on the goal of the collaboration, such autonomy can be horizontal (strategic objectives) or vertical (financial goals) (Hill et al. 2009). In addition, there should be a distinction between strategic and operational control; while strategic control hurts autonomy, operational control helps to transfer managerial skills effectively (Lin, Chen, and Lin 2017).

Finally, using specific metrics tracking the performance should be an integral part of the planning process (Markham et al. 2005). These metrics can be financial, strategic, and process oriented. Moreover, it is crucial to decide which people at what level will be involved in making investment decisions (streamlining as much as possible), who will receive reports (opting for broad buy-in), establishing regular reviews, and sharing a common understanding of what will make success and failure (Markham et al. 2005). Establishing such clear metrics as part of the collaboration governance helps both partners to stay focused on the success of the collaboration and to move beyond their individual identities.

4.6.4. Address the corporate's internal context to mitigate insularity

Among others, there are three major internal areas that corporates should address. First, there is the importance of the internal network configuration of inventors that shapes social capital (set of shared values) and hence the direction of the collaboration: a configuration where inventors are heavily clustered into cohesive subgroups of interconnected inventors is optimal to preclude the risk of insularity as there is no strong social identity (clusters are autonomous and mutually dependent) (Kim, Steensma, and Heidl 2021).

Second, it is prominent to rethink a collaborative relationship that was mainly considered dyadic as a triadic relationship (business unit, open innovation task force, and startups) and be aware of the potential internal coopetition between multi-end back units (Seran and Bez 2021). The study addresses problems of connecting and engaging that concern not only internal and business units with startups but rather multiple rival internal business units. The authors emphasise the relevance of focusing on a singular front-end (startups) and paying attention to the internal 'valley of death' (Seran and Bez 2021). Hence, the first step is to identify the multi-unit back-end problem and to implement different process initiatives that simultaneously foster internal cooperation and competition. The latter include incentivising group-level collaboration while respecting the business units' competition, corporate innovation task force implementing two-level engagement with startups (one at the group level and one at the business-unit level), and finally, helping business units overcome their fear of sharing data to create a joint data lake by asking only for the anonymised data (raw) and creating an incentive system in which they exchange raw data.

Third, insularity can trigger two stark phenomena, NIH and NHS, that prevent successful knowledge transfer and put the collaboration at stake, so it is significant to align the objectives (NIH) and create knowledge sharing environment (NSH) to prevent them (Amann et al. 2022). Research informs that the causes of NIH and HSH problems

may be a desire for excellence and a fear of giving without receiving, respectively. Coping mechanisms involve translating the relevance of ideas and creating mutual ownership (NIH), and having mutual confidentiality understanding and use of appropriate safeguarding (NSH) (Amann et al. 2022).

4.6.5. Use boundary spanners to learn about partners on both sides and reduce information asymmetry

Learning more about each other and comprehending partnership asymmetries are essential in corporate-startup collaboration. Dedicated business developers can act as boundary spanners and overlook relationships to ensure that both parties' interests do converge (Ben Mahmoud-Jouini, Duvert, and Esquirol 2018; Weber and Weber 2011). For example, GE's corporate accelerator uses an interface unit to manage startups' interactions (Chesbrough 2012). Similarly, the knowledge brokering function in corporate venture capital connects external experimentation done through startup investments with future internal capabilities' needs (Keil et al. 2008). The corporate venturing unit acts as a matchmaker, connecting the venture to relevant business units during search, selection, due diligence, and as part of the collaboration, thereby easing the venture's navigation of complex organisational structures (Gutmann, Schmeiss, and Stubner 2019; Napp and Minshall 2011). Corporates furthermore tend to recruit managers with high social capital, solid functional expertise and look for non-traditional network endorsements (those distant from the incumbent's core business) (Keil et al. 2008).

Finally, startups should carefully assess the potential corporate partner, engage experienced external sponsors to learn more about corporates, and educate them about 'startup culture' through many informal interactions. In addition, corporates should prepare process maps showing startups the collaboration's operativity and decision-making processes, do shielding (developing dedicated teams or individual champions to protect a startup from bureaucracy and facilitate communication on both sides), and use intermediaries (consultants and universities) to spur more relationship building with startups (Minshall et al. 2010).

4.7. The organising paradox: alignment versus flexibility tension

Organising paradoxes surface as complex systems create competing designs and processes to achieve a desired outcome (Smith and Lewis 2011). They examine how firms create them, such as, for example, organising tensions between alignment and flexibility (Schad et al. 2016). Gibson and Birkinshaw (2004) highlight that firms need to be simultaneously aligned and efficient in their management of present business needs while also adaptive enough to changes in the environment that they will still be around tomorrow. They note the increasing recognition of the role of the processes and systems in a given organisational context that achieve the desired balance between opposing demands.

According to Gibson and Birkinshaw (2004), alignment refers to coherence among all the patterns of activities in the business unit; they are working towards the same goals. Adaptability refers to the capacity to reconfigure activities in the business unit quickly to meet changing demands in the task environment. These considerations are particularly relevant in the context of corporate-startup collaboration where, for

example, CVC investments exhibit a management challenge of ensuring close technical cooperation between a startup and a corporate and, at the same time, protect the decision-making autonomy of the CVC unit (Ernst, Witt, and Brachtendorf 2005).

Regarding alignment, three tense sets of processes are evident in corporate-startup collaboration – search and integration, ideation and operationalisation, and development and commercialisation. External venturing requires external knowledge search and integration of their initiatives with mainstream organisational units (Basu, Phelps, and Kotha 2016). Similarly, corporate accelerators also need search and integration as they rely intensely on the optimal selection of promising startups and the links to internal knowledge (Ben Mahmoud-Jouini, Duvert, and Esquirol 2018). Basu, Phelps, and Kotha (2016) investigate how to monitor, identify, and work with startups searching and integrating knowledge simultaneously, a challenging task to achieve as search focus could compromise mainstream organisation and integration emphasis search efforts.

In addition, the relationship between ideation and operationalisation is also complex. Although externally sourced ideas from startups have higher degrees of novelty and customer benefit than those coming from existing suppliers, creativity performance alone is not enough (Homfeldt, Rese, and Simon 2019). The study informs that factors that tip the scales for implementation are internal fit, economic performance, and proof of technical feasibility of the respective idea. Corporates choose startups based on the type of innovation and its fit within existing technology and economic model (Homfeldt, Rese, and Simon 2019).

Finally, there is the tension between the development and commercialisation of a new product for startups and corporates, also known as the technology diffusion chasm (Kurpjuweit and Wagner 2020). The study recalls the difficulty in bridging the gap between innovators/early adopters and early majority customers (startups) and between technology people and their commercial teams (corporates). This tension is stark in corporate-startup collaboration, as both phases are essential, and they do not concern a single organisation but two partners.

4.8. Coping mechanisms for alignment versus flexibility tension

4.8.1. Pursue active involvement early on

Working closely with portfolio companies is prominent regardless of the ultimate objective (financial or strategic) (Markham et al. 2005). In the case of financial goals, the most important resources are market knowledge, supply chain logistics, and access to potential customers; in the case of strategic objectives, there should be frequent contact to get a desired window on the marketplace, technology and value chain: the more frequent the contacts, the richer the information shared (Markham et al. 2005). Similarly, out of the four processes that involve selection, structuring, involvement, and exit, involvement is the most important value-adding process in incubation (Becker and Gassmann 2006). Finally, Allen and Hevert (2007) recognise three factors that destroy CVC value: late initiation in the VC cycle, large spikes in annual investment activity that strains on capabilities, and less active harvesting of holding due to inexperience. They conclude that active management is vital to overcome them, even in the case of only mainly strategic objectives.

4.8.2. Adopt differential processes for simultaneous search and integration

Basu, Phelps, and Kotha (2016) delivered five differentiating search and integration processes that were adopted by strong performing corporate venturing units. These processes reflect managing search and integration simultaneously and can be grouped into opportunity generation and the selection and venture-specific and unit-specific integration. Reduction of deal complexity (closing the deal faster and reducing terms and conditions) and protection of venture interests (safeguarding ventures' IP and avoiding competing investments) are two opportunity generation processes. Commitment to early-stage ideas (investing in young startups, making follow-on investments) is the opportunity selection process differentiating performing and non-performing CVC units. The study discovered two new practices for integration: developing collaborative blueprints (venture-specific integration) and avoiding competitive posture (unit-specific integration).

4.8.3. Develop a specific process inherent to a distinct collaboration type

Corporate-startup collaboration demands overarching properties such as fairness in partnership (partners protecting IP), a distinct, separate interface unit that buffers the startups from bureaucracy, and integration with the startups' ecosystem where corporates see startups as new customer groups that require their value proposition and marketing (Weiblen and Chesbrough 2015). However, a specific collaboration type also requires specific processes. For example, when corporates engage with venture capitalists and incubators to work with startups, to improve the pace of corporate innovation, they need processes that allow brainstorming, easy and inexpensive prototyping, and failing without long-term career consequences (Howard 2014). For corporate accelerators, it is critical developing a specific process that manages the relationships between the corporation and the startups involved (Ben Mahmoud-Jouini, Duvert, and Esquirol 2018), and the good example is GE's corporate accelerator programme ecoimagination that emphasised a specific need to set processes and structures around the programme to optimise it (Chesbrough 2012). Shankar and Shepherd (2019) propose two pathway processes of corporate acceleration that enhance entrepreneurialness – accelerating strategic fit to adapt to the future and venture emergence to reserve the right to play.

Kurpjuweit and Wagner (2020) offer a significant paradigm shift, seeing startups as potential suppliers (business partners) in startup-supplier programmes. They indicate the importance of integrating different internal startup activities, preparing the purchasing for its new role fostering exchange with the external entrepreneurial ecosystem. As to CVC, there are also specific processes concerning the CVC unit that creates channels for capturing the strategic value of CVC investments maximising the innovation enhancing value for all actors – parent firm (corporation), CVC units, and startups (Napp and Minshall 2011). The study offers an objectives-structure-metrics framework to distinguish between explorational opportunities (market knowledge, window on new technologies, and options objectives) and exploitational opportunities (access to complementary technologies, leveraging internal technology, and market expansion objectives). Enhancing innovation occurs through both channels with specific role assignments; CVC unit handling explorational opportunities and matchmaking that connects all the actors and business units of

the parent company and the startups directly managing all exploitational efforts (Napp and Minshall 2011). These examples of specific ways of organising information processing of the distinct collaboration type are prominent as they address bridging competing processes on both sides.

4.8.4. Organize a smooth deal setup and ongoing management

When working with startups, it is important to structure the collaboration deal in an easy, simple, and lightweight governance way that permits more manageable and faster collaboration (Basu, Phelps, and Kotha 2016; Morgan 2014; Weiblen and Chesbrough 2015). A smooth deal setup and ongoing management are crucial (Minshall et al. 2010). To do so, the authors propose that startups should invest in understanding who the dealmakers are and the exact objective of the deal, engage an external legal counsel, and set a partnership management process for regular review meetings and updates (Minshall et al. 2010). In addition, the study finds that continuous and open communication, documenting all interactions, and periodically reviewing the partnership (all its elements, including people) to capture all time changes is vital. Moreover, they elaborate on corporates who improve deal setup by agreeing early on overarching principles, doing an easy initial deal (successively followed by the longer-term more substantial partnership), and checking the status with the term sheet that deals with any potential issues.

Finally, corporates may consider the startup's cash flow position and build a deal around short-term revenue generation as this helps to understand future developments or termination of the partnership (Minshall et al. 2010). In addition, they engage various internal stakeholders (R&D, legal/IP, CVC, procurement, production, commercial) early on to set the deal. Finally, the study concludes, when managing the deal, corporates assure different team manages the deal implementation (transition from setup to operationalisation), a dedicated partnership manager keeps communication and monitoring intense and constant, a review of the partnership feeds into the corporate's business and technology strategy. These various activities to smooth the deal setup and management connect many different processes early in the collaboration, permitting more information flow for both sides and reducing potential tensions.

5. Discussion

Research on corporate-startup collaboration has gained much traction during the past decade and has evolved to investigate diverse market developments, innovation trends, and organisational needs of corporates and startups. Naturally, these developments have also added complexity to the intricate relationship between two very different partners. Our systematic literature review highlights the complex nature of the relationship and the challenges and tensions that are omnipresent in corporate-startup collaborations. Using a paradox lens, we have introduced a unified framework that synthesises earlier findings along four generic paradoxes and subsequently identified the coping mechanisms that both corporates and startups may employ to deal with these tensions. By doing so, our study has important theoretical and practical implications for corporate-startup collaborations.

5.1. Theoretical implications

We make several contributions to the academic literature. First, we use paradox theory as a unifying perspective for understanding corporate-startup collaboration and bring together different research streams around the notion of paradoxes and the tensions to be managed. Specifically, our framework connects literature streams on CVC, corporate entrepreneurship/corporate accelerators and asymmetric partnerships to the growing body of literature on corporate-startup relations. Moreover, our framework connects relational pluralism literature with inter-organisational learning and alliance literatures. Whereas relational pluralism investigates startups' partnership strategies mitigating tension of resource access and misappropriation (Knoben and Bakker 2019), the inter-organisational learning literature has looked at how corporates manage trade-offs regarding resource commitment and uncertainty risk (Wadwha and Basu 2013). Finally, the alliance literature concerns interfirm collaboration between small and large established firms on how startups decide potential value creation or value capture corporate partners depending on the information available to them (Morgan, Anokhin, and Wincent 2018). Bringing them together is relevant to understanding corporate-startup collaboration as a unique inter-organisational relationship. Applying a paradox perspective allows us to create a unifying framework by identifying paradoxical tensions to understand corporate-startup collaboration that can be applied across diverse types of collaborations between corporates and startups.

