

HOW A NETWORK-BASED START-UP ECOSYSTEM SUPPORTS NEW VENTURE PERFORMANCE: MANAGEMENT PERSPECTIVES AND FUTURE RESEARCH

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ABSTRACT

The literature on how a start-up ecosystem has an impact on a start-up's performance has significantly grown and contributed to the management field. Nevertheless, these theoretical developments have been scattered, inconsistent, lacking in theoretical depth. Therefore, in this review, we use three perspectives to organise the knowledge field, refine concepts and generate a prospectus for future studies. The perspectives reviewed are the Resource-Based View, Open Innovation and Social Capital Theory. The results have generally shown that the network-based start-up ecosystem contributes resources, capabilities, learning, collaboration, relationship, knowledge shared and social capital to new ventures. The influence of these benefits for new venture performance is uncertain. Conceptual development in start-up ecosystem research will gain value from management perspectives that address these benefits. We propose a plan for future studies on network-based start-ups that is oriented towards a more robust framework with which to consider the role and influence of a start-up ecosystem that goes beyond general descriptions of the positive effect of start-ups network-ecosystem on performance.

Keywords: Start-up Ecosystems, Start-up Performance, Network Learn Capability, Resource, Open Innovation, Social Capital.

INTRODUCTION

Creating many start-ups can play an important part in the development and confidence of a nation (Berger & Kuckertz, 2016; Naudé, 2010; Wong et al., 2005). Successful start-ups provide employment creation and growth at local and regional levels (Tripathi et al., 2019) but many fail. While new venture dynamics capabilities are well recognised the odds for their success can be improved (Baron & Harima, 2019; Hasani & O'Reilly, 2020). In particular, understanding of the ecosystem in which start-ups gestate and emerge can improve and accelerate start-up development (Ahn et al., 2019). The start-up network-ecosystem offers embryonic start-ups support, resources and services (Sperber & Linder, 2019) that can add value to ways in which founders/co-founders of start-ups are able to work (Singh et al., 2019).

Start-up ecosystems have gained important recognition from public policymakers and industry actors because of their role in supporting business growth, innovation and creation of new venture (Kong, 2019; Pavlak & Petru, 2018; Singh et al., 2019; Sipola et al., 2016). Over recent years the number of start-up ecosystems have grown globally (Tripathi et al., 2019); for example, in the global start-up ecosystem report in 2020 (Genome, 2020), almost 70 ecosystems were analysed

that generated more than \$4 billion in ecosystem value. Changes have occurred in the ways that start-up ecosystems function (Hasani & O'Reilly, 2020). The first generation of start-up ecosystems focused fundamentally on providing physical and technological infrastructure, designing culture and linking to support services and universities (Brown & Mason, 2017; Roundy et al., 2017; Singh et al., 2019; Spigel & Harrison, 2018). Second-generation start-up ecosystems improved their way of working by facilitating networks, support programs and advice services (Cao & Shi, 2020; Singh et al., 2019). Recently, start-up ecosystems have expanded by generating network learning capabilities (Liu & Tang, 2020; Pustovrh et al., 2020; Weerawardena et al., 2015). These might include network access resources as well as capabilities such as information, legitimacy, knowledge, and investment (Tripathi et al., 2019). Focusing on capabilities significantly improves new ventures (Albourini et al., 2020).

Scholars have been researching the changing dynamics of start-up ecosystems (Feng et al., 2019; Singh et al., 2019). The new venture ecosystem-based entrepreneurial economy view of start-ups has gained significant interest (Sipola et al., 2016). Significantly, the perspective asks whether and how ecosystem-based start-ups have an impact on new venture performance (Baraldi et al., 2019). The focus is very much on the start-up organisation's development through internal and external networks (Baraldi et al., 2019), especially global networks (Sipola et al., 2016). The increased attention paid to start-up ecosystems has produced a rich and wide diversity of perspectives and approaches (Hasani & O'Reilly, 2020; Sperber & Linder, 2019). However, as the knowledge field grew, two notable deficiencies arose (Cao & Shi, 2020).

First, studies on the impact those start-up ecosystems as entrepreneurial micro-economies have on new venture performance led to opposite findings. Some researchers argued that the start-up ecosystem did not increase new venture performance (Phangestu et al., 2020; Seo et al., 2018). Other researchers showed that start-up ecosystem do lead to enhanced performance (Kee et al., 2019; Tripathi et al., 2019). These different findings may be the result of the diversity of start-up ecosystem in terms of network learning capabilities (Baraldi et al., 2019; Wang & Fang, 2012; Weerawardena et al., 2015), contextual differences (Tripathi et al., 2019) or because of a focus on specific measures (Marvel et al., 2019; Spender et al., 2017). Studied in isolation, it is not easy to assign causality. Likewise, start-up ecosystem aspects have previously been principally analysed individually, which makes it difficult to rank their importance in analysing new venture performance.

Second, start-up ecosystem research is very general in its orientation to practices (Cao & Shi, 2020) as are network learning capability perspectives (Pustovrh et al., 2020). While academics refer to relevant literature, according to some scholars, it has poor conceptual depth (Hasani & O'Reilly, 2020), as for example, in Baron and Harima (2019), discussion of high-growth companies' creation and consolidation: the so-called new venture firms. To close the gap between the literature on the start-up ecosystem and the network learning capability perspective we will examine the impact of start-up ecosystems on new venture performance, using the three conceptual perspectives that have used most frequently in this knowledge field. These theories are the Resource-Based View (RBV), Open Innovation (OI) and Social Capital Theory (SCT). First, we will analyse and discuss research about start-up ecosystems and the impact they have on new venture performance. We will focus on how network learning capability influence new venture performance. Second, we will analyse start-up ecosystems in terms of what management and business perspectives can contribute, discovering gaps and inconsistencies about start-up ecosystems. Finally, we propose a research agenda that strengthens how the startup ecosystem supports the new venture.

METHODS

Systematic literature review (SLR) consists of identifying, analysing, selecting, and critically appraising the main conceptual categories of research through a stage-by-stage procedure for content review and analysis (Mayring, 2004; Shapiro et al., 1998). We will describe a group of scientific articles that address the role and impact of new venture ecosystems on start-up performance. We define the start-up's ecosystem in terms of networks (Albourini et al., 2020; Ojaghi et al., 2019). The focus is on new ventures and their performance (Chatterji et al., 2019; Seet et al., 2020). The literature review encompasses leading journals in the management field (i.e., Strategic Management Journal, Organization Science, Academy of Management Review, Journal of Management, Academy of Management Journal, Administrative Science Quarterly, and Journal of Management Studies) as well as in the field of entrepreneurship (i.e., International Small Business Journal, Strategic Entrepreneurship Journal, Entrepreneurship and Regional Development, Entrepreneurship Theory and Practice and the Journal of Business Venturing) and technology and innovation (i.e., Research Policy, Technovation, Journal of Technology Transfer, Journal of cleaner production, Technological Forecasting and Social Change and Journal of Products Innovation Management). The period for the exploration was from 2010 to 2021. It led to a general set of 217 papers.

We subsequently read the articles closely to evaluate whether to incorporate into the analysis for subsequent classification. We had two criteria for exclusion. First, the name or abstract of the papers had to include “*start-up*”, “*start-up ecosystem*”, “*start-up performance*”, “*new venture performance*”, “*firm performance*”, “*business performance*” or “*company performance*” to assure that the paper focused on our subject of interest. Second, we searched for inclusion of a topic related to networks’ learning capacity, signified by including “*network**”, “*learning**”, “*capacity**”, “*alliances**” or “*support**”. We restricted the search to English-language papers in the selected journals. These papers were then evaluated on their pertinence for the purpose of our research, leading to the exclusion of 91 papers that did not meet the criteria. We removed thirty-six papers because they did not fit the criterion of a start-up’s ecosystem. Likewise, forty-one papers did not focus on new venture performance and network learning capability or their connection. Finally, we excluded fourteen papers because they did not provide an important contribution, upon further inspection. The ultimate data set includes eighty-five papers, listed in the Appendix. All the papers were published between 2010 and 2021, with only five papers in print before 2015 and the majority published after 2010.

Forty-four of the papers considered were quantitative studies. Some were focused on the resources and supports of the start-up's ecosystem for a new venture (Assenova, 2020; Islam et al., 2018; Nair et al., 2017; Nair et al., 2020; Pustovrh et al., 2020); others looked at the difference between start-ups support and non-support ecosystems (Cao & Shi, 2020; Crespo et al., 2019; Tripathi et al., 2019), while some focused on the impacts of network learning capability on new venture performance (Anwar et al., 2018; Karami & Tang, 2019; Wu et al., 2020; Xue et al., 2019; Zheng et al., 2020). Thirty-nine of the papers were based on qualitative data, such as case studies of particular start-up ecosystems (Baron & Harima, 2019; De Groote & Backmann, 2020; Feng et al., 2019; McDonald & Eisenhardt, 2020); discussions of start-ups performance (Jin, 2017; Marvel et al., 2020; Shepherd et al., 2021); focusing on the role of the entrepreneur (Kee & Rahman, 2018; Vaznyte & Andries, 2019; Zaech & Baldegger, 2017), network learning capability (Cacciolatti et al., 2020; Garidis & Rossmann, 2019) and their impact on the start-up (Cole & Sokolyk, 2018; Jeong et al., 2020; Kozubikova et al., 2019). The remaining two research papers used mixed

methodology to research start-ups ecosystem (Hallen & Pahnke, 2016) or used qualitative data to complement mostly quantitative research with other techniques and instruments (Garidis & Rossmann, 2019).

Considering the papers' academic perspectives, all but nineteen of the papers drew on three theories. First, the RBV perspective steered twenty-five articles. The RBV centres on how a new venture accesses and obtains diverse kinds of resources in the start-up ecosystem (Wu et al., 2020; Xue et al., 2019). Second, eighteen articles used an open innovation (OI) perspective centre on the sharing of knowledge and the collaborative processes of a new venture (Faridian & Neubaum, 2020; Michelino et al., 2017). The twenty-three articles that adopted Social Capital Theory (SCT) focussed on the company's capacity to create, combine and reconfigure tangible and intangible knowledge produced between actors and networks (Smith et al., 2017; Zheng et al., 2020).

The choice of categories allows a systematic review and analysis of the papers. The conceptual variables drawn from the three approaches postulate diverse effects on the dependent (start-up performance) and independent constructs (start-up ecosystem and network learning capability) in terms of the conceptual perspectives' primary constructs. We organised the article according to the categories utilising a comprehensive approach (Mayring, 2004). We content analysed the papers and analysed them in turns of business and administration theories' descriptions, applying the same analysis to quantitative, qualitative and mixed papers. The structuration of categories was cross-checked by the three authors independently.

FINDINGS

The results show six subparts. In the first three, we analyse the notion of the start-up ecosystem, start-up performance and network learning capability literature. We focus on the reviewed papers' methodological and conceptual considerations in these first three subparts. Figure 1 below displays the papers in terms of their links among the principal categories.

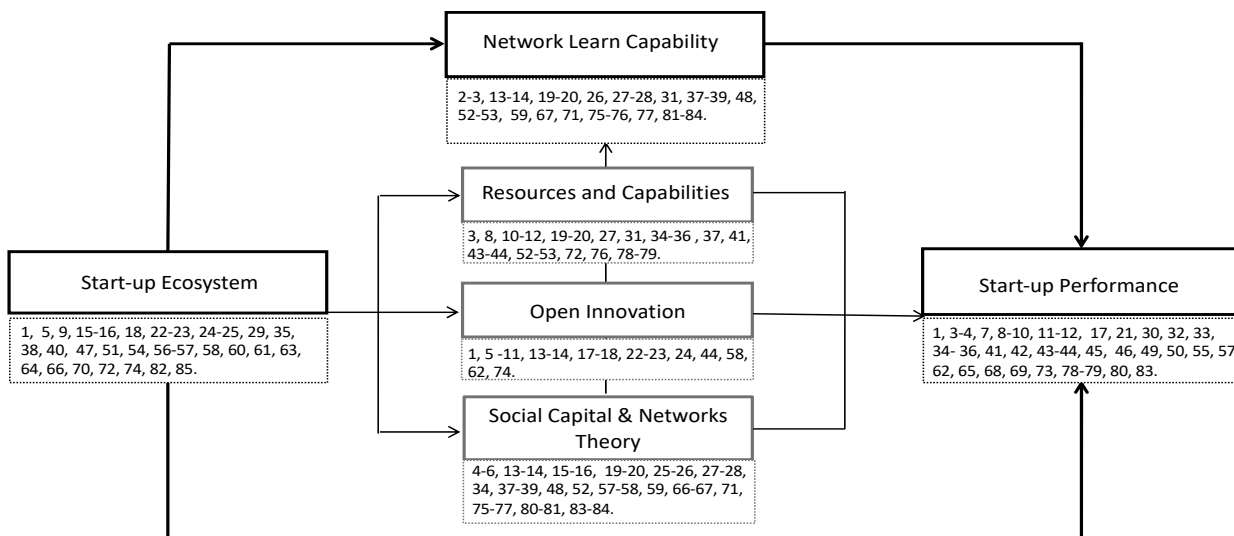


FIGURE 1
CONCEPTUAL DESIGN
 THE NUMBERS RELATE TO THE PAPERS CONSIDERING THIS CONNECTION (see Appendix)

The fourth, fifth, and sixth subparts consider the network learning capability perspective across RBV, OI, and SCT theories. In these subparts, we consider the conceptual aspects, the network learns capability and the impact of the start-up ecosystem on new venture performance. All categories and descriptions are presented in Table 1 and will be explained in the results section of the paper.

Categories	Dimensions	Descriptions
Start-up ecosystem (SE)	General objective measures	Governmental help, investor angels, venture capital (VC), crowd funding and business incubation.
	Ecosystem-specific objective measures	New venture support from the start-up ecosystem and several lifted obstacles.
Start-up performance (SP)	General objective measures (Enterprise)	Success, employment, total of funds obtained, profit, survival, firm size and firm growth in terms of sales.
	General subjective measures (Entrepreneur's satisfaction).	Entrepreneurial success, market performance, firm performance, the achievement of enterprise goals, estimation of sales and growth, competitive performance, anticipated survival, performance compared to competitors, estimation of profit, and satisfaction with the return on assets.
Network learn capability	Network learn-specific objective measures	Advancement in the internal and externally focused network learning capability procedure from initiation to market scaling.
	Actors	Researchers, coaching, consultants, service providers, universities, incubators, mentors, informal financing and VC.
	Relationships	The content, formality, strength of the interactions, communication, and internal or external relationship.
Resource based-view (RBV)	Resources	Specific contacts, technical knowledge, shared knowledge, recommendation, a sense of belonging, funding, office space, a general network and credibility.
	Capabilities	Learn capabilities, absorption capabilities, innovative capabilities, adaptation capabilities, managerial capabilities, marketing capabilities, network capabilities.
Open innovation (OI)	Process	A Start-up firm is a potent engine of OI processes.
	Outcomes	Results have enabled us to classify them into two sub-categories: innovation performance and organizational performance.
Social capital theory (SCT)	Social capital	Structural dimension of social capital: the influence of structural diversity on innovation processes and network results.
		The relational dimension of social capital: the impact of qualitative variations in single company's relationships with the other organisations on innovation processes and results.

All six subparts have been organised so that a formal association is made between the categories of the perspectives and network learning capability theory. Each subpart concludes with definitions and theoretical and conceptual assumptions on start-ups ecosystems and start-up performance research.

Start-up ecosystem

Definitions and conceptions:

The academic literature on start-up ecosystem dates back to the 90s' when his term was popularized by James More (Moore, 1993), gaining real traction around 2010 (Mason & Brown, 2014; Singh et al., 2019). However, the publication of a systematic review in 2019 by Tripathi et

al., 2019 in a specific issue in the Journal of Information and Software Technology, directed future research along three main lines of discussion. These were the concepts of a start-up ecosystem; the essential components involved in creating a start-up ecosystem as well as the functions that these components play in start-ups' performance.

There is an interesting debate in the literature about actors, roles, functions, and relationships generate in the start-up ecosystems (Alvedalen & Boschma, 2017; Amedofu et al., 2019; Kuckertz, 2019; Kuckertz et al., 2020; Sperber & Linder, 2019; Tripathi et al., 2019). Some of these studies suggest that understanding of the concept of a start-up ecosystem has become quite clear but that it is necessary to distinguish between an 'entrepreneurial ecosystem' (Kuckertz, 2019; Stam et al., 2014; Stam & Spigel, 2015) and a 'start-up ecosystem' (Singh et al., 2019), two tightly associated ideas which, however, deal with distinct kinds of management activities.

The start-up ecosystem refers to a favourable environment where diverse actors collaborate to support the start-up (Acs et al., 2014). A start-up ecosystem's key factors are companies, infrastructure, accelerators, innovation centres and universities (Neck et al., 2004; Sharif & Tang, 2014; Spender et al., 2017). The start-up ecosystem provides favourable conditions for high-growth start-up firm creation, development and growth (Baron & Harima, 2019). The needs of start-ups differ from small firms, for example, in the investments, capabilities and pace of growth (Fraiberg, 2017; Haines, 2016).

Start-up performance

Start-ups are firms in the process of identifying, creating and scaling a viable and replicable business model to materialize market opportunities (Ehrenhard et al., 2017). Rompho (2018) defined them as being young firms, less than ten years old, with an innovative business model and that show a notable increase in employees or sales. Their continuance can be considerably improved by innovation (Feng et al., 2019). Their innovation and knowledge processes and performance notably vary from those of established companies (Centobelli et al., 2017; Criscuolo et al., 2012) because they are knowledge-based, solve contemporary problems, are flexible, agile, and have a high potential for growth and scalability.

Start-up performance is one of the most extensively applied dependent constructs in the management, entrepreneurship and innovation field in recent times. Start-up performance is related to a rise in their sales, market penetration and financial achievement (Rompho, 2018). New venture performance can be indicated by agility, efficiency and adaptability of the firms' activities in different industry environments (Cantamessa et al., 2018; Rekarti & Doktoralina, 2017). In terms of measuring new venture performance, authors utilise a host of performance criteria (Marvel et al., 2019; Rompho, 2018). The usual dimensions are start-up performance growth, funding attracted, market share, employment, gross profit, business volume, survival, cost control, successful outcome, goal attainment, satisfied customers, evaluation of success by the founder, among others (Dutta & Folta, 2016; Hasani & O'Reilly, 2020; Sorooshian, 2017). Given the several notions and perspectives suggested in terms of measuring new venture performance, doing so consistently is not easy (Marvel et al., 2019; Rompho, 2018). The measures proposed can be either more objective when utilising financial records or more subjective when based on people's perception (Stam et al., 2014).

Network learning capability

Network learning capability supports new ventures by improving their network as well as the firm (Baraldi et al., 2019). We define this capability as the company's capacity to create, combine, and reconfigure tangible and intangible knowledge by internal and external links with organisations or actors in their environment (Weerawardena et al., 2015). Both types of network learning capabilities catch different knowledge's required to offer valuable services that markets demand.

The external learning capabilities facilitate identifying the knowledge intensity you need for the new venture in its initial business activities (Zheng et al., 2020). Internally focused learning capabilities capture the company's abilities in terms of the founders' vision and expertise in accessing current networks and generating new ones (Weerawardena et al., 2015). However, it is crucial to consider two essential components of a network; nodes and connects (Dickel et al., 2018; McGrath et al., 2019).

Nodes are generally situated at distinct enterprise levels, such as companies, areas, projects or individuals (Dickel et al., 2018). Nodes can also be actor networks (Anwar et al., 2018), including venture capital, government institutions, business accelerators, business incubators, large enterprises, small enterprises and universities (Baraldi et al., 2019). Ties typically describe relational aspects, including collaboration, communication, confidence and knowledge exchange, information and advice (Xue et al., 2019). Studies usually consider one particular kind of interaction but it multiple connections can be considered (Panetti et al., 2019).

Improving network learning capability calls for knowing and working with other companies and so is more than an internal ability of a new venture that is directed towards other different companies. These other companies also need to have access to specific means and context, establishing a network capability (McGrath et al., 2019). Most start-up companies begin outside of a network-ecosystem. The chief executive officers (CEO) need to identify those links that generate critical relationships for success. The lack of an established status for new ventures suggests that time is necessary for other companies to accept them as new actors. Network learning capability has long been linked with new venture performance (Zacca et al., 2015).

There is a consensus in the research studied that connections and network links do produce performance benefits for small business (Semrau & Sigmund, 2012), although extant studies are inconclusive due to the contradictory approaches used. Hence, it is not clear what types of network links help small business performance (Stam et al., 2014). In the context of start-ups and their externally focused network learning capability, the start-up ecosystem relationships with technological factors are useful for start-up performance.

Resource-based View

The resource-based view (RBV) holds that companies have tangible (financial, technological or physical) and intangible (human and knowledge) resources that can convert into unique capabilities that are the source of a firm's competitive advantage (Barney, 1991; Guo et al., 2020). Likewise, the extent of information exchange influences resources acquisition's abundance and variety, having an impact on the community's capability for exploring and relationships (Xue et al., 2019). The RBV sees companies as a set of resources and capabilities whose value generates benefits for enterprise, such as, for example, revenues (De Groote & Backmann, 2020; Grant, 1991)

The RBV perspective demonstrates that the exploration and absorption of an initial resources base for creating new ventures will shape competitive advantage and thus, performance (Marullo et al., 2018). The RBV literature has mostly worked on new ventures, advising that the

exploration and exploitation of a set of initial resources facilitates a firms' ability to comprehend and develop value-creating strategies (DeTienne & Cardon, 2008; Marullo et al., 2018).

The RBV-inspired entrepreneurship perspective has frequently studied the impact of distinct internal resources (human capital, technology and finance) on new venture performance. Still, it has insufficiently assessed the influence of teams' 'openness' to external resources in the startup initial phase as a factor that improves success (Marullo et al., 2018; Tedmanson et al., 2012). The RBV approach recommends that human capital helps generate a long-lasting competitive advantage. New ventures acquire the skills and the prior experience of their founders or allies; thus, entrepreneurs are among the most critical human resources present in the company in terms of value-creating (Agarwal et al., 2004; Marullo et al., 2018).

The RBV suggests that the survival of a new venture in a competitive context depends on its capability to harness resources; therefore, start-ups successful transfer of innovations depends on the availability of complementary assets, so start-ups' capability-based resources have a more significant impact on competitive advantage than other intangible and tangible assets (Hyytinen et al., 2015; Paradkar et al., 2015). For the new ventures, alliances with other actors are a vital asset, and so the ability to be able to form partnerships is a key dynamic capability. Successful new ventures leverage their available resources to attract allies to obtain complementary resources.

Open Innovation

The literature on Open Innovation (OI) in small and medium business has highlighted the influence of an open focus on start-up creation as a critical aspect driving new venture success (Eftekhari & Bogers, 2015; Marullo et al., 2018). We define IO as purposive inflows and outflows of knowledge to accelerate business and develop the market through externally sourced innovation (Chesbrough et al., 2006). Therefore, OI can play a crucial function in the absorption and exploiting of knowledge. Two supports sustain OI processes: technology exploration (inbound OI) and technology exploitation (outbound OI) (Pustovrh et al., 2020).

OI phenomenon have been on the growth in established companies, particularly in collaboration with new ventures (De Groote & Backmann, 2020), which suffer a fundamental lack of key resources and learning capabilities (Wymer & Regan, 2005). Their lack of financial resources and human capital limits the growth of innovation. New ventures adopt OI practices to overcome both their novelty and smallness (Bogers, 2011), such that the new venture phenomenon and OI are intimately linked (Spender et al., 2017).

The research in OI has developed diverse strands, displaying the multidimensional character of the notion of OI (Spender et al., 2017). Many types of research have explored the complex dimensions of OI (Aslesen & Freel, 2012; Huizingh, 2011), focussing on diverse aspects, such as innovation practices (Baldwin & Von Hippel, 2011; Galati et al., 2016; Saguy & Sirotinskaya, 2014); OI levels (Herrmann et al., 2007); OI modalities (Bigliardi et al., 2012; Dahlander & Gann, 2010); knowledge flows (Lichtenthaler & Ernst, 2009); effectiveness of OI activities and practices (Dahlander & Gann, 2010; Greco et al., 2015; Tomlinson, 2010) and internal and external contexts of OI (Harison & Koski, 2010; Huizingh, 2011). An OI approach to development of a start-up ecosystem typically promotes the development of four key aspects: (a) a coordinative and collaborative network of the principal firm and allies; (b) links based on cooperative vertical and horizontal relationship among network allies, with a particular focus on intra-network flows of knowledge; (c) value-capture with allies and (d), external connections of the network-ecosystem to other networks and enterprises (Pustovrh et al., 2020). From this theoretical perspective, an 'open

approach' to start-up creation is key, i.e. intentionally leveraging external innovation-related and technological knowledge through the new venture's enterprise boundaries (Eftekhari & Bogers, 2015; Marullo et al., 2018; Presutti et al., 2011) that can support the founding teams in overcoming internal resources constraints, providing new venture performance (Drechsler & Natter, 2012; Gruber et al., 2013; Ketchen et al., 2007; West & Bogers, 2014).

Social Capital Theory

The social capital perspective is mainly understood as an entrepreneurs' capacity to acquire and use resources from links to achieve expected results (Adler & Kwon, 2002; De Groote & Backmann, 2020). This theory has been applied widely in sociology (Smith et al., 2017), business and management (Ter Wal et al., 2016), including entrepreneurship (Packard, 2017) and the innovation literature (Feng et al., 2019).

The SCT perspective shows that innovation and entrepreneurship generate entrepreneur positive behaviour inside of the start-up ecosystem and increase access to knowledge, relationships, or benefits over other actors and a sense of solidarity or support (Engel et al., 2017; Nair et al., 2020). As such, the dependence on personal networks for a new venture can be described in terms of SCT, which stresses the importance of the social environment in which the new venture actors are established as a principal source for reducing risks and promoting innovation (De Groote & Backmann, 2020; Leyden et al., 2014). Therefore, we adopt a notion of social capital as the sum of real and possible resources set within, available and derived from the network of links maintained by people (Smith et al., 2017). This concept of social capital is consistent with its multidimensional nature. Despite conceptualization challenges and associated validity studies of the dimensions SCT (Gedajlovic et al., 2013), advancement has been made in the definition of how social capital is manifest. For Smith et al. (2017), two complementary viewpoints have emerged in the innovation and entrepreneurship literature: 1) bridging social capital and 2) bonding social capital.

The bridging social capital evolves across structural relationships with other actors and is essentially distinguished by information and knowledge sharing. Entrepreneurs are thought to generate networks that contribute access to the resources and capabilities they require to be successful by bridging the structural gaps in their collaboration networks, often via brokers, to achieve expected performance. Likewise, bonding social capital is accrued through an entrepreneur's network, deepening attitudes and behaviours, including the time-based relations of pacing, network keeping and embedding. However, when we study the features of the relationships that influence the level of social capital we need to consider three constructs (Smith et al., 2017).

First, the structural construct focuses on the high or limited position of the actor in the network, such as social support and access to unique information. Both relate to company performance but limited closure has a more substantial effect on start-ups. Second, the relational construct leads to the strength of the connection and interaction, such as friendships, gratitude and respect that influences a high level of trust and reciprocity but is costly to maintain. Likewise, relationally weak ties are important because they are moderately low to maintain and they usually connect actors in distinct contexts, holding diverse information (Stam et al., 2014). The third construct of SCT is homophily (Ruef et al., 2003), which refers to how related the two actors are in terms of what they know, think and have. For a new venture in high-tech businesses and innovation, a low level of homophily is more strongly related to start-up performance (Stam et al., 2014).

SYNTHESIS AND DISCUSSION

We have studied individual contributions to the network learning capabilities literature across three management perspectives. Table 2 condenses these results. The matrix is organised in terms of the review's principal categories and expands the concepts. Preconceived categories are start-up ecosystem, start-up performance measures, network learning capability perspective and conceptual aspects. The concepts that arose from the papers are network learning capability practices, start-up performance outcomes, synthesis and research agenda. We debate the network learning capability approