

Resource coordination and control through strategic networking: insights from biotechnology incubators in Sweden

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Abstract

Purpose – This study explores how Swedish biotechnology incubators coordinate and control critical resources through strategic networking. It examines the mechanisms that enable incubators to manage resource flows and identifies the key partners involved in these exchanges within Sweden's innovation ecosystem.

Design/methodology/approach – We analyze strategic practices by a qualitative multiple-case approach, drawing on semi-structured interviews with CEOs and board members from seven major biotechnology incubators in Sweden. Data were analyzed through a qualitative content analysis, combining deductive coding based on the resource-based view framework with inductive identification of emerging network actors and interaction patterns.

Findings – The analysis reveals four core categories of resources including human, financial, operational and technological resources acquired through diverse network alliances. Universities, science parks, investors, government agencies and service providers emerge as key partners in resource acquisition. Incubators employ trust-based relationships, organized interaction mechanisms, specialization strategies and geographical proximity to sustain and expand these networks. The findings also show variation in incubator business models and highlight how proximity to universities and science parks enhances credibility, resource access and collaborative opportunities.

Originality/value – This paper provides an in-depth understanding of how resource coordination unfolds within biotechnology incubation networks. By integrating theoretical and empirical perspectives, it contributes to the literature on strategic incubator management, with implications for innovation policy and incubator best practice.

Keywords Biotechnology incubators, Strategic networking, Resource control, Resource coordination, Incubator management

Paper type Research article

1. Introduction

Biotechnology firms typically originate at universities or research institutes, where scientists turn into research-driven entrepreneurs by commercializing their discoveries (Gurdon and Samsom, 2010). In general, scientists lack business skills, infrastructure and resources. Moreover, the development of biotechnology innovation requires long timelines. As a consequence, biotechnology startups suffer high risks in development and require huge investments (Sridhar *et al.*, 2013).

An incubator is a form of organization created with the purpose of nurturing and supporting the growth of startups to survive their initial stage (Aernoudt, 2004). They are either funded through internally generated financial resources or through external financial resources, sponsorship from the government or corporations (Hausberg and Korreck, 2020; van Weele *et al.*, 2017). Typically, incubators are intermediary organizations that connect various actors



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in a business ecosystem, including startups, investors, academic institutions and government (Dutt *et al.*, 2016). For such an organization, networking with the stakeholders is crucial. More specifically, relationships and connections among mentors, entrepreneurs, investors, industry experts and other stakeholders facilitate the knowledge sharing, collaboration and exchange of resources, essential for the success of the startups in the early stage (Hong *et al.*, 2019). Through this, incubators provide their incubatees with both tangible resources, such as rental space, shared equipment and funding, and intangible resources, such as knowledge, consulting services and network access. It has been shown that biotechnology firms in life science incubators typically have a better success rate than those functioning on their own (Holzwarth, 2019). Moreover, for the incubator itself, effective network development enhances its ability to attract investment, talent and expertise, which in turn benefits the incubatees toward their growth and market competitiveness (Di Fatta *et al.*, 2018).

However, although building and developing networks in business incubators are important, such networks are heterogeneous, and connections involve many stakeholders, including incubatees, industry partners, investors, educational institutions and government agencies (Shih and Aaboen, 2019). Managing those networks in a strategic way is no easy task. Some incubator managers are uncertain about forming collaborations or lack a strategic plan to establish ties with external firms (Phillips, 2022). Many incubator articles studying networks focus on investigating the impact of networks. There are fewer studies on the networking of incubators at the strategic level, and fewer still looking at a specific industry or sector. To fill the gap, this study aims to study the strategic management of biotechnology incubators in developing their network to control and coordinate resources. We identify key partners of biotechnology incubators and study how the incubators connect to these partners.

Besides the introduction in Section 1, the remaining sections of this paper are organized as follows. Section 2 provides the literature review. In Section 3, we provide an overview of the method used in this paper. Sections 4 and 5 present the results and discussion, and the paper is concluded in Section 6.

2. Literature review

Starting with the introduction of biotechnology incubators and their role in business development, this section summarizes networking in business incubators and how these networks have developed. This section concludes with how the concept of a resource-based view (RBV) affects the strategic management of incubators.

2.1 Biotechnology incubators

2.1.1 The role of biotechnology incubators. Biotechnology incubators, as proposed by Tonukari (2008), are designed primarily to help young entrepreneurs with limited funds and strong potential for biotechnology innovation. The translation process of biotechnology discoveries into market-ready products or technologies takes a long time requires huge investment in infrastructure and expertise from various fields and needs support from large biotechnology companies and venture capital firms (Sridhar *et al.*, 2013). Biotechnology incubators play a pivotal role in this process by providing specialized support, especially in intellectual property protection, technology transfer and regulatory requirements, as well as a well-equipped space with the right resources and services for accelerating research and business growth. As all biotechnology products need to be in compliance with applicable regulations, such as safety, standard operating procedures, waste disposal and environmental regulations, a valuable contribution by incubators specialized in biotechnology is knowledgeable staff with expertise in regulatory matters. Additionally, life science incubators provide shared equipment such as plate readers, centrifuges and HPLC systems. This means incubated firms do not have to purchase every single instrument, leading to cost savings and a quicker lab setup process (Holzwarth, 2019).

2.2 Biotechnology incubators and ecosystems

Biotechnology incubators operate within highly specialized and resource-intensive innovation ecosystems. Prior research across different geographical contexts, including the United States, the United Kingdom and Europe, emphasizes that access to critical resources, such as venture capital, scientific knowledge, laboratory infrastructure, and regulatory expertise, is strongly embedded in networked relationships among multiple actors (Calza *et al.*, 2020; Edmunds *et al.*, 2019; Prabhu *et al.*, 2024; Segers, 2015). These ecosystems are typically structured around a triple-helix configuration of university–industry–government interactions, where hybrid organizations such as science parks, incubators and technology transfer offices play boundary-spanning roles in facilitating collaboration and resource exchange (Edmunds *et al.*, 2019).

Across regions, anchor institutions including leading universities, teaching hospitals and large pharmaceutical firms, are consistently identified as central to resource access and cluster development. In the United States, life science clusters illustrate how proximity to research-intensive universities and dense venture capital networks supports startup formation, knowledge spillovers and access to funding (Calza *et al.*, 2020; Owen and Vedanthachari, 2022; Prabhu *et al.*, 2024). Similarly, large pharmaceutical firms increasingly engage in collaborative partnerships and innovation platforms to access early-stage technologies and support commercialization pathway (Fishburn, 2014; Stevens, 2017).

In the United Kingdom and Europe, studies highlight the importance of regional innovation systems and hybrid actors in shaping resource access. The HealthTIES framework demonstrates how incubators and science parks facilitate knowledge flows across institutional boundaries while revealing variation in governance and funding structures (Edmunds *et al.*, 2019). Research on European clusters further emphasizes the role of public funding, venture capital and institutional support in enabling biotechnology development, particularly in regions with less concentrated private capital (Carvalho and Vale, 2018; Segers, 2015). Across contexts, proximity to universities and science parks is consistently associated with improved access to technological and knowledge resources and enhanced opportunities for collaboration.

Thus, existing literature provides a well-established understanding of what resources biotechnology incubators and startups require and who the key actors are. Moreover, incubators and science parks are increasingly recognized as important intermediaries that connect these actors and facilitate access to resources within life science ecosystems (Bettanti *et al.*, 2022; Edmunds *et al.*, 2019).

However, while prior research extensively documents resource access and network embeddedness, less attention has been given to how incubators strategically manage, coordinate and control these resource flows. In particular, the mechanisms through which incubators structure relationships, select partners and govern interactions among universities, investors and industry actors remain underexplored (Edmunds *et al.*, 2019; Friesl *et al.*, 2019).

This study addresses this gap by focusing on how biotechnology incubators actively orchestrate their networks to coordinate and control critical resources, thereby moving beyond a focus on resource access toward a deeper understanding of strategic resource management within innovation ecosystems.

2.3 Networks in incubators

2.3.1 The role of business incubators in network development. Although the initial incubators were created in the United States in the late 1950s, the concept did not achieve worldwide popularity until in the 1980s, with an emphasis on innovation development through growing technology-based firms and academic entrepreneurship (Hackett and Dilts, 2004; Mian *et al.*, 2016). Three generations of incubators are defined (Bruneel *et al.*, 2012). Firstly, classic business incubators focused primarily on infrastructure benefits and economies of scale, such as affordable office space under preferential terms, complemented by shared amenities such as

meeting rooms, laboratory space and research equipment. Secondly, later incubators started including business support services, such as coaching and training. From the 1990s onward, the third generation of business incubators started emphasizing the use of their external network to provide access to services (Bruneel *et al.*, 2012), as well as focusing on intangibles and high-value services (Cantù, 2015; Grimaldi and Grandi, 2005). Business incubators exploit their network to provide incubated firms with preferential access to potential partners, such as customers, suppliers and investors (Hansen *et al.*, 2000). The significance of business incubators in fostering network development has been recognized as important (Antunes *et al.*, 2021; Pettersen *et al.*, 2016). Furthermore, not only do these incubators encourage commercialization within their own ecosystem, but they also attract significant foreign biotechnology entities to the ecosystem, stimulating economic development and competitiveness (Tonukari, 2008). Biotechnology start-ups located within the incubators have significantly greater success than those operating on their own (Holzwarth, 2019).

2.3.2 The impact of networks on incubatees. Successful incubators provide networks that help technology-based firms enhance resource allocation and knowledge sharing (Hong *et al.*, 2019). Networking has a significant impact on business performance (Kiran and Bose, 2020; Soetanto and Jack, 2013) propose that highly innovative companies collaborate with incubators and universities to support an environment where they can access both tangible and intangible resources. The firms with the most connections within the incubator ecosystems act as central players in shaping innovation development. They foster innovative collaborations with other incubated firms (Di Fatta *et al.*, 2018). Previous study suggested that too limited networking inside incubators can hinder firms from benefiting fully from the advantages of proximity and collaboration with other incubatees and universities (Bakouros *et al.*, 2002). Finally, although internal networks help develop the competitiveness of firms, entrepreneurs seek external networks for access to financial support and market inputs (Eveleens *et al.*, 2017; Hughes *et al.*, 2007).