Second, we contribute to the paradox literature by unravelling the coping mechanisms that organisations apply for specific tensions. Such coping mechanisms help navigate the paradoxes within corporate-startup collaborations. Although prior literature has identified coping mechanisms to deal with paradoxes (Andriopoulos and Lewis 2009, 2010; Lewis, Andriopoulos, and Smith 2014; Smith and Tushman 2005), this paper is among the first to relate and explain specific coping mechanisms to specific types of tensions in the context of corporate-startup collaboration. Future research may further examine the relative effectiveness of each coping mechanisms in addressing a specific tension, and potential contingencies shaping the effectiveness. In this sense, our unified framework may act as a platform for future research about the multi-faceted nature of paradoxes and tensions within corporate-startup collaborations.

Finally, our study has implications for the literature on SMEs collaboration. For example, Hossain and Kauranen's (2016) research on open innovation in SMEs posits that SMEs are weaker than large firms in overcoming challenges for open innovation and that the size of an SME, its organisational stage, its capability to develop partnerships, and capacity to identify partners with complementary resources are influential. This context amplifies in the case of startups, which are small, young, and growth-oriented firms. While there are many similarities in the challenges of small and new firms (liabilities of smallness and newness), some unique challenges, such as the absence of trained employees, internal processes, customers, and revenues, are specific to brand new firms (Greul, West, and Bock 2018). Furthermore, Zahoor and Al-Tabbaa's (2020) research on inter-organisational collaborations and SMEs innovation found that firm size, age, and

entrepreneurial orientation negatively moderate the collaboration-innovation relationship in small firms. The smaller the firm's size, age, and entrepreneurial orientation, the more collaboration-innovation relationship. These findings indicate the importance of understanding startups as part of SMEs and open innovation efforts with corporates. Our study is revealing as it focuses on startups collaborating with large firms to innovate and the drivers and challenges of such collaboration's success. The coping mechanisms we identified may also concern SMEs collaborations.

5.2. Limitations and future Research

Our study provides a synthesis of corporate-startup collaboration research. Even though our review provides important implications, we recognise that our work is just a stepping stone for further exploration of this fascinating area.

First, whereas our review found strong evidence of individual versus collective and alignment versus flexibility tensions, especially for the latter, the managing solutions lacked the same richness. We think that this result is understandable from the pace of the research – only the last decade and particularly more recent studies focused on the operational aspects of the collaboration. As we discovered, the structuring of the collaboration is a prominent factor in allowing for a manageable and swift organisation (Basu, Phelps, and Kotha 2016; Minshall et al. 2010; Morgan 2014; Weiblen and Chesbrough 2015). Hence, answering who will do what and how to operate is critical. What underlying organisational structures (especially in corporates) make good ground for collaboration? How do specificities of such structures (functional, divisional, matrix, hybrid) feed into new organisational processes of the collaboration? These are just a few questions that come to our minds. We vigorously invite more research in this vital area.

Second, whereas our review identified collaboration tensions and their coping mechanisms, some of which reflect human resources issues, there is undoubtedly a need to further investigate the importance of human factors and organisational culture to the paradoxical tensions of collaboration. People and culture permeate all organisational spheres and affect organisational elements such as goals, knowledge, identity, and processes that, as discussed, ultimately concern collaboration. While we know that certain personality traits foster more openness to the paradox at the individual level, and dynamic capabilities (the processes, routines, and skills that enable firm leaders to respond effectively to constantly shifting environments (Teece et al. 1997) can do so at the organisational level (Smith and Lewis 2011), we still need to see this discussion inherent to the corporate-startup collaboration.

Third, the increasing pace of high technology, and particularly artificial intelligence and blockchain are likely to have a significant effect on solving some of the tensions and thereby to increase the performance effects of corporate-startup collaboration. For example, blockchain has already been documented as a potential lever for trust in collaborative innovation (Wan, Gao, and Hu 2022). As such, further research could expand on these insights to understand how corporate-startup collaborations can benefit from the application of blockchain technologies. Moreover, artificial intelligence is quickly emerging as a solution for firms to identify and select relevant startups to work with. Whether and under what circumstances such solution actually create value, however, remains to be better understood.

Fourth, we limited our framework to four main categories of paradox for the sake of clarity as paradox conceptualisation in itself is complex. However, throughout our review, we noticed potential crossovers and hence an indication of existing relationships between tensions that ask for more future research attention. Perhaps a good example is Napp and Minshall's, 2011 emphasis on matching practice to strategic goals in corporate venturing efforts of open innovation. The paradox perspective identifies tensions between organising and performing as the interplay between means and ends or process and outcome, apparent in conflicts between high commitment and high performance (Smith and Lewis 2011). Furthermore, it points out the importance of relationships that remain underexplored (Schad et al. 2016). For instance, it asks to what degree performing paradoxes (strategic priorities that reflect the competing demands) reinforce or mitigate organising paradoxes (practices for control and flexibility) fuelled by their implementation (Schad et al. 2016).

Finally, we discovered the potential of having tensions within tensions. The collaboration happens because of the tensions between two different actors. On one side, there is a startup with its easiness of embracing entrepreneurship, and on the other, a corporate that often struggles to do so due to its straddle between opportunity-seeking (entrepreneurship) and advantage-seeking (strategic management) behaviours (Shankar and Shepherd 2019). This tension initially attracts them, yet their engagement may further exacerbate multiple, multi-level collaboration tensions between personal and shared resources and strategies. For instance, corporate acceleration requires attracting startups and, at the same time, competing with internal programmes to attract internal resources to support work with startups and ensure new knowledge absorption (Ben Mahmoud-Jouini, Duvert, and Esquirol 2018). In addition, corporates' and startups' particular interests may be both convergent and divergent as they collaborate to leverage each other's resources and capabilities, yet still might have quite different individual incentives; corporates' wish for alignment and startups' ultimate goal to stay flexible and free (Ben Mahmoud-Jouini, Duvert, and Esquirol 2018). Unfortunately, our study did not cover this important issue particularly relevant to the corporate-startup collaboration given its inter-organisational nature. Further studies in this direction could bring exciting discoveries for the field.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

Ajlin Dizdarevic http://orcid.org/0000-0002-0535-046X
Vareska van de Vrande http://orcid.org/0000-0001-9551-2794
Justin Jansen http://orcid.org/0000-0001-7757-078X

References

Ademi, P., M. C. Schuhmacher, and A. L. Zacharakis. 2022. "Evaluating Affordance-Based Opportunities: A Conjoint Experiment of Corporate Venture Capital managers' Decision-Making." *Entrepreneurship Theory and Practice* 1–30. https://doi.org/10.1177/10422587221134788.

Allen, S. A., and K. T. Hevert. 2007. "Venture Capital Investing by Information Technology Companies: Did It Pay?" *Journal of Business Venturing* 22 (2): 262–282. https://doi.org/10.1016/j.jbusvent.2006.01.001.

Amann, M., G. Granstrom, J. Frishammar, and J. Elfsberg. 2022. "Mitigating Not-Invented-Here and Not-Sold-Here Problems: The Role of Corporate Innovation Hubs." *Technovation* 111:102377. https://doi.org/10.1016/j.technovation.2021.102377.

Andriopoulos, C., and M. W. Lewis. 2009. "Exploitation-Exploration Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation." *Organization Science* 20 (4): 696–717. https://doi.org/10.1287/orsc.1080.0406.

Andriopoulos, C., and M. W. Lewis. 2010. "Managing Innovation Paradoxes: Ambidexterity Lessons from Leading Product Design Companies." *Long Range Planning* 43 (1): 104–122. https://doi.org/10.1016/j.lrp.2009.08.003.

Anokhin, S., T. Morgan, W. Schulze, and R. Wuebker. 2022. "Is a Reputation for Misconduct Harmful? Evidence from Corporate Venture Capital." *Journal of Business Research* 138:65–76. https://doi.org/10.1016/j.jbusres.2021.09.008.

Anokhin, S., D. Örtqvist, S. Thorgreen, and J. Wincent. 2011. "Corporate Venturing Deal Syndication and Innovation: The Information Exchange Paradox." *Long Range Planning* 44 (2): 134–151. https://doi.org/10.1016/j.lrp.2010.12.005.

Arthur D. Little. 2019. *Corporate/start-up collaboration How to get the most of it?*. Arthur D. Little Luxembourg S.A.

Basu, S., C. C. Phelps, and S. Kotha. 2016. "Search and Integration in External Venturing: An Inductive Examination of Corporate Venture Capital Units." *Strategic Entrepreneurship Journal* 10 (2): 129–152. https://doi.org/10.1002/sej.1206.

Basu, S., C. Phelps, and S. Kotha. 2011. "Towards Understanding Who Makes Corporate Venture Capital Investments and Why." *Journal of Business Venturing* 26 (2): 153–171. https://doi.org/10.1016/j.jbusvent.2009.07.001.

Becker, B., and O. Gassmann. 2006. "Gaining Leverage Effects from Knowledge Modes within Corporate Incubators." *R&d Management* 36 (1): 1–16. https://doi.org/10.1111/j.1467-9310.2005.00411.x.

Belderbos, R., J. Jacob, and B. Lokshin. 2018. "Corporate Venture Capital (CVC) Investments and Technological Performance: Geographic Diversity and the Interplay with Technology Alliances." *Journal of Business Venturing* 33 (1): 20–34. https://doi.org/10.1016/j.jbusvent.2017.10.003.

Ben Mahmoud-Jouini, S., C. Duvert, and M. Esquirol. 2018. "Key Factors in Building a Corporate Accelerator Capability." *Research-Technology Management* 61 (4): 26–34. https://doi.org/10.1080/08956308.2018.1471274.

Benson, D., and R. H. Ziedonis. 2009. "Corporate Venture Capital as a Window on New Technologies: Implications for the Performance of Corporate Investors When Acquiring Startups." *Organization Science* 20 (2): 329–351. https://doi.org/10.1287/orsc.1080.0386.

Boston Consulting Group. 2019. *After the Honeymoon Ends Making Corporate-Startup Relationships Work*, June 2019. Boston Consulting Group.

Ceccagnoli, M., M. J. Higgins, and H. D. Kang. 2018. "Corporate Venture Capital as a Real option in the Markets for Technology." *Strategic Management Journal* 39 (13): 3355–3381. https://doi.org/10.1002/smj.2950.

Chesbrough, H. 2000. "Designing Corporate Ventures in the Shadow of Private Venturecapital." *California Management Review* 42 (3): 31–49. https://doi.org/10.2307/41166041.

Chesbrough, H. 2012. "Ge's Ecomagination Challenge: An Experiment in Open Innovation." *California Management Review* 54 (3). https://doi.org/10.1525/cmr.2012.54.3.140. 140–154

Chesbrough, H. W. 2003. "Open Innovation: The New Imperative for Creating and Profiting from Technology." *Harvard Business School Press*.

Chesbrough, H. W., and A. R. Garman. 2009. "How Open Innovation Can Help You Cope in Lean Times." *Harvard Business Review* 87 (12): 68–76.

Colombo, M. G., L. Grilli, and E. Piva. 2006. "In Search of Complementary Assets: The Determinants of Alliance Formation of High-Tech Start-Ups." *Research Policy* 35 (8): 1166–1199. https://doi.org/10.1016/j.respol.2006.09.002.

Colombo, M. G., and K. Shafi. 2016. "Swimming with Sharks in Europe: When are They Dangerous and What Can New Ventures Do to Defend Themselves?" *Strategic Management Journal* 37 (11): 2307–2322. https://doi.org/10.1002/smj.2572.

Coombs, J. E., R. Mudambi, and D. L. Deeds. 2006. "An Examination of the Investments in U.S. Biotechnology Firms by Foreign and Domestic Corporate Partners." *Journal of Business Venturing* 21 (4): 405–428. https://doi.org/10.1016/j.jbusvent.2005.02.001.

Das, T. K., and B. S. Teng. 2000. "A Resource-Based Theory of Strategic Alliances." *Journal of Management* 26 (1): 31–61. https://doi.org/10.1177/014920630002600105.

Denyer, D., and D. Tranfield. 2009. "Producing a Systematic Review." In *The Sage Handbook of Organizational Research Methods*, edited by D. A. Buchanan and A. Bryman, 671–689, Sage Publications Ltd.

Di Lorenzo, F., and V. van de Vrande. 2019. "Tapping into the Knowledge of Incumbents: The Role of Corporate Venture Capital Investments and Inventor Mobility." *Strategic Entrepreneurship Journal* 13 (1): 24–46. https://doi.org/10.1002/sej.1304.

Dushnitsky, G., and M. J. Lenox. 2005a. "When Do Firms Undertake R&D by Investing in New Ventures?" *Strategic Management Journal* 26 (10): 947–965. https://doi.org/10.1002/smj.488.

Dushnitsky, G., and M. J. Lenox. 2005b. "When Do Incumbents Learn from Entrepreneurial Ventures?: Corporate Venture Capital and Investing Firm Innovation Rates." *Research Policy* 34 (5): 615–639. https://doi.org/10.1016/j.respol.2005.01.017.

Dushnitsky, G., and J. M. Shaver. 2009. "Limitations to Interorganizational Knowledge Acquisition: The Paradox of Corporate Venture Capital." *Strategic Management Journal* 30 (10): 1045–1064. https://doi.org/10.1002/smj.781.

Ernst, H., P. Witt, and G. Brachtendorf. 2005. "Corporate Venture Capital as a Strategy for External Innovation: An Exploratory Empirical Study." *R&d Management* 35 (3): 233–242. https://doi.org/10.1111/j.1467-9310.2005.00386.x.

Ferrary, M. 2011. "Specialized Organizations and Ambidextrous Clusters in the Open Innovation Paradigm." *European Management Journal* 29 (3): 181–192. https://doi.org/10.1016/j.emj.2010.10.007.

Fisch, C., and J. Block. 2018. "Six Tips for Your (Systematic) Literature Review in Business and Management Research." *Management Review Quarterly* 68 (2): 103–106. https://doi.org/10.1007/s11301-018-0142-x.

Freeman, J., and J. S. Engel. 2007. "Models of Innovation: Startups and Mature Corporations." *California Management Review* 50 (1): 94–119. https://doi.org/10.2307/41166418.

Gaba, V., and G. Dokko. 2016. "Learning to Let Go: Social Influence, Learning, and the Abandonment of Corporate Venture Capital Practices." *Strategic Management Journal* 37 (8): 1558–1577. https://doi.org/10.1002/smj.2404.

Ganguly, A., and J. Euchner. 2018. "Conducting Business Experiments." *Research-Technology Management* 61 (2): 27–35. https://doi.org/10.1080/08956308.2018.1421381.

Gans, J. S., and S. Stern. 2003. "The Product Market and the Market for "Ideas": Commercialization Strategies for Technology Entrepreneurs." *Research Policy* 32 (2): 333–350. https://doi.org/10.1016/S0048-7333(02)00103-8.

Gibson, C. B., and J. Birkinshaw. 2004. "The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity." *Academy of Management Journal* 47 (2): 209–226. https://doi.org/10.2307/20159573.

Greul, A., J. West, and S. Bock. 2018. "Open at Birth? Why New Firms Do (Or don't) Use Open Innovation." *Strategic Entrepreneurship Journal* 12 (3): 392–420. https://doi.org/10.1002/sej.1282.

Gutmann, T., J. Schmeiss, and S. Stubner. 2019. "Unmasking Smart Capital How Corporate Venture Capital Units Configure Value-Adding Services." *Research Technology Management* 62 (4, *July–August*): 27–36. https://doi.org/10.1080/08956308.2019.1613117.

Hagedoorn, J., and J. Schakenraad. 1994. "The Effect of Strategic Technology Alliances On company Performance." *Strategic Management Journal* 15 (4): 291–309. https://doi.org/10.1002/smj.4250150404.

Hallen, B. L., R. Katila, and J. D. Rosenberger. 2014. "How Do Social Defenses Work? A Resource-Dependence Lens on Technology Ventures, Venture Capital Investors, and Corporate Relationships." *Academy of Management Journal* 57 (4): 1078–1101. https://doi.org/10.5465/amj.2012.0003.

Herrmann, A. M., C. Storz, and L. Held. 2022. "Whom Do Nascent Ventures Search For? Resource Scarcity and Linkage Formation Activities During New Product Development Processes." *Small Business Economics* 58 (1): 475–496. https://doi.org/10.1007/s11187-020-00426-9.

Hill, S. A., and J. Birkinshaw. 2014. "Ambidexterity and Survival in Corporate Venture Units." *Journal of Management* 40 (7): 1899–1931. https://doi.org/10.1177/0149206312445925.

Hill, S. A., M. V. Maula, J. M. Birkinshaw, and G. C. Murray. 2009. "Transferability of The venture Capital Model to the Corporate Context: Implications for the Performance of Corporate Venture Units." *Strategic Entrepreneurship Journal* 3 (1): 3–27. https://doi.org/10.1002/sej.54.

Hogenhuis, B. N., E. A. van den Hende, and E. J. Hultink. 2016. "When Should Large Firms Collaborate with Young Ventures?" *Research-Technology Management* 59 (1): 39–46. https://doi.org/10.1080/08956308.2016.1117329.

Homfeldt, F., A. Rese, and F. Simon. 2019. "Suppliers versus Start-Ups: Where Do Better Innovation Ideas Come From?" *Research Policy* 48 (7): 1738–1757. https://doi.org/10.1016/j.respol.2019.04.002.

Hossain, M., and I. Kauranen. 2016. "Open Innovation in SMEs: A Systematic Literature Review." *Journal of Strategy and Management* 9 (1): 58–73. https://doi.org/10.1108/JSMA-08-2014-0072.

Howard, M. 2014. "Venture Capital Firms and Incubators." *Research-Technology Management* 57 (6): 40–45.

Howard, M., H. K. Steensma, M. Lyles, and C. Dhanaraj. 2016. "Learning to Collaborate Through Collaboration: How Allying with Expert Firms Influences Collaborative Innovation Within Novice Firms." *Strategic Management Journal* 37 (10): 2092–2103. https://doi.org/10.1002/smj.2424.

Idelchick, M., and S. Kogan. 2012. "Ge's Open Collaboration Model." *Research Technology Management* 55 (4): 28–31. https://doi.org/10.5437/08956308X5504101.

Katz, R., and T. J. Allen. 1982. "Investigating the Not Invented Here (NIH) Syndrome: A Look at the Performance, Tenure, and Communication Patterns of 50 R & D Project Groups." *R&d Management* 12 (1): 7–20. https://doi.org/10.1111/j.1467-9310.1982.tb00478.x.

Keil, T. 2004. "Building External Corporate Venturing Capability." *Journal of Management Studies* 41 (5): 799–825. https://doi.org/10.1111/j.1467-6486.2004.00454.x.

Keil, T., E. Autio, G. George, and Keil. 2008. "Corporate Venture Capital, Disembodied Experimentation and Capability Development." *Journal of Management Studies* 45 (8): 1475–1505. https://doi.org/10.1111/j.1467-6486.2008.00806.x.

Keil, T., M. Maula, H. Schildt, and S. A. Zahra. 2008. "The Effect of Governance Modes and Relatedness of External Business Development Activities on Innovative Performance." *Strategic Management Journal* 29 (8): 895–907. https://doi.org/10.1002/smj.672.

Kim, J. Y., H. K. Steensma, and R. A. Heidl. 2021. "Clustering and Connectedness: How Inventor Network Configurations within Incumbent Firms Influence Their Assimilation and Absorption of New Venture Technologies." *Academy of Management Journal* 64 (5): 1527–1552. https://doi.org/10.5465/amj.2018.0225.

Kim, J. Y. R., H. K. Steensma, and H. D. Park. 2019. "The Influence of Technological Links, Social Ties, and Incumbent Firm Opportunistic Propensity on the Formation of Corporate Venture Capital Deals." *Journal of Management* 45 (4): 1595–1622. https://doi.org/10.1177/0149206317720722.

Knoben, J., and R. M. Bakker. 2019. "The Guppy and the Whale: Relational Pluralism and Start-ups' Expropriation Dilemma in Partnership Formation." *Journal of Business Venturing* 34:103–121. https://doi.org/10.1016/j.jbusvent.2018.05.008.

Krauss, S., M. Breier, and S. Dasi-Rodriguez. 2020. "The Art of Crafting a Systematic Literature Review in Entrepreneurship Research." *International Entrepreneurship & Management Journal* 16 (3): 1023–1042. https://doi.org/10.1007/s11365-020-00635-4.

Kurpjuweit, S., and S. M. Wagner. 2020. "Startup Supplier Programs: A New Model for Managing Corporate-Startup Partnerships." *California Management Review* 62 (3): 64–85. https://doi.org/10.1177/0008125620914995.

Lado, A. A., N. G. Boyd, and S. C. Hanlon. 1997. "Competition, Cooperation, and the Search for Economic Rents: A Syncretic Model." *Academy of Management Review* 22 (1): 100–141. https://doi.org/10.2307/259226.

Lee, S. U., and J. Kang. 2015. "Technological Diversification Through Corporate Venture Capital Investments: Creating Various Options to Strengthen Dynamic Capabilities." *Industry and Innovation* 22 (5): 349–374. https://doi.org/10.1080/13662716.2015.1054128.

Lee, S. U., G. Park, and J. Kang. 2018. "The Double-Edged Effects of the Corporate Venture Capital Unit's Structural Autonomy on Corporate investors' Explorative and Exploitative Innovation." *Journal of Business Research* 88:141–149. https://doi.org/10.1016/j.jbusres.2018.01.049.

Lewis, M. W., C. Andriopoulos, and W. K. Smith. 2014. "Paradoxical Leadership to Enable Strategic Agility." *California Management Review* 56 (3): 58–77. https://doi.org/10.1525/cmr.2014.56.3.58.

Lewis, M. W., and W. K. Smith. 2014. "Paradox as a Metatheoretical Perspective." *The Journal of Applied Behavioral Science* 50 (2): 127–149. https://doi.org/10.1177/0021886314522322.

Lin, J. Y. 2020. "What Affects New Venture Firm's Innovation More in Corporate Venture Capital?" *European Management Journal* 38 (4): 646–660. https://doi.org/10.1016/j.emj.2020.01.004.

Lin, Y. H., C. J. Chen, and B. W. Lin. 2017. "The Influence of Strategic Control and Operational Control on New Venture Performance." *Management Science* 55(5): 1042–1064.

Markham, S. K., S. T. Gentry, D. Hume, R. Ramachandran, and A. I. Kingon. 2005. "Strategies and Tactics for External Corporate Venturing." *Research Technology Management* 48 (2): 49–59. https://doi.org/10.1080/08956308.2005.11657305.

Maula, M. V. J., E. Autio, and G. C. Murray. 2009. "Corporate Venture Capital and the Balance of Risks and Rewards for Portfolio Companies." *Journal of Business Venturing* 24 (3): 274–286. https://doi.org/10.1016/j.jbusvent.2008.10.012.

Maula, M. V. J., T. Keil, and S. A. Zahra. 2013. "Top Management's Attention to Discontinuous Technological Change: Corporate Venture Capital as an Alert Mechanism." *Organization Science* 24 (3): 926–947. https://doi.org/10.1287/orsc.1120.0775.

Minshall, T., L. Mortara, R. Valli, and D. Probert. 2010. "Making "Asymmetric" Partnerships Work." *Research-Technology Management* 53 (3): 53–63. https://doi.org/10.1080/08956308.2010.11657631.

Morgan, H. 2014. "Venture Capital Firms and Incubators." *Research-Technology Management* 57 (6): 40–44.

Morgan, T., S. Anokhin, and J. Wincent. 2018. "When the Fog Dissipates: The Choice Between Value Creation and Value Appropriation in a Partner as a Function of Information Asymmetry." *Journal of Business Research* 88:498–504. https://doi.org/10.1016/j.jbusres.2017.11.032.

Napp, J. J., and T. Minshall. 2011. "Corporate Venture Capital Investments for Enhancing Innovation: Challenges and Solutions." *Research-Technology Management* 54 (2): 27–36. https://doi.org/10.5437/08953608X5402004.

Pahnke, E., R. Katila, and K. M. Eisenhardt. 2015. "Who Takes You to the Dance? How partners' Institutional Logics Influence Innovation in Young Firms." *Administrative Science Quarterly* 60 (4): 596–633. https://doi.org/10.1177/0001839215592913.

Paradkar, A., J. Knight, and P. Hansen. 2015. "Innovation in Start-Ups: Ideas Filling the Void or Ideas Devoid of Resources and Capabilities?" *Technovation* 41-42:1–10. https://doi.org/10.1016/j.technovation.2015.03.004.

Patriotta, G. 2020. "Writing Impactful Review Articles." *Journal of Management Studies* 57 (6): 1272–1276. https://doi.org/10.1111/joms.12608.

Prevezer, M. 2001. "Ingredients in the Early Development of the U.S. Biotechnology Industry." *Small Business Economics* 17 (1/2): 17–29. https://doi.org/10.1023/A:1011174421603.

Riikkinen, M., and M. Pihlajamaa. 2022. "Achieving a Strategic Fit in Fintech Collaboration - a Case Study of Nordea Bank." *Journal of Business Research* 152:461–472. https://doi.org/10.1016/j.jbusres.2022.05.049.

Schad, J., M. W. Lewis, S. Raisch, and W. K. Smith. 2016. "Paradox Research in Management Science: Looking Back to Move Forward." *Academy of Management Annals* 10 (1): 5–64. https://doi.org/10.5465/19416520.2016.1162422.

Sears, J. B., M. S. McLeod, R. E. Evert, and G. T. Payne. 2022. "Alleviating Concerns of Misappropriation in Corporate Venture Capital: Creating Credible Commitments and Calculative Trust." *Strategic Organization* 20 (2): 318–340. https://doi.org/10.1177/1476127020926174.

Seran, T., and S. M. Bez. 2021. "Open Innovation's "Multiunit Back-End Problem": How Corporations Can Overcome Business Unit Rivalry." *California Management Review* 63 (2): 135–157. https://doi.org/10.1177/0008125620968609.

Shankar, R. K., and D. A. Shepherd. 2019. "Accelerating Strategic Fit or Venture Emergence: Different Paths Adopted by Corporate Accelerators." *Journal of Business Venturing* 34 (5): 105886. https://doi.org/10.1016/j.jbusvent.2018.06.004.

Smith, W. K., and M. W. Lewis. 2011. "Toward a Theory of Paradox: A Dynamic Equilibrium Model of Organizing." *Academy of Management Review* 36 (2): 381–403. https://doi.org/10.5465/AMR.2011.59330958.

Smith, K. W., and M. L. Tushman. 2005. "Managing Strategic Contradictions: A Top Management Model for Managing Innovation Streams." *Organization Science* 16 (5): 522–536. https://doi.org/10.1287/orsc.1050.0134.

Sorrentino, M., and M. L. Williams. 1997. "Relatedness and Corporate Venturing: Does It Really Matter?" *Journal of Business Venturing* 10 (1): 59–73. https://doi.org/10.1016/0883-9026(94)00007-H.

Souitaris, V., and S. Zerbinati. 2014. "How Do Corporate Venture Capitalists Do Deals? An Exploration of Corporate Investment Practices." *Strategic Entrepreneurship Journal* 8 (4): 321–348. https://doi.org/10.1002/sej.1178.

Souitaris, V., S. Zerbinati, and G. Liu. 2012. "Which Iron Cage? Endo-And Exoisomorphism in Corporate Venture Capital Programs." *Academy of Management Journal* 55 (2): 477–505. https://doi.org/10.5465/amj.2009.0709.

Teece, D. J., G. Pisano, and A. Shuen 1997. "Dynamic Capabilities and Strategic Management." *Strategic Management Journal* 18 (7): 509–533.

Tranfield, D., D. Denyer, P. Smart, and Tranfield. 2003. "Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review." *British Journal of Management* 14 (3): 207–222. https://doi.org/10.1111/1467-8551.00375.

Veer, T., P. Yang, and J. Riepe. 2022. "Ventures' Conscious Knowledge Transfer to Close partners, and Beyond: A Framework of Performance, Complementarity, Knowledge Disclosure, and Knowledge Broadcasting." *Journal of Business Venturing* 37 (3): 106–191. https://doi.org/10.1016/j.jbusvent.2022.106191.

Wadhwa, A., and S. Kotha. 2006. "Knowledge Creation Through External Venturing: Evidence from the Telecommunications Equipment Manufacturing Industry." *Academy of Management Journal* 49 (4): 819–835. https://doi.org/10.5465/amj.2006.22083132.

Wadhwa, A., C. Phelps, and S. Kotha 2016. "Corporate Venture Capital Portfolios and Firm Innovation." *Journal of Business Venturing* 31 (1): 95–112.

Wadwha, A., and S. Basu. 2013. "Exploration and Resource Commitments in Unequal Partnerships: An Examination of Corporate Venture Capital Investments." *Journal of Product Innovation Management* 30 (5): 916–936. https://doi.org/10.1111/jpim.12037.

Walter, A., M. Auer, T. Ritter, and Walter. 2006. "The Impact of Network Capabilities and Entrepreneurial Orientation on University Spin-Off Performance." *Journal of Business Venturing* 21 (4): 541–567. https://doi.org/10.1016/j.jbusvent.2005.02.005.

Wan, Y., Y. Gao, and Y. Hu. 2022. "Blockchain Application and Collaborative Innovation in the Manufacturing Industry: Based on the Perspective of Social Trust." *Technological Forecasting and Social Change* 177:121540. https://doi.org/10.1016/j.techfore.2022.121540.

Weber, C., and B. Weber. 2011. "Exploring the Antecedents of Social Liabilities in CVC Triads—A Dynamic Social Network Perspective." *Journal of Business Venturing* 26 (2): 255–272. https://doi.org/10.1016/j.jbusvent.2009.07.004.

Weiblen, T., and H. W. Chesbrough. 2015. "Engaging with Startups to Enhance Corporate Innovation." *California Management Review* 57 (2): 66–90. https://doi.org/10.1525/cmr.2015.57.2.66.

World Economic Forum. 2018. *Collaboration Between Start-Ups and Corporates – a Practical Guide for Mutual Understanding*. World Economic Forum.

Wouters, M., J. C. Anderson, and M. Kirchberger. 2018. "New-Technology Startups Seeking Pilot Customers: Crafting a Pair of Value Propositions." *California Management Review* 60 (4): 101–124. https://doi.org/10.1177/0008125618778855.

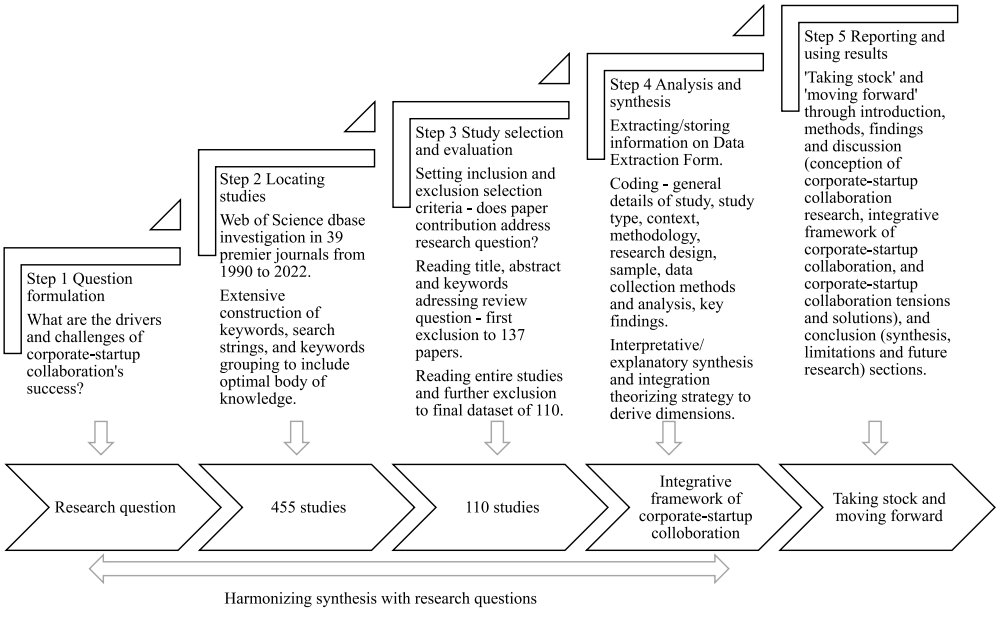
Yang, Y., V. K. Narayanan, and D. M. De Carolis. 2014. "The Relationship Between Portfolio Diversification and Firm Value: The Evidence from Corporate Venture Capital Activity." *Strategic Management Journal* 35 (13): 1993–2011. https://doi.org/10.1002/smj.2190.

Yang, Y., V. K. Narayanan, and S. Zahra. 2009. "Developing the Selection and Valuation Capabilities Through Learning: The Case of Corporate Venture Capital." Journal of Business Venturing 24: 261–273.

Zahoor, N., and O. Al-Tabbaa. 2020. "Inter-Organizational Collaboration and SMEs' Innovation: A Systematic Review and Future Research Directions." *Scandinavian Journal of Management* 36 (2): 101109. https://doi.org/10.1016/j.scaman.2020.101109.

Zahra, S. A. 1996. "Technology Strategy and New Venture Performance: A Study of Corporate-Sponsored and Independent Biotechnology Ventures." *Journal of Business Venturing* 11 (4): 289–321. https://doi.org/10.1016/0883-9026(95)00128-X.

Appendix 1. PRODUCING SYSTEMATIC REVIEW



Appendix 2. List of the most representative studies

Challenges: openness vs protection, multiple competing goals and strategies
Topics: value proposition, information asymmetry, "paradox of disclosure", "paradox of CVC", "information exchange paradox", technological proximity, misappropriation, "swimming with sharks"
Derived dimension:
The performing paradox: cooperation vs competition tension
References (for both, tension and *coping mechanisms*):
Anokhin, Örtqvist, and Thorgreen, 2011; Benson and Ziedonis, 2009
Colombo and Shafi, 2016; Dushnitsky and Lenox, 2005; Dushnitsky and Shaver, 2009; Gans and Stern, 2003; Kim, Steensma, and Park, 2019; Maula, Autio, and Murray, 2009; Morgan, Anokhin, and Wincent, 2018; *Allen and Hevert, 2007; Anokhin et al., 2022; Ben Mahmoud-Jouini, Duvert, and Esquirol, 2018; Garnsey and Wilkinson, 1994; Greul, West, and Boch, 2018; Hallen, Katila, and Rosenberger, 2014; Idelchick and Kogan, 2012; Keil et al., 2008; Kim and Steensma, 2017; Knobben and Baker, 2019; Lee, Park, and Kang, 2018; Markham et al., 2005; Minshall, Mortara 2010; Riikkinen and Pihlajamaa, 2022; Sears et al., 2022; Veer, Yang, and Riepe, 2022; Weber and Weber, 2011; Weiblen and Chesbrough, 2015; Wouters, Anderson, and Kirchberger, 2018*

Challenges: core business vs innovation, present vs future (old vs new) and their resources allocation considerations
Topics: resource access and expropriation risk for startups, resource commitment and uncertainty risk for corporates
Derived dimension:
The learning paradox: stability vs change tension
References (for both, tension and *coping mechanisms*):
Basu, Phelps, and Kotha, 2011; Chesbrough, 2000; Colombo, Grilli, and Piva, 2006; Ganguly and Euchner, 2018; Hill and Birkinshaw, 2014; Keil, Autio, and George 2008; Kim, Steensma, and Park, 2019; Knoben and Bakker, 2019; Lee andKang, 2015; Maula, Autio, and Murray, 2009; Paradkar, Knight, and Hansen, 2015; Wadwha and Basu, 2013; Wadhwa and Kotha, 2006; Yang, Narayanan, and De Carolis, 2014; *Belderbos et al., 2018; Benson and Ziedonis, 2009; Ceccagnoli et al., 2018; Colombo and Shafi, 2016; Di Lorenzo and van de Vrande, 2019; Dushnitsky and Lenox, 2005b ; Ferrary, 2011; Held et al., 2022; Hill and Birkinshaw, 2014; Hill, Murray, Birkinshaw, and Maula, 2009; Hogenhuis, van den Hende, and Hultink, 2016; Homfeldt, Rese, and Simon, 2019; Howard, 2014; Howard, Steensma, and Lyles, 2016; Keil, 2004; Kurpjuweit and Wagner, 2020; Lee and Kang, 2015;* Lin, 2020; *Maula, Keil, and Zahra, 2013; Minshall, Mortara, Valli, et al., 2010; Weiblen and Chesbrough, 2015; Yang et al., 2014; Yang et al., 2009*

Challenges: entrepreneurial vs strategic, competing identities needing to converge their diverging incentives within collaborative efforts
Topics: "creativity vs control paradox" – entrepreneurial creativity against corporate ability
Derived dimension:
The belonging paradox: individual vs collective tension
References (for both, tension and *coping mechanisms*):
Amman et al., 2022; Freeman and Engel, 2007; Hill, Maula, Birkinshaw, and Murray, 2009; Markham et al., 2005; Souitaris and Zerbinati, 2014; Souitaris, Zerbinati, and Liu, 2012;
Ademi et al., 2022; Amann et al., 2022; Ben Mahmoud-Jouini, Duvert, and Esquirol, 2018; Cox Pahnke, Katila, and Eisenhardt, 2015; Chesbrough, 2012; Ernst, Witt, and Brachtensdorf, 2005; Gaba and Dokko, 2016; Hill et al., 2009; Keil, Autio, and George, 2008; Keil et al., 2008; Kim, Steensma, and Heidl, 2021; Lin, Chen, and Lin, 2017; Maula, Autio, and Murray, 2009; Markham et al., 2005; Minshall, Mortara, Valli, and Probert, 2010; Napp and Minshall, 2011; Seran and Bez, 2021; Weber and Weber, 2011

Challenges: competing processes, a need to have diverse processes of two asymmetric partners simultaneously coexistent
Topics: search and integration, ideation and operationalization, development and commercialization
Derived dimension:
The organizing paradox: alignment vs flexibility tension
References (for both, tension and *coping mechanisms*):
Basu, Phelps, and Kotha, 2016; Ben Mahmoud-Jouini, Duvert, and Esquirol, 2018; Ernst, Witt, and Brachtendorf, 2005; Hogenhuis, van den Hende, and Hultink, 2016; Homfeldt, Rese, and Simon, 2019; Kurpjuweit and Wagner, 2020; Weiblen and Chesbrough, 2015;
Allen and Hevert, 2007; Basu, Phelps, and Kotha, 2016; Becker and Gasmann, 2006; Ben Mahmoud-Jouini, Duvert, and Esquirol, 2018; Chesbrough, 2012; Howard, 2014; Kurpjuweit and Wagner, 2020; Markham et al., 2005; Minshall, Mortara, Valli, et al., 2010; Morgan, 2014; Napp and Minshall, 2011; Shankar and Shepherd, 2019; Weiblen and Chesbrough, 2015