2.3.3 Network strategies in business incubators. Because of the high impact of networks on the success of both incubators and incubatees, strategies for building and developing networks should be developed (Akçomak, 2009). Network actors can be divided into internal and external networks. The internal network refers to the connections and relationships formed within the incubator environment, while external networks connect the incubator and its incubatees to external stakeholders such as universities, investors, market experts and potential customers (Soetanto and Jack, 2013). Networking can be formal, through interactive activities such as meetings, training workshops, conferences and events (Chan and Lau, 2005; Soetanto and Jack, 2013). It can also be informal, and it has been argued that relationships typically rely on informal arrangements (Bøllingtoft and Ulhøi, 2005), and in particular that face-to-face communication is conducive to relationships (McAdam *et al.*, 2006). Frequency of interaction is key for collaboration (Soetanto and Jack, 2013). Meetings between incubated firms and non-incubated firms help overcome weak network problems to gain financial resources (van Rijnsoever, 2020). Several studies find that geographical proximity, which includes sharing space and social events taking place at the incubator, can influence the frequency and quality of interactions leading to network formation (McAdam *et al.*, 2006; McAdam and McAdam, 2006; Shih and Aabo, 2019).

Similarly, the proximity between the incubator and the university aids in fostering contact and personal interaction between entrepreneurs and academic researchers (McAdam and Marlow, 2008). Proximity within the incubator effectively nurtured both internal and external relationships, enhancing the connectedness. This interconnected approach not only solidifies the network but also improves the sense of belonging and trust for the incubated firms, making them feel more integrated and supported (Eveleens *et al.*, 2017). Previous research has emphasized the role of trust in fostering networked relationships in incubators (Bøllingtoft and Ulhøi, 2005; McAdam and McAdam, 2006), and in that sense, trust can be seen as a fundamental element of network strategy. The previous study suggested that management of incubators should focus on building trust for the successful development of the network

(McAdam and Marlow, 2008). Incubatees, mentors and investors are more likely to collaborate when there is mutual trust. This is supported by a study in Denmark, showing that mutual trust has greater significance than formal contact (Bøllingtoft and Ulhøi, 2005). Trust can be influenced by proximity and reputation gained through frequent interactions (McAdam and Marlow, 2008). Previous research showed that reputation can help overcome the liability of newness, enhancing the credibility and legitimacy of new ventures and facilitating the development of relationships with potential partners (Roseira *et al.*, 2014).

However, the strategy for developing networks in incubators should be deliberate, especially in specific industry incubators such as ICT and biotechnology incubators. It is essential to identify collaborative relationships that empower the incubator to successfully nurture its role in developing the network (Shih and Aaboen, 2019). Incubators are heterogeneous in reflection of the needs of the incubated firms (Soetanto and Jack, 2013). If there are too many different incubatees in an incubation program, they may not understand each other's business. On the other hand, if their businesses are too similar, they may avoid sharing information and making relationships (Eveleens *et al.*, 2017). Entrepreneurs may hesitate to share sensitive information due to fear of copying and stealing ideas (Akçomak, 2009). Moreover, excessive initial relationships can discourage incubated firms from engaging in further network opportunities (Shih and Aaboen, 2019).

Despite the extensive literature on networks and biotechnology ecosystems, existing studies have primarily focused on how networks enable access to resources. However, less attention has been given to how biotechnology incubators actively use these networks to coordinate and manage resources. To address this gap, this study adopts a RBV to examine how incubators build and utilize network relationships to mobilize and deploy critical resources.

2.4 Conceptual framework: a resource perspective of incubators

In the field of strategic management, the RBV theory has long been used to explain why some firms consistently outperform others. Under the RBV, organizations are seen as a collection of resources and capabilities that can be leveraged to create a competitive advantage (Barney, 1991). RBV focuses on the different resources that a firm requires and how they allocate them. According to the RBV theory, firms can attain sustainable competitive advantage if they get access to resources that are valuable, rare, inimitable and non-substitutable. These resources can be tangible or intangible resources (Amit and Paul, 1993; Barney, 1991). For the incubator context, RBV is used to gain an understanding of the resources that play a pivotal role in the success of incubation programs and how incubators manage and control these resources to support start-ups (Gassmann and Becker, 2006). While RBV traditionally focuses on firm-level resources, in the context of biotechnology incubators, many critical resources are accessed through inter-organizational networks. Therefore, networks can be understood as mechanisms through which incubators mobilize and coordinate valuable resources, linking relational structures to resource-based advantages.

However, RBV only focuses on the internal resources of firms. Instead, the resource-dependent theory is used to address the external resources of firms (Eisenhardt, 1989; Roundy and Bayer, 2019). The resource-dependent theory explores how external resources affect organizational behavior. According to the resource-dependent theory, firms are not able to produce all resources. They need to search for external resources from the environment (Roundy and Bayer, 2019). When applying this theory to the concept of business incubators, incubators use both internal and external resources to provide services to their incubated firms. In the context of biotechnology incubation, competitive advantage can be understood as the ability of startups to survive early-stage uncertainty, secure funding and progress through development stages toward commercialization. From the RBV perspectives, several resources identified in this study exhibit VRIN characteristics. Specialized scientific knowledge and expertise are valuable and difficult to imitate, while access to established investor networks

and institutional credibility associated with leading universities can be considered rare and non-substitutable resources. These characteristics are particularly important in biotechnology, where high uncertainty, long development cycles and regulatory complexity increase the importance of unique and hard-to-replicate resources.

Figure 1 displays the conceptual framework of this research. Using a resource perspective, the resources influencing the management of business incubators are divided into four main categories: human resources, financial resources, organizational resources and technological resources (Somsuk and Laosirihongthong, 2014; Somsuk *et al.*, 2012). Human resources refer to knowledge, skills and experience from talented managers, coaching and on-site business expertise (Kiani Mavi *et al.*, 2019; Somsuk *et al.*, 2012). Human resources are seen as the most important resource that increases start-up survival rates (Blank, 2021; Somsuk and Laosirihongthong, 2014). Financial resources refer to different kinds of financial support or monetary resources, such as venture capitalists, business angels, and equity investors (Heirman and Clarysse, 2004). An incubator can be seen as a central hub for financial activities, partnering with a variety of financial and other organizations, and giving advice or information regarding available funding options (Somsuk *et al.*, 2012). Organizational resources refer to operational routines and the quality of services offered to start-ups. This also includes the selection process of tenants, as incubators have to develop their collaborations with the community and government agencies for a more effective operational process (Lose, 2021). Technological resources refer to physical infrastructure with affordable prices, such as rental spaces, laboratory equipment and facilities (Somsuk and Laosirihongthong, 2014).

Start-ups often rely on networks to overcome their weak reputations and scarce resources. Incubators play an important role in promoting partnerships and networks within and outside the incubator. These networks are used as a key resource to support their incubatees (Galvão *et al.*, 2019; Dourado Freire *et al.*, 2022) highlight the importance of creating a strong network of contacts with various types of actors. A study from (Somsuk and Laosirihongthong, 2014) also suggests that incubators have to build a strong collaboration with universities, crucial external experts and other institutes for supplementing and complementing resources. A strong network capacity can enhance the ability of technology business incubators to innovate and improve their service offerings (Dong *et al.*, 2023). Furthermore, in a Chinese setting Lin *et al.* (2012) find that external support resources are positively correlated with operating and networking capabilities, resources highlighted as the most significant in enhancing incubator service performance. Therefore, networking capabilities were also found to play an important role in determining the success in the incubators. In line with this, the studies from (Dong *et al.*, 2023; Kiran and Bose, 2020) find that networking has a positive and significant impact on

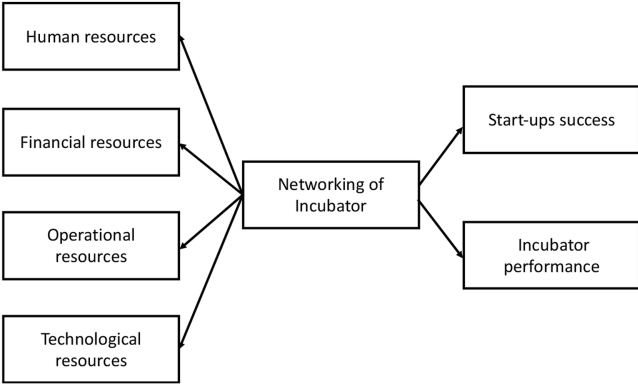


Figure 1. The theoretical framework of the study

incubator performance. Through the networks of incubators, start-ups access accurate resources, resulting in improved entrepreneurial performance (Wu *et al.*, 2023). It is important for incubator managers to leverage the network for resource acquisition. So, the research questions of this study are as follows.

- RQ1. How do Swedish biotechnology incubators utilize their networks to control and coordinate relevant resources?
- RQ2. Who are the key network partners in these resource exchanges?

3. Methodology

3.1 Research design

This study examines the strategic management practice of Swedish biotechnology incubators. This study focuses on biotechnology and life science in Sweden for a number of reasons. Firstly, Sweden has a strong life science cluster, hosting more than 3,000 companies with upwards of 40,000 employees (Innovation, 2020). Sweden is also recognized for its innovative capabilities, ranking as the high innovative country in the EU and having a significant portion of GDP derived from life science exports (BioStock, 2022; Innovation, 2020).

The research approach is a qualitative case study (Gomm *et al.*, 2000; Yin, 2018). This approach has been widely used for understanding complex phenomena (Dubois and Araujo, 2007; Miles and Huberman, 1994). It is also used to build and test theory (Eisenhardt, 1989). We purposefully selected seven prominent biotechnology and life science incubators in Sweden, including Karolinska Innovation, Sting, Uppsala Innovation Center, Medeon, Smile, GU Venture and Umeå Biotech Incubator (see Table 1). This selection encompassed a significant portion of biotechnology and life science incubators in Sweden, ensuring a comprehensive understanding of the strategic management practices of the incubators in Sweden (Innovation, 2020). In this study, regional incubators refer to incubators embedded within local or regional innovation systems, typically supported by municipalities or regional development agencies, and primarily focused on fostering startups within a specific geographic area.

3.2 Participants

The participants are CEOs and board members of the selected incubators, and in one case, an experienced investment director, chosen for their responsibility for decision-making and strategic direction. The profiles of the respondents are presented in Table 2.

3.3 Data collection

For each incubator, we read documents (annual reports, information material, vision documents, plans) and read through their webpages, both for the incubators and their holding

Table 1. Incubators participating in the study

Organization	Type of incubator	Region	Founded
Medeon	Regional incubator	Malmö	1985
GU Venture	University incubator	Gothenburg	1995
KI Innovation	University incubator	Stockholm	1996
Uppsala Innovation Center	University incubator	Uppsala	1999
Sting	Regional incubator	Stockholm	2002
Umeå Biotech Incubator	University incubator	Umeå	2003
Smile	Regional incubator	Lund	2007

Table 2. Profile of the respondents of the study

Participants	Title
P1	CEO
P2	Board member
P3	CEO
P4	CEO
P5	CEO
P6	Investment director
P7	CEO
P8	Board member
P9	CEO

companies. Semi-structured interviews (Clark *et al.*, 2021; Kvale, 1996) were conducted between August 2023 and February 2024. The interviews were conducted either face-to-face or via video conferencing, depending on the preferences of the interviewee. All interviews, which were conducted in English and lasted for approximately one hour, focused on how incubators build their network to get access to their key resources. A semi-structured interview guide was used, structured around four main topics: key incubator resources, network development, key partners and collaboration, and success factors. All interviews were recorded with the participant’s consent and then transcribed verbatim to ensure accuracy and integrity in data analysis.

3.4 Data analysis

A qualitative content analysis was conducted to interpret interview data. In the deductive phase, transcripts were coded according to categories from the RBV, including human, financial, technological and operational resources, to examine how these resources were coordinated and controlled within incubator networks. The second, inductive phase involved identifying the key network partners engaged in these resource exchanges and exploring how interactions among them facilitated coordination and control.

4. Results and discussion

4.1 Resources

4.1.1 Human resources. Biotechnology incubators provide business coaches to support incubatees. They are typically industry experts with entrepreneurial experience within the life science, pharmaceutical and MedTech industries. This ensures that the guidance offered is informed by practical, industry-specific experience.

So, we have 9 business coaches, and they are employed [...] our program, even the open programs, are designating a unique coach with experience and these people are experienced business coaches. Most of them are engineers by training but they have also started and launched [their own] companies before. (P8)

All the coaches have previous experience as entrepreneurs and we’re looking for coaches that have reached a stage in their career where they want to give back to the startup community. (P7)

Coaches are selected to suit the individual incubatees in the incubator, both in terms of the specific field and the need at different stages.

The incubator companies get the dedicated external coach, and we also tailor the selection based on the specific needs of that particular company. (P3)

While coaches at some incubators are full-time employees, ensuring their commitment and availability to the incubatees they mentor, other incubators do not have full-time coaches, instead keeping a list of coaches in different special fields.

Coaches, they're not employees [...] there's the long list of different coaches but I think the most important is to evaluate, what kind of coach do you need for this special company. (P2)

Apart from coaches, incubators require experts. Service provider organizations offer expertise, ranging from specialized legal advice and intellectual property management to technical support and market analysis. For example, experts from a Clinical Research Organization are required to assist incubatees in pharmaceutical, biotechnology and medical fields in the clinical trial process. IP firms and legal expertise are also required for the patenting issue.

We have some partnerships with the companies that deliver services to the startup companies in within the incubator and that could be like lawyer firms, IP consultants, accountancy firms. (P7)

4.1.2 Financial resources. Financial resources consist of the funding of the incubator operations, and second, the funding of the startups. The main source of funding for incubator operations is public, of which the main part comes from Vinnova, Sweden's innovation agency. For the university incubators, they also obtain funding through their university holding company, where they sometimes co-invest in the incubatees. Furthermore, the fact that most biotechnology incubators in Sweden are located in different cities means that they also receive some public funding and support from the state and municipality. Another source of public funding is from international collaboration with EU funding.

[...] which is also funded by EU money, partly funded, to be honest we fund 60% in EU funds 40% [through the university] (P4)

What's more, incubators supplement public funding with private investments, mitigating the risk of dependency on government funds, which may be subject to policy shifts and changing agendas.

[You] need to have the balanced sources of income. If you're only relying on public capital, you're very vulnerable to changes [...] maybe the government changes, they have a different agenda. (P1)

Besides external funding from public and private sources, some incubators use internally generated funding. Many incubators do not take ownership of the incubatees, instead relying on public funding for operating their work and supporting incubatees.

[...] We as an incubator need to work longer with the startups. We don't take equity in the companies that we incubate. We are very much relying on public funding [...] (P1)

In contrast, other incubators do take ownership when investing in incubatees and the profit will be reinvested in the next batch of incubatees in the program.

Turning to the funding of the incubatees, some of the earliest funding is supplied by the incubator, while later funding is supplied by the investor network connected to the incubator.

When you need 20 million or more up to 100 million. That's where there's a blind spot in the market for funding. So, we are going to take a role in creating a better environment for the startups in those stages, because there are no clear actors that have taken [...] that responsibility, not here in [our university] at least. (P1)

The reason for this is that investors do not want to take on the high risk of investing in early-stage innovation.

The problem for business angels is that it's highly specialized research, and it's extremely difficult for them, even for the more institutionalized funds to compare different projects with each other ... So, they can't invest in that very early stage. (P6)

4.1.3 Operational resources. As the field of biotechnology is broad, most of our interviewees emphasized the importance of offering tailored programs.

If you start with a pharmaceutical company, you don't have a product candidate at all. Maybe it's not relevant to start [talking] to a customer. [...] So, you really need to customize the programs. (P2).

Customization could also be done according to different developmental stages, ranging from early stage, such as open coaching, to more structured incubation and acceleration programs lasting from 1 to 2 years.

Our key strategy is to have different programs directed to groups of innovators based on the maturity of the business idea. Our core business is giving them the right tools in the right time to get them to the next stage. So, we've developed four different business development programs spanning from early-stage ideation to find problem solution fit all the way to product market fit and scale [...]. (P1)

However, as all incubatees are research-based, the absolute majority lack business skills. They need to gain all sorts of business knowledge.

In the incubator, once they're accepted to the incubator program, we offer some common programs, that are sort of group exercises business development program. (P3)

There are also pre-incubator training programs provided by incubators. If the ideas are not mature enough, the incubatees will be convinced to take courses, some of which are available online.

We have a pre-incubation activity called the startup academy. It's a free online course for teams or projects or companies that are a little bit too early for our incubator. (P7)

Other than this, the incubator also has collaborations with other partners such as other incubators, universities, hospital, providing more specific support for incubatees.

Right now, we're running a collaborative project together with [another incubator] and also with [the] innovation support system at the University Hospital. (P3)

One such collaboration is when incubators organize events like CEO lunches, breakfast talks and alumni discussions, which provide valuable opportunities for entrepreneurs to share challenges, tips and solutions related to their entrepreneurial journeys, thereby promoting a culture of peer-to-peer support, enhancing the startup ecosystem.

We also have an alumni network where we arrange exclusive dinners ... for companies ... they can get to know each other better and also it gives us the chance to keep connections with them because we can use them in the early stages for inspiration or expert talks so they can transfer their knowledge and their experiences to the new generation. (P1)

4.1.4 Technological resources. The interviewees mention two main resources; on the one hand, the classic incubator resource facilities, and on the other hand, the actual research ideas that turn into incubatees. The management of facilities and lab space in biotechnology incubators is an infrastructure that is vital for the incubatees to conduct research and development. Having access to fully equipped labs at heavily discounted prices allows incubatees to pursue high-level scientific projects without the initial burden of large capital investments, such as purchasing a mass spectrometer.

We also have a full format discovery lab, so we have 11 fully equipped labs which the companies have access to at an extremely discounted price, extremely cheap, and which [...] also enables them to get started and they don't have to talk to their investors about buying a mass spectrometry for 7,000,000 the first day. (P4)

Moreover, the incubators provide not just a lab space or instruments but also a technician, service and training.

We also have staff that can introduce them to this equipment and train them. We don't perform the Mass Spectrometry. Maybe actually we do offer some related services. (P4)

However, not all biotechnology incubatees need lab space. MedTech startups, focusing on developing health applications, do not require specialized testing laboratories.

25% of our companies are biotech [...] or if you add diagnostics, let's say that forty percent, they value the labs. The other 60% have no interest in the labs because they are E-health or Med tech or something else. (P4)

In line with this, some interviewees argued that incubators should not provide lab space. Instead, they provide their incubatees with access to business parks and universities where such facilities are available.

[Our incubator] does not have any facilities or lab spaces to provide [...]. We have business parks, and they can provide [...] business lab space. (P2)

The second technological resource is the deal flow of ideas. These ideas constitute the fundamental input of technological knowledge for biotechnology incubators. In Sweden, many biotechnology and life science companies start from an idea in a university lab. Research universities, such as Karolinska Institutet, play an important role by spotting and encouraging these early ideas.

There is extremely strong research at [our university]. So, it benefits us in the way where that would get very interesting cases to work with and very interesting companies to work with. (P3)

University would be very early in the corridors of their researchers and so on and digging out interesting ideas, innovations projects which may be commercialized later on [...]. (P5)

4.2 Network development with key partners for resource acquisition

4.2.1 Government and institutional support. Incubators leverage governmental and institutional support to secure financial aid, expand their professional networks and enhance their technological capabilities. Most of the biotechnology incubators in Sweden are state-owned and integral components of the regional and national strategy to promote innovation in biotechnology.

We are also gathering all the companies within life sciences involvement, in a network called life science moment. We are owned 60% by the municipality of [...]. (P5)

Financial resources are the cornerstone of the collaboration between government entities and biotechnology incubators. Government grants and funding programs are primarily channeled to support operational costs. Incubators access these financial resources through formal collaboration by applying for specific government programs. This method not only secures necessary funding but also aligns the incubator's activities with governmental economic and scientific objectives.

It's usually very formal collaboration where you apply for funding. You should receive funding to reach their goals, which are coming from the government and goals of the government, and once you've been accepted for funding, you need to report regularly. (P1)

These incubators often run co-projects with government agencies investing in the early stages of the company. These co-projects provide not just capital but also strategic guidance and access to the broader network. Incubators also guide their incubatees through the process of

applying for government funding. They provide information and actively encourage incubatees to take advantage of available funding. Moreover, government agencies organize meetings that connect diverse networks of biotechnology and life science incubators. These meetings and activities are designed to encourage the exchange of insights and the best practice among incubators, creating a community of incubators.

So, Swedish incubators and science parks, they're sort of organizations we're part of, and we regularly go to meetings to meet other incubator staff [...]. So, we exchange experience. So, it's on the national level, how do we optimize the national support system and how can we learn from each other. (P3)

4.2.2 University collaboration. Universities offer financial resources, operational resources and technological resources. The close collaboration with the university not only enhances the resource pool available to the incubators but also facilitates a smoother translation of academic research into commercial success.

We are a part of the university. So, we are an integrated part of the university, and we are centrally located, and we support researchers, students and faculty and employees with early-stage innovation development. (P8)

Firstly, financial resources are important. In Sweden, the universities, being founders or stakeholders of the incubators, often provide direct financial support to incubators for operating incubating programs.

We get financial support from [our] university. They are one of the stakeholders there are financing us having said that, that's about 10 percent of our financing. (P4)

The main owner is the holding company of university. We are working mainly with ideas, business ideas from the university like 90–95% of our ideas. We are working with ideas coming from the university and we have a very close collaboration with the innovation office at a university in this case there are situations within the holding company. (P9)

Furthermore, universities support incubatees by co-investing with incubators through a university holding company. This means that the incubators work closely with university-holding companies. In Sweden, university holding companies are one of the board members in the incubators.

We work a lot with the [university] holding, we do some co-investments in companies. So, we are very close friends. I speak with the CEO two times a week maybe. (P2).

Besides, working closely with the university helps incubators access broader funding networks. Affiliation with prominent university brands adds considerable credibility, thereby enhancing the ability of incubatees to attract external investors and venture capital.

[Our university] brand is also very strong, and I think it adds credibility to the companies when they are raising funds from investors, that they're from [our] university. So, I think it's a quality stamp [...]. (P3)

Besides financial resources, operational resources are facilitated by close collaboration between incubators and universities, such as shared educational courses and joint incubation projects. Incubators participate in or co-develop courses and workshops that are designed to equip entrepreneurs with necessary skills and knowledge. This integration is facilitated by close physical proximity to universities and regular strategic meetings.

We also attend meetings at the various universities, and then we have one specialty, that once per year we are arranging an education program, which is three days education where researchers within our field, life sciences, they will learn about governmental agencies, they will learn about early funding, they will learn about patent IP before publication. (P5)

Lastly, universities provide essential technological resources, including innovative ideas, laboratory equipment, and facilities. Incubators access these resources through deep collaborative ties with university innovation offices and technology transfer offices. These organizations work closely with researchers encouraging them to commercialize their discovery.

We collaborate with [our university] but that's actually mostly on [...] the innovation office services, where we work closely with the external engagement office of [our university] to reach out to [our] researchers. (P3)

The geographical proximity and regular meetings help maintain a close relationship, enabling a transfer of technology and innovation from the academic to the commercial products.

We have good collaborations with the tech transfer offices. So, we have meetings with them and check out their pipeline. (P4)

They're sitting right next to us in the same office space. So, we meet each other during lunch, during coffee, and we also have formal regular meetings roughly every two to four weeks, where we talk about the new ideas that have come up recently, how we can help them moving forward and that's together with the innovation officers. (P1)

Many incubators in Sweden are university-owned. These incubators sustain strong collaborative relationships with the universities through formal partnerships. University officials are represented on the boards of these incubators.

So, I sit on the [incubator] board, so I represent the university. So, that's how the steering is working. (P2)

This representation ensures that the strategic direction of the incubators is consistent with the university's mission to foster innovation. However, it does not extend to intervening in the incubators' investment decisions.

We have our own board. The board is decided by the university, but we take all our own investment decisions. (P6)

4.2.3 Science parks. Incubators situated in close proximity to science parks gain access to lab spaces, advanced equipment, office space and specialized facilities. Science parks provide structured events and meetups where incubatees can connect with potential partners, investors and industry leaders. Proximity to other businesses, institutions and resources in science parks, enables interaction and collaboration. Communication and the rapid exchange of ideas among businesses can accelerate innovation and problem-solving.

They meet each other, and they talk at the coffee machine every day. [...] If we can't help them, there's a specialist in the next door, next room. So, there are a lot of the companies support each other with advice. They also sell services to each other. They are experts in different instruments or different analysis and so the whole community is a stronghold by itself. (P4)

What we're discussing at the moment is finding ways to have office space available for our startups, to sit next to each other when they're not in the program because just working side by side could be a good way to form startups. (P1)

Swedish biotechnology incubators operate as regional entities, focusing on local startups. This strategic focus not only enhances participation rates but also fosters a collaborative and supportive community among regional entrepreneurs.

We have our startup companies that they have to be available in Stockholm, they have to be able to participate in activities in our building. (P7)

Interviewees highlighted that these spaces are designed to facilitate networking, collaboration and the sharing of experiences and ideas. The ability to connect with others in the same field is perceived as a key factor in the success of incubatees, as it allows for the exchange of knowledge and the formation of support systems.

Key for success is to share experience between people. Usually, we have the same problem. All life science companies have more or less the same problems and challenges, and in the business park, when you can gather and share labs or facilities – of course, that will stimulate the development of the companies. (P2)

Furthermore, association with reputable science parks significantly boosts the credibility and brand image of an incubator, thus attracting more innovative ventures and investors.

In [our city], we have a really good innovation system [. . .] we are good in Sweden to create these innovations because we have a good research environment. (P1)

Good reputation makes it easier to build network, because then people want to meet you so you might even not have to put into much effort yourself, you will be contacted. (P3)

4.2.4 Service providers or partner network. Incubators provide incubatees with access to a wide range of expertise through established networks that include experienced professionals and local service providers. These experts regularly contribute to workshops aimed at delivering specialized knowledge and skills. Sometimes, incubators also facilitate direct contact with these experts when incubatees require specialized support. Incubators offer various activities, including training programs, courses and workshops covering a variety of topics crucial to business development, including business planning, marketing strategies, financial management and legal considerations.

We invite our partner within marketing to provide lecture and workshop and they get to know the partner that way and we also arrange these more informal events we're partners, and startups are invited to get to meet each other. (P1)

Incubators form partnerships with many service providers, to meet the varied and specialized needs of their incubatees. This collaborative approach integrates incubatees into a supportive network. Service providers offer specialized expertise in essential areas such as legal, IT and marketing.

Our most important network is our partner network. We have about 20 partners, that are the service providers of some sort locally here in [our city]. It's banks, IP attorneys, accounting firms, technical consultants, marketing consultants, digital agencies, that can provide expertise in their fields, to our startups in the early phases. (P1)

Incubators connect to these service providers through local networks, taking advantage of geographic proximity to foster rapid and direct interactions, giving incubatees immediate access to the expertise they require.

The criteria to become a partner is that you need to have a local office and a local presence in [our city]. (P1)

Strategically, the incubators maintain these relationships through regular updates and meetings to evaluate the benefits each partner offers and to plan future collaborations.

We have 2-h meeting with all partners, where I'm also attending to look for what we've done the past year, and what we can do better this year, how we can better use the expertise for startups, how we can expose them better for the startups. (P1)

4.2.5 Investors. Investment funding and strategic support are the primary resources that incubators seek from investors.

We provide a network of investors. So, they get the network of investors and the support from us. (P2)

The incubators proactively engage with business angels and investors, facilitating early-stage interactions with the companies they nurture. Although investors prefer providing capital for a later stage, it is important to invite them in the early stage, following the development of the company. Thus, the relationships built during these initial stages lay the foundation for future funding.

Still, it's very useful to bring them in early just to meet the companies [...] the VC would like to follow a startup at least two or three years before they invest. (P6).

Furthermore, these early interactions provide critical feedback that can steer the company's development in the right direction.

[...] definitely we use them to help develop the companies, so we asked [them] to give feedback and I mean they might on presentations or interests or whatever, so we invite them for workshops sometimes and just for giving feedback or talk about what they're interested in. (P4)

Incubators organize three different kinds of interactions between investors and incubatees: large pitching events, smaller meetings and pairings.

We work very hard in building the investor network above the angel level, and then what we do in [...] these networks, we arrange pitch events with our companies. (P4)

This active participation helps incubators to continuously expand their network and ensure that their incubatees have access to a diverse of investors. These pitch events also serve as networking platforms. These events help incubatees in access to investment opportunities and broaden their network of investors. During special events like annual innovation days arranged by incubators, incubatees get the chance to present their projects and ideas to external visitors.

Pitching and meetings are also beneficial for investors, as they prevent an excessive number of individual companies approaching them for funding. By participating in these events, investors can meet many interesting companies.

We can create more meaningful meetings, where we save time both for the investors and the entrepreneur, because the investors have to take fewer meetings with startups and [...] the entrepreneur has to spend less time looking for funding. (P1)

However, there are only 2–3 pitching events a year. In the early phase of incubator programs, the incubator may invite potential investors to a private meeting where incubators and incubatees can present their ideas. This activity not only provides funding but also provides strategic guidance and a network of investors to the incubatees.

I can invite an investor and then line up three companies [...] we spend one hour per company, and they will present and then they will discuss [...] and I asked the investor to provide feedback during the meeting, that's how we do it [a] little bit more tailor-made. (P2)

In addition to hosting pitching events and meetings, some incubators also engage in even more individualized matchmaking, pairing companies with potential investors based on the project's scope and the investor's interest areas. They maintain an extensive list of investors, which enables them to effectively match incubatees with investors who have a specific interest in their business ideas.

We are reviewing the company. We know the company and then we can invite different. We're very careful how we work. We invite different investors that we believe we fit to the company. (P2)

Yes, [...] from day one actually, we are trying to match some kind of investors to the specific case [...] [it] would take two or three years before they become investable so to speak, but they learn to know each other. (P9)

Pairing may be particularly useful as biotechnology investors often have specific interests and expertise, varying from medical devices and pharmaceuticals to agricultural biotechnology and environmental sciences. Thus, some incubators employ this approach because they think that matchmaking ensures that investors are matched with ventures that align with their areas of expertise and interest.

We invite different investors that we believe we fit to the company. So, I don't think you can do these all pitch events etcetera. We don't work like that, we work case by case, to find a suitable investor that will fit the company. You can't bring it in any investor in the company, you need to be very careful. (P2)

In addition to the investor-incubatee interactions described, incubators send their investor networks regular updates. This not only helps in securing ongoing support but also increases the chances of securing subsequent rounds of investment.

We invite them to different kinds of activities, so it's a continuously ongoing process and of course [...] also to follow up on contacts. (P3)

Furthermore, incubators strategically use conferences to maintain and expand their network of investors. These conferences are face-to-face interactions that help initiate relationships.

We travel extensively around the world [...] and present the portfolio, the pipeline[...]. (P4)

By attending these conferences, incubators also gather valuable business intelligence, necessary for understanding current investment trends and investor interests.

We do some business intelligence, but a lot of that business intelligence is [...] facilitated by just being at these conferences. So, I was just at JP Morgan's conference, in the healthcare conference in San Francisco two weeks ago, for example, and brought back a lot of new contacts. (P4)

In order to attract and retain investors, incubators need to have credibility, to inspire trust and to be able to offer mutually beneficial relationships to investors. Incubators gain credibility primarily through their track record in selecting companies with a strong business plan and growth potential for investors.

We are also much more credible as an institution than the startups that we represent, and by having a connection with us, from the investor's point of view, they can have a [...] clean deal flow. (P1)

Besides track record, an important part of credibility lies in the brand image. Incubators build their brand and reputation by being associated with a strong university brand, and by attending the conferences mentioned above, presenting their success stories, enhancing their reputation and brand visibility. The strong branding makes them more attractive to potential investors.

It also makes it quite easy to be [our university] because we have quite a strong brand name, so if we ask someone that we need [an introduction] to be connected to. They usually say yes. (P8)

We build the brand towards the takers of these companies, we're building the brand to the industry and the investors, which means when my colleague in five years ago went to these conferences, he had a hard time booking meetings. Now he signs up for the conference, he gets fully booked. (P4)

Trust is fostered by involving investors early in the incubatee's journey, by inviting them to initial meetings and follow-ups. This approach helps investors feel involved and informed, which is crucial for building long-term relationships.

Not that many in Sweden. They're early investors but usually, they invest after us. We invite them [...] last year we had startups, six companies. And then we can invite them to see we have these new 6

companies [...] then a year after, we can meet them again, [...] now the six companies [...] some of them are not ready for investment, but they know the companies and then it's about working together. It's more trust. (P2)

Finally, it is about creating mutually beneficial–symbiotic–relationships, ensuring that both incubatees and investors benefit from their collaborations, including support for further funding and growth.

They will also receive support from [our incubator] and the coaches and of course through [our investment setup] they get to do the first investment together with other angels, and they will be able to see what companies are keeping to their promises, and they can do follow-up investments from that. So that's one way that we find a win-win with some of our partners. (P7)

4.2.6 Other incubators and international collaboration. The final stakeholder in our study consists of other incubators and international partners. When an incubator collaborates with other incubators or with international partners, relationships are formed through networking events, membership in international networks and co-projects. Firstly, networking through events. Incubators regularly participate in and sometimes host international meetings and events. For example, partnerships with other European incubators provide a platform for regular meetings and mutual visits. This method of connection not only expands their network but also opens doors to new markets and collaboration opportunities, effectively broadening their resource acquisition channels.

We have a partnership with seven other incubators in the European Union. We have regular meetings and go to arrange events. We can have startups who are looking to establish themselves in our respective countries. So, if someone wants to go to Austria, I can call the local incubator there and they can help us with finding the right person. (P1)

Secondly, through membership in international networks such as the Nordic network and EU projects, incubators gain access to resources including market research, academic collaborations and technological advancements from across different states and regions.

We have Nordic network in the Nordic membership program, so that's one international collaboration. We have been part of the EU projects that's what the innovation office side. We provide them innovation support, to the consortium. (P3)

Lastly, incubators engage in collaborative projects with other incubators both within Sweden and internationally. Incubators participate in or co-organize programs like biotechnology boot camps and specialized training workshops to facilitate the direct transfer of technical knowledge and operational skills.

We [are] also engaged with other organizations, other innovation organizations, other incubators. We [are] involved with the university, with the region, with the municipality, but we also run a lot of European projects with different stakeholders in Europe. So, we have run a biotech boot camp. (P4)

Regular interactions and project collaborations help maintain strong, active links between incubators.

Across the cases, geographical proximity emerges as an important enabling condition for network development. Many interactions between incubatees, service providers and other stakeholders are facilitated through co-location within science parks or shared spaces. Interviewees highlight how informal encounters, such as daily interactions and proximity to specialized expertise, enable faster knowledge exchange and collaboration. In addition, several incubators emphasize the importance of maintaining local partner networks, for example by requiring partners to have a local presence, which highlights how physical proximity supports trust-building and efficient coordination of resources.

While the results highlight the key resources accessed through incubator networks, the findings also suggest that incubators play an active role in enabling startups to mobilize and combine these resources. These enabling mechanisms are further discussed in the following section.

5. Discussion

5.1 Strategic patterns on biotechnology incubator management

In the empirical section of the paper, we have described the resources and the stakeholders in the incubator network. To provide a clearer overview of the findings, Table 3 summarizes how biotechnology incubators coordinate different types of resources through their networks. The table highlights the relationships between resource types, key partners, coordination mechanisms and the strategic choices made by incubators.

Table 3 illustrates that resource coordination is not uniform but involves distinct strategic configurations. Incubators actively combine resources, partners and coordination mechanisms through specific capabilities, such as resource matching and network orchestration, to support startups. This section also synthesizes key strategic patterns observed across Swedish biotechnology incubators and develops a conceptual understanding of how incubators manage resource acquisition. We agree with the previous study by (Kulkov *et al.*, 2021) that biotechnology incubators in Sweden are primarily focused on regional development. The majority of the deal flow is from local universities. There are biotechnology ecosystems in the big cities where universities, tech transfer offices, incubators and science parks are located close to each other. Key important factors for developing biotechnology incubators are accessing human resources and securing financial resources. Incubators consistently highlight human capital as a key strategic factor, especially the contribution of experienced coaches and mentors with deep expertise in developing the biotechnology industry. Many incubators use a coach-on-demand model that provides incubatees with both internal mentorship and access to a network of external advisors when specialized knowledge is required. This demand-driven is crucial for the biotechnology sector, where startups face challenges that general business coaches may not tackle effectively. Unlike conventional incubators, which may follow a structured coaching program, biotechnology incubators enable incubatees to receive guidance that aligns with their technical and operational needs. In addition to human capital, Swedish biotechnology incubators rely heavily on public funding sources such as Vinnova, Sweden’s innovation agency. Due to the high risk of early-stage investment in this industry, public funding is crucial for incubators to operate and assist new ventures secure their finance by not

Table 3. Strategic choices in incubator management

Resource type	Key partner	Coordination mechanisms	Incubator capabilities	Strategic choice
Human resources	Coaches, experts	Matching coaches	Resource-matching capability	In-house vs network
Financial resources	VCs, business angels, government	Pitch events, private meetings, co-invest	Investor matchmaking capability	Matchmaking vs pitch events Equity vs no equity
Operational resources	Universities, hospitals, incubators	Training programs, collaborations	Network orchestration capability	Standardized vs tailored programs
Technical resources	Universities, science parks, TTOs	Access to labs	Infrastructure and knowledge coordination capability	In-house labs vs external access Deal flow: internal (university) vs open sourcing

fully dependent on private capital. Nevertheless, biotechnology incubators are motivated to seek additional private funding to broaden their income streams and better prepare for fluctuations in public funding.

Our study also reveals strategic variation among incubators in terms of operational models and equity strategies. For instance, some incubators take equity stakes in exchange for their funding and services, thereby generating returns that can be reinvested into new batches of incubatees. In contrast, other incubators choose not to take equity, instead focusing on fostering innovation in their local areas and attracting a greater number of incubatees. Both strategies are effective in attracting deal flows, which indicate that there is no right or wrong choice. Each approach aligns with the business model and funding strategy of the incubator.

Another distinct strategy among the incubators is their approach to provide laboratory spaces and facilities. In some regional innovation ecosystems where the university, technology transfer offices or science parks already offer laboratory spaces and equipment, the incubator often focuses on providing coaching, mentorship and a network of investors. In other setups, some incubators directly provide these facilities, recognizing that not only specialized technology and equipment are crucial for biotechnology startups to succeed but also a research environment where researchers in these firms can share and discuss their successes or challenges from experiments. In spite of these different strategies, our study found that there is a consensus across biotechnology incubators on the necessity of providing laboratory spaces and facilities. However, the responsibility for providing these resources remains debated.

5.2 Strategic approaches for resource acquisition

Our study also emphasizes how biotechnology incubators play a strategic role in resource acquisition by creating and maintaining a robust network with universities, incubators, science parks and other incubators. Our findings underscore how incubators maximize resource access through collaborative alliances. Our findings also suggest that geographical proximity plays a key role in enabling resource coordination, particularly by facilitating frequent interactions and informal exchanges among actors. Co-location within science parks and proximity to universities allow incubatees to access expertise, infrastructure and partners more efficiently. This supports previous studies on cluster dynamics but also extends them by showing how proximity operates as a mechanism for network orchestration, rather than merely a structural condition.

We offer key strategic approaches for resource coordination and control. The first key approach is university partnerships for core resources. Collaborations with universities provide biotechnology incubators with essential financial, operational and technological resources. Universities not only fund or co-invest in incubatees, but they also contribute through holding companies, board membership and branded credibility. The close collaboration between the local university and the incubators enhances sharing and the transfer of resources. This relationship benefits from geographical proximity, enabling academic innovation to transition smoothly into the commercial market. Investor networks for early and growth-stage funding are the second key approach. Building relationships with investors through early networking events, meetings and pitching events may enable incubatees to connect with funding sources and validate business concepts. Incubators serve as intermediaries to introduce incubatees to investors at early stages and set the stage for future investment. Additionally, some incubators have matchmaking events that align investor interests with incubatees' specific fields, e.g. pharmaceuticals or MedTech, which may enhance the precision of resource matching and increase investment success rates. The next approach is collaboration with science parks for infrastructure and expertise. Science parks offer incubators access to advanced laboratory equipment, office spaces and collaborative work environments, which create a setting that facilitates peer-to-peer learning and collaboration. The geographical proximity of incubators to science parks fosters daily interactions that allow startups to exchange ideas and resources. This integrated environment

demonstrates how incubators can leverage local innovation hubs to support incubatees with infrastructure. The final approach is the strategic use of service providers for specialized expertise. Partnerships with service providers such as legal advisors, IP consultants, and marketing experts may expand the incubator's capacity to offer specialized support. By connecting incubatees with these providers, incubators build a network where companies can access expertise as needed.

5.3 Incubator capabilities for resource orchestration

Beyond providing access to resources, our findings suggest that biotechnology incubators also develop specific capabilities that enable startups to effectively utilize these resources. While the results section identified four main resource categories, including human, financial, operational and technological. These resources alone do not automatically translate into competitive advantage for incubated firms. Rather, incubators play an active role in enabling startups to mobilize and combine these resources through a set of coordination activities.

First, incubators demonstrate resource-matching capabilities, particularly in connecting startups with appropriate mentors, investors and service providers. Instead of simply providing access to a broad network, incubator managers actively match companies with partners whose expertise aligns with the specific technological or business needs of the venture. Second, incubators develop network orchestration capabilities, coordinating interactions among universities, investors, service providers and other ecosystem actors. Through activities such as pitch events, targeted investor meetings, workshops and collaborative programs, the incubator's structure facilitates interactions that allow startups to access and mobilize resources more efficiently. Third, incubators facilitate trust-building and legitimacy-building capabilities. By acting as intermediaries between startups and external stakeholders, incubators enhance the credibility of early-stage biotechnology firms, which is particularly important in a sector characterized by high uncertainty and long development cycles. These capabilities illustrate that incubators not only provide access to resources but also support the deployment and combination of resources through coordinated activities. From an RBV perspective, such capabilities can enhance the ability of startups to transform available resources into competitive advantages, for example, by improving survival prospects, securing investment and advancing through stages of technological development.

6. Conclusion

6.1 Theoretical implications

This study adds to the research on the strategic management of biotechnology incubators. Our findings contribute to network development for resource acquisition by illuminating how relational, structural and strategic inputs shape the capacity of biotechnology incubators to support new biotechnology ventures.

First, based on the literature on the management of incubators, our results presented four strategic resources biotechnology incubators need based on a RBV perspective, including human resources, financial resources, operational resources and technological resources. We agree with (Somsuk and Laosirihongthong, 2014) that human resources and financial resources are more important for incubators than the other two resources. Coaches are the most important need for the success of biotechnology firms. This is in line with research from Kotte *et al.* (2020) indicating that a coach with specialized knowledge and experience is essential for fostering innovation and growth in incubatees. The study from Harada *et al.* (2021) also revealed that business alliances and mentorship are vital for navigating the high costs and uncertainties associated with drug discovery and development.

Second, we offer three key inputs for network development in biotechnology incubators. The first one is a trust-based partnership. Biotechnology incubators should maintain relational inputs and trust-based partnerships. The study emphasizes that trust and relational capital with

universities, investors and service providers are necessary to create networks that consistently provide specialized resources. The challenges faced during the incubation process, such as legal issues and infrastructure limitations, can be mitigated through strong trust-based relationships among partners (Jiang *et al.*, 2022). The second is to create space for informal interaction. Both formal and informal engagement methods are crucial in developing an incubator's network. However, we agree with Galvão *et al.* (2019) that incubator networking is found to be informal. Our study showed that many informal activities, such as CEO lunch and informal seminars, can maintain active and responsive networks.

The third input is to focus the incubator on specialized needs. We agree with Klofsten *et al.* (2020) that the specialization and size of incubators can influence their networking capabilities. Our study indicates that biotechnology incubators strategically select partnerships and resources that meet the unique demands of life sciences and biotechnology startups, such as clinical testing support, intellectual property advice and access to scientific expertise. By aligning network inputs with specific needs, incubators can optimize the relevance and impact of their support networks. Finally, the fourth input is the importance of the geographical proximity of incubators and other support institutions. Our study highlights that geographical proximity to universities, science parks and local service providers enables rapid, face-to-face interactions that bolster incubators' networks. Geographic proximity is not only essential for collaboration, but it also significantly facilitates knowledge sharing and enhances trust within the network (Schutjens and Kruger, 2020). Thus, close locations enable faster access to specialized resources and strengthen relational bonds within the ecosystem. In line with several studies that emphasized that proximity allowed biotechnology firm managers to engage in informal knowledge sharing among biotechnology firms (Allen *et al.*, 2016; Brennecke *et al.*, 2016).

Importantly, this study extends prior research by shifting the focus from resource access to resource orchestration, highlighting how incubators actively structure relationships and coordinate interactions among ecosystem actors. This provides a more process-oriented understanding of how incubators enable the effective deployment of resources to support biotechnology ventures.

6.2 Implications for policy

This study suggests that policymakers should move beyond a focus on infrastructure and funding provision and instead support the development of coordination capabilities within biotechnology incubators. While previous policies have emphasized physical infrastructure and financial support, our findings indicate that the effectiveness of these resources depends on how they are coordinated and mobilized through networks.

In particular, policymakers can support incubators by funding intermediary roles and activities, such as investor matchmaking, partnership facilitation and network orchestration programs. These roles are critical in enabling incubators to connect startups with appropriate partners and to structure interactions across universities, investors and service providers.

Furthermore, policies that encourage co-location and proximity should be complemented with initiatives that enhance interaction intensity, such as networking programs, joint events and collaborative platforms. This ensures that proximity translates into actual resource coordination rather than merely spatial clustering.

6.3 Implications for practice

For incubator managers, the findings highlight the importance of adopting an active role in resource orchestration, rather than acting solely as providers of space or access. This involves developing capabilities to strategically match startups with relevant partners, coordinate interactions among ecosystem actors and build trust across networks.

In particular, incubator managers should focus on selective partner alignment, ensuring that collaborations with universities, investors and service providers are tailored to the specific

technological and developmental needs of biotechnology startups. This includes designing targeted matchmaking processes and structured interaction formats, such as curated investor meetings and specialized mentoring sessions. Moreover, the findings suggest that effective incubation relies on combining both formal coordination mechanisms (e.g. structured programs, workshops) and informal interaction spaces (e.g. networking events, co-location environments), which together facilitate knowledge exchange and relationship building. Finally, while global network participation can expand access to resources, the results indicate that local networks and proximity remain critical for enabling frequent interaction and trust-building. Therefore, incubator managers should balance global outreach with strong local network integration.

6.4 Limitations

Our study has limitations that can create an opportunity for further research. Firstly, the scope of this study focuses on the Swedish biotechnology incubator ecosystem, and the results may vary across regions. The support policies for the biotechnology sector, incubators and biotechnology clusters may differ. Future studies could analyze incubators in other locations to determine if similar funding and support models apply globally. Additionally, tracking long-term outcomes for incubatees could provide insights into the effectiveness of public-private funding structures in ensuring startup success.

References

- Aernoudt, R. (2004), "Incubators: tool for entrepreneurship?", *Small Business Economics*, Vol. 23 No. 2, pp. 127-135, doi: [10.1023/b:sbej.0000027665.54173.23](https://doi.org/10.1023/b:sbej.0000027665.54173.23).
- Akçomak, İ.S. (2009), "Incubators as tools for entrepreneurship promotion in developing countries", in *Entrepreneurship, Innovation and Economic Development*, Oxford University Press, pp. 228-264, available at: https://www.researchgate.net/publication/48267496_Incubators_as_Tools_for_Entrepreneurship_Promotion_in_Developing_Countries
- Allen, T.J., Gloor, P., Fronzetti Colladon, A., Woerner, S.L. and Raz, O. (2016), "The power of reciprocal knowledge sharing relationships for startup success", *Journal of Small Business and Enterprise Development*, Vol. 23 No. 3, pp. 636-651, doi: [10.1108/JSBED-08-2015-0110](https://doi.org/10.1108/JSBED-08-2015-0110).
- Amit, R. and Paul, J.H.S. (1993), "Strategic assets and organizational rent", *Strategic Management Journal*, Vol. 14 No. 1, pp. 33-46, doi: [10.1002/smj.4250140105](https://doi.org/10.1002/smj.4250140105), available at: <http://www.jstor.org/stable/2486548>.
- Antunes, L.G.R., de Castro, C.C. and Mineiro, A.A.d.C. (2021), "Network orchestration: new role of business incubators?", *Innovation and Management Review*, Vol. 18 No. 1, pp. 51-68, doi: [10.1108/INMR-12-2019-0151](https://doi.org/10.1108/INMR-12-2019-0151).
- Bakouros, Y.L., Mardas, D.C. and Varsakelis, N.C. (2002), "Science park, a high tech fantasy?: an analysis of the science parks of Greece", *Technovation*, Vol. 22 No. 2, pp. 123-128, doi: [10.1016/S0166-4972\(00\)00087-0](https://doi.org/10.1016/S0166-4972(00)00087-0).
- Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120, doi: [10.1177/014920639101700108](https://doi.org/10.1177/014920639101700108).
- Bettanti, A., Lanati, A. and Missoni, A. (2022), "Biopharmaceutical innovation ecosystems: a stakeholder model and the case of Lombardy", *The Journal of Technology Transfer*, Vol. 47 No. 6, pp. 1948-1973, doi: [10.1007/s10961-021-09890-1](https://doi.org/10.1007/s10961-021-09890-1).
- BioStock (2022), *Swedish Life Science Market is the Most Active in Europe*, BioStock, available at: <https://www.biostock.se/en/2022/07/swedish-life-science-market-is-the-most-active-in-europe/>
- Blank, T.H. (2021), "When incubator resources are crucial: survival chances of student startups operating in an academic incubator", *The Journal of Technology Transfer*, Vol. 46 No. 6, pp. 1845-1868, doi: [10.1007/s10961-020-09831-4](https://doi.org/10.1007/s10961-020-09831-4).

- Bøllingtoft, A. and Ulhøi, J. (2005), "The networked business incubator - leveraging entrepreneurial agency?", *Journal of Business Venturing*, Vol. 20 No. 2, pp. 265-290, doi: [10.1016/j.jbusvent.2003.12.005](https://doi.org/10.1016/j.jbusvent.2003.12.005).
- Brennecke, J., Schierjott, I. and Rank, O. (2016), "Informal managerial networks and formal firm alliances: a multilevel investigation in biotech", *Schmalenbach Business Review*, Vol. 17 No. 1, pp. 103-125, doi: [10.1007/s41464-016-0003-x](https://doi.org/10.1007/s41464-016-0003-x).
- Bruneel, J., Ratinho, T., Clarysse, B. and Groen, A. (2012), "The evolution of business incubators: comparing demand and supply of business incubation services across different incubator generations", *Technovation*, Vol. 32 No. 2, pp. 110-121, doi: [10.1016/j.technovation.2011.11.003](https://doi.org/10.1016/j.technovation.2011.11.003).
- Calza, F., Ferretti, M., Panetti, E. and Parmentola, A. (2020), "Moving drug discoveries beyond The valley of death: the role of innovation ecosystems", *European Journal of Innovation Management*, Vol. 24 No. 4, pp. 1184-1209, doi: [10.1108/EJIM-11-2019-0342](https://doi.org/10.1108/EJIM-11-2019-0342).
- Cantù, C. (2015), "A service incubator business model: external networking orientation", *IMP Journal*, Vol. 9 No. 3, pp. 267-285, doi: [10.1108/IMP-08-2015-0041](https://doi.org/10.1108/IMP-08-2015-0041).
- Carvalho, L. and Vale, M. (2018), "Biotech by bricolage? Agency, institutional relatedness and new path development in peripheral regions", *Cambridge Journal of Regions, Economy and Society*, Vol. 11 No. 2, pp. 275-295, doi: [10.1093/cjres/rsy009](https://doi.org/10.1093/cjres/rsy009).
- Chan, K.F. and Lau, T. (2005), "Assessing technology incubator programs in the science park: the good, the bad and the ugly", *Technovation*, Vol. 25 No. 10, pp. 1215-1228, doi: [10.1016/j.technovation.2004.03.010](https://doi.org/10.1016/j.technovation.2004.03.010).
- Clark, T., Foster, L., Bryman, A. and Sloan, L. (2021), *Bryman's Social Research Methods*, Oxford University Press.
- Di Fatta, D., Caputo, F. and Dominici, G. (2018), "A relational view of start-up firms inside an incubator: the case of the ARCA consortium", *European Journal of Innovation Management*, Vol. 21 No. 4, pp. 601-619, doi: [10.1108/EJIM-08-2017-0110](https://doi.org/10.1108/EJIM-08-2017-0110).
- Dong, H., Murong, R. and Li, J. (2023), "Research on network capacity, absorptive capacity and service innovation performance of technology business incubators—based on PLS-SEM and fsQCA methods [Original Research]", *Frontiers in Environmental Science*, Vol. 11, 1154162, doi: [10.3389/fenvs.2023.1154162](https://doi.org/10.3389/fenvs.2023.1154162).
- Dourado Freire, C., Sacomano Neto, M., Morales, H.F. and Rodrigues Antunes, L.G. (2022), "Technology-based business incubators: the impacts on resources of startups in Brazil", *International Journal of Emerging Markets*, Vol. 18 No. 12, pp. 5778-5797, doi: [10.1108/IJOEM-08-2020-0900](https://doi.org/10.1108/IJOEM-08-2020-0900).
- Dubois, A. and Araujo, L. (2007), "Case research in purchasing and supply management: opportunities and challenges", *Journal of Purchasing and Supply Management*, Vol. 13 No. 3, pp. 170-181, doi: [10.1016/j.pursup.2007.09.002](https://doi.org/10.1016/j.pursup.2007.09.002).
- Dutt, N., Hawn, O., Vidal, E., Chatterji, A., McGahan, A. and Mitchell, W. (2016), "How open system intermediaries address institutional failures: the case of business incubators in emerging-market countries", *Academy of Management Journal*, Vol. 59 No. 3, pp. 818-840, doi: [10.5465/amj.2012.0463](https://doi.org/10.5465/amj.2012.0463).
- Edmunds, L.D., Gluderer, S., Ovseiko, P.V., Kamerling, R., Ton, J., Vis, L., Jenni, M., Tutton, G., Lawton-Smith, H., Nadabán, M.V., Rab, M., Rees, J., Anson, J., Rushforth, A.D., Allen, M., Buchan, A.M., Vendrell, M., Casta, A., Mehes, G., Hassan, A.B. and Hafen, E. (2019), "New indicators and indexes for benchmarking university-industry-government innovation in medical and life science clusters: results from the European FP7 Regions of Knowledge HealthTIES project", *Health Research Policy and Systems*, Vol. 17 No. 1, p. 10, doi: [10.1186/s12961-019-0414-5](https://doi.org/10.1186/s12961-019-0414-5).
- Eisenhardt, K.M. (1989), "Building theories from case study research", *Academy of Management Review*, Vol. 14 No. 4, pp. 532-550, doi: [10.2307/258557](https://doi.org/10.2307/258557).
- Eveleens, C.P., van Rijnsoever, F.J. and Niesten, E.M.M.I. (2017), "How network-based incubation helps start-up performance: a systematic review against the background of management

- theories", *The Journal of Technology Transfer*, Vol. 42 No. 3, pp. 676-713, doi: [10.1007/s10961-016-9510-7](https://doi.org/10.1007/s10961-016-9510-7).
- Fishburn, C.S. (2014), "New York's biotech beginnings", *Science-Business eXchange*, Vol. 7 No. 21, p. 603, doi: [10.1038/scibx.2014.603](https://doi.org/10.1038/scibx.2014.603).
- Friesl, M., Ford, C.J. and Mason, K. (2019), "Managing technological uncertainty in science incubation: a prospective sensemaking perspective", *R & D Management*, Vol. 49 No. 4, pp. 668-683, doi: [10.1111/radm.12356](https://doi.org/10.1111/radm.12356).
- Galvão, A., Marques, C., Franco, M. and Mascarenhas, C. (2019), "The role of start-up incubators in cooperation networks from the perspective of resource dependence and interlocking directorates", *Management Decision*, Vol. 57 No. 10, pp. 2816-2836, doi: [10.1108/MD-10-2017-0936](https://doi.org/10.1108/MD-10-2017-0936).
- Gassmann, O. and Becker, B. (2006), "Towards a Resource-based view of corporate incubators", *International Journal of Innovation Management*, Vol. 10 No. 01, pp. 19-45, doi: [10.1142/S1363919606001387](https://doi.org/10.1142/S1363919606001387).
- Gomm, R., Foster, P. and Hammersley, M. (2000), *Case Study Method: Key Issues, Key Texts*, available at: https://books.google.se/books/about/Case_Study_Method.html?id=c1VOCAGy86EC&redir_esc=y
- Grimaldi, R. and Grandi, A. (2005), "Business incubators and new venture creation: an assessment of incubating models", *Technovation*, Vol. 25 No. 2, pp. 111-121, doi: [10.1016/S0166-4972\(03\)00076-2](https://doi.org/10.1016/S0166-4972(03)00076-2).
- Gurdon, M.A. and Samsom, K.J. (2010), "A longitudinal study of success and failure among scientist-started ventures", *Technovation*, Vol. 30 No. 3, pp. 207-214, doi: [10.1016/j.technovation.2009.10.004](https://doi.org/10.1016/j.technovation.2009.10.004).
- Hackett, S.M. and Dilts, D.M. (2004), "A systematic review of business incubation research", *The Journal of Technology Transfer*, Vol. 29 No. 1, pp. 55-82, doi: [10.1023/b:jott.0000011181.11952.0f](https://doi.org/10.1023/b:jott.0000011181.11952.0f).
- Hansen, M.T., Chesbrough, H.W., Nohria, N. and Sull, D.N. (2000), "Networked incubators", *Harvard Business Review*, Vol. 78 No. 5, pp. 74-84.
- Harada, Y., Wang, H., Kodama, K. and Sengoku, S. (2021), "Drug discovery firms and business alliances for sustainable innovation", *Sustainability*, Vol. 13 No. 7, p. 3599, doi: [10.3390/su13073599](https://doi.org/10.3390/su13073599).
- Hausberg, J.P. and Korreck, S. (2020), "Business incubators and accelerators: a co-citation analysis-based, systematic literature review", *The Journal of Technology Transfer*, Vol. 45 No. 1, pp. 151-176, doi: [10.1007/s10961-018-9651-y](https://doi.org/10.1007/s10961-018-9651-y).
- Heirman, A. and Clarysse, B. (2004), "How and why do research-based start-ups differ at founding? A resource-based configurational perspective", *The Journal of Technology Transfer*, Vol. 29 No. 3, pp. 247-268, doi: [10.1023/B:JOTT.0000034122.88495.0d](https://doi.org/10.1023/B:JOTT.0000034122.88495.0d).
- Holzwarth, M.S. (2019), "Benefits of life in a science incubator", *Future Drug Discovery*, Vol. 1 No. 1, FDD3, doi: [10.4155/fdd-2019-0010](https://doi.org/10.4155/fdd-2019-0010).
- Hong, J., Yang, Y., Wang, H., Zhou, Y. and Deng, P. (2019), "Incubator interdependence and incubation performance in China's transition economy: the moderating roles of incubator ownership and strategy", *Technology Analysis and Strategic Management*, Vol. 31 No. 1, pp. 96-110, doi: [10.1080/09537325.2018.1487551](https://doi.org/10.1080/09537325.2018.1487551).
- Hughes, M., Ireland, R. and Morgan, R. (2007), "Stimulating dynamic value: social capital and business incubation as a pathway to competitive success", *Long Range Planning*, Vol. 40 No. 2, pp. 154-177, doi: [10.1016/j.lrp.2007.03.008](https://doi.org/10.1016/j.lrp.2007.03.008).
- Innovation, M.o.E.a. (2020), *Sweden's National Life Sciences Strategy. (N2020.03)*, Government Offices of, Sweden, available at: <https://www.government.se/information-material/2020/11/swedens-national-life-sciences-strategy/>
- Jiang, Q., Wang, D., Wang, Y. and Wu, B. (2022), "Innovation elements, incubation capacity, and incubation performance in biomedical incubation platforms: moderating role of customized services", *Frontiers in Public Health*, Vol. 10, 873875, doi: [10.3389/fpubh.2022.873875](https://doi.org/10.3389/fpubh.2022.873875).

- Kiani Mavi, R., Gheibdoust, H., Khanfar, A.A. and Kiani Mavi, N. (2019), "Ranking factors influencing strategic management of university business incubators with ANP", *Management Decision*, Vol. 57 No. 12, pp. 3492-3510, doi: [10.1108/MD-06-2018-0688](https://doi.org/10.1108/MD-06-2018-0688).
- Kiran, R. and Bose, S.C. (2020), "Stimulating business incubation performance: role of networking, university linkage and facilities", *Technology Analysis and Strategic Management*, Vol. 32 No. 12, pp. 1407-1421, doi: [10.1080/09537325.2020.1772967](https://doi.org/10.1080/09537325.2020.1772967).
- Klofsten, M., Lundmark, E., Wennberg, K. and Bank, N. (2020), "Incubator specialization and size: divergent paths towards operational scale", *Technological Forecasting and Social Change*, Vol. 151, 119821, doi: [10.1016/j.techfore.2019.119821](https://doi.org/10.1016/j.techfore.2019.119821).
- Kotte, S., Diermann, I., Rosing, K. and Möller, H. (2020), "Entrepreneurial coaching: a two-dimensional framework in context", *Applied Psychology*, Vol. 70 No. 2, pp. 1-38, doi: [10.1111/apps.12264](https://doi.org/10.1111/apps.12264).
- Kulkov, I., Hellström, M. and Wikström, K. (2021), "Identifying the role of business accelerators in the developing business ecosystem: the life science sector", *European Journal of Innovation Management*, Vol. 24 No. 4, pp. 1459-1479, doi: [10.1108/EJIM-04-2020-0139](https://doi.org/10.1108/EJIM-04-2020-0139).
- Kvale, S. (1996), *Interviews: An Introduction to Qualitative Research Interviewing*, Sage Publications, Thousand Oaks, CA.
- Lin, D., Wood, L.C. and Lu, Q. (2012), "Improving business incubator service performance in China: the role of networking resources and capabilities", *Service Industries Journal*, Vol. 32 No. 13, pp. 2091-2114, doi: [10.1080/02642069.2011.582498](https://doi.org/10.1080/02642069.2011.582498).
- Lose, T. (2021), "Business incubators in South Africa: a Resource-based view perspective", *Academy of Entrepreneurship Journal*, Vol. 27, pp. 1-11.
- McAdam, M. and Marlow, S. (2008), "A preliminary investigation into networking activities within the university incubator", *International Journal of Entrepreneurial Behavior and Research*, Vol. 14 No. 4, pp. 219-241, doi: [10.1108/13552550810887390](https://doi.org/10.1108/13552550810887390).
- McAdam, M. and McAdam, R. (2006), "The networked incubator: the role and operation of entrepreneurial networking with the university science park incubator (USI)", *The International Journal of Entrepreneurship and Innovation*, Vol. 7 No. 2, pp. 87-97, doi: [10.5367/000000006776928663](https://doi.org/10.5367/000000006776928663).
- McAdam, M., Galbraith, B., McAdam, R. and Humphreys, P. (2006), "Business processes and networks in university incubators: a review and research agendas", *Technology Analysis and Strategic Management*, Vol. 18 No. 5, pp. 451-472, doi: [10.1080/09537320601019578](https://doi.org/10.1080/09537320601019578).
- Mian, S., Lamine, W. and Fayolle, A. (2016), "Technology business incubation: an overview of the state of knowledge", *Technovation*, Vol. 50, pp. 1-12, doi: [10.1016/j.technovation.2016.02.005](https://doi.org/10.1016/j.technovation.2016.02.005).
- Miles, M.B. and Huberman, A.M. (1994), *Qualitative Data Analysis: An Expanded Sourcebook*, sage.
- Owen, R. and Vedanthachari, L. (2022), "Exploring the role of UK government policy in developing the university entrepreneurial finance ecosystem for cleantech", *IEEE Transactions on Engineering Management*, Vol. 70 No. 3, pp. 1026-1039, doi: [10.1109/tem.2022.3153319](https://doi.org/10.1109/tem.2022.3153319).
- Pettersen, I.B., Aarstad, J., Høvig, Ø.S. and Tobiassen, A.E. (2016), "Business incubation and the network resources of start-ups", *Journal of Innovation and Entrepreneurship*, Vol. 5 No. 1, p. 7, doi: [10.1186/s13731-016-0038-8](https://doi.org/10.1186/s13731-016-0038-8).
- Phillips, R. (2022), "Critical success factors for biotech Incubators-A qualitative study of successful incubators in China and the US", *Jingwei Wu, Ling Wan, Fabio Della Bianca, Altynbek Kabdolov, Karina J Tang and Robert A. Phillips (2022) Journal of Asia Entrepreneurship and Sustainability*, Vol. 182, pp. 92-124.
- Prabhu, V.N., Jha, S.K. and Krishnan, R.T. (2024), "Science and technology ventures in India: integrating NIS, SSI and ecosystem perspectives", *Science Technology and Society*, Vol. 29 No. 1, pp. 97-119, doi: [10.1177/09717218231219636](https://doi.org/10.1177/09717218231219636).
- Roseira, C., Ramos, C., Maia, F. and Henneberg, S. (2014), "Understanding incubator value A network approach to university incubators", doi: [10.13140/RG.2.2.34899.91689](https://doi.org/10.13140/RG.2.2.34899.91689).

- Roundy, P.T. and Bayer, M.A. (2019), "To bridge or buffer? A resource dependence theory of nascent entrepreneurial ecosystems", *Journal of Entrepreneurship in Emerging Economies*, Vol. 11 No. 4, pp. 550-575, doi: [10.1108/JEEE-06-2018-0064](https://doi.org/10.1108/JEEE-06-2018-0064).
- Schutjens, V. and Kruger, M. (2020), "The role of proximity in resources exchanged by incubatees of biopartner center Leiden, the Netherlands", *European Spatial Research and Policy*, Vol. 27 No. 1, pp. 75-104, doi: [10.18778/1231-1952.27.1.04](https://doi.org/10.18778/1231-1952.27.1.04).
- Segers, J.-P. (2015), "The interplay between new technology based firms, strategic alliances and open innovation, within a regional systems of innovation context. The case of the biotechnology cluster in Belgium", *Journal of Global Entrepreneurship Research*, Vol. 5 No. 1, p. 16, doi: [10.1186/s40497-015-0034-7](https://doi.org/10.1186/s40497-015-0034-7).
- Shih, T. and Aaboen, L. (2019), "The network mediation of an incubator: how does it enable or constrain the development of incubator firms' business networks?", *Industrial Marketing Management*, Vol. 80, pp. 126-138, doi: [10.1016/j.indmarman.2017.12.002](https://doi.org/10.1016/j.indmarman.2017.12.002).
- Soetanto, D.P. and Jack, S.L. (2013), "Business incubators and the networks of technology-based firms", *The Journal of Technology Transfer*, Vol. 38 No. 4, pp. 432-453, doi: [10.1007/s10961-011-9237-4](https://doi.org/10.1007/s10961-011-9237-4).
- Somsuk, N. and Laosirihongthong, T. (2014), "A fuzzy AHP to prioritize enabling factors for strategic management of university business incubators: resource-based view", *Technological Forecasting and Social Change*, Vol. 85, pp. 198-210, doi: [10.1016/j.techfore.2013.08.007](https://doi.org/10.1016/j.techfore.2013.08.007).
- Somsuk, N., Wonglimpiyarat, J. and Laosirihongthong, T. (2012), "Technology business incubators and industrial development: resource-based view", *Industrial Management and Data Systems*, Vol. 112 No. 2, pp. 245-267, doi: [10.1108/02635571211204281](https://doi.org/10.1108/02635571211204281).
- Sridhar, M., Arunkumar, N., Burji, S. and Saiyed, T. (2013), "An overview on technology nurturing and incubation from a life science perspective", in Akhilesh, K.B. (Ed.), *Emerging Dimensions of Technology Management*, Springer, pp. 63-71, doi: [10.1007/978-81-322-0792-4_5](https://doi.org/10.1007/978-81-322-0792-4_5).
- Stevens, A.J. (2017), "An emerging model for life sciences commercialization", *Nature Biotechnology*, Vol. 35 No. 7, pp. 608-613, doi: [10.1038/nbt.3911](https://doi.org/10.1038/nbt.3911).
- Tonukari, N. (2008), "Africa needs biotechnology incubators", *Biotechnology*, Vol. 7 No. 4, pp. 803-807, doi: [10.3923/biotech.2008.803.807](https://doi.org/10.3923/biotech.2008.803.807).
- van Rijnsoever, F.J. (2020), "Meeting, mating, and intermediating: how incubators can overcome weak network problems in entrepreneurial ecosystems", *Research Policy*, Vol. 49 No. 1, 103884, doi: [10.1016/j.respol.2019.103884](https://doi.org/10.1016/j.respol.2019.103884).
- van Weele, M., van Rijnsoever, F.J. and Nauta, F. (2017), "You can't always get what you want: how entrepreneur's perceived resource needs affect the incubator's assertiveness", *Technovation*, Vol. 59, pp. 18-33, doi: [10.1016/j.technovation.2016.08.004](https://doi.org/10.1016/j.technovation.2016.08.004).
- Wu, C., Tian, F. and Zhou, L. (2023), "The impact of incubator network strategy on the entrepreneurial performance of start-ups: a resource bricolage perspective", *Innovation*, Vol. 27 No. 2, pp. 1-20, doi: [10.1080/14479338.2023.2262438](https://doi.org/10.1080/14479338.2023.2262438).
- Yin, R.K. (2018), *Case Study Research and Applications*, Vol. 6, Sage, Thousand Oaks, CA.

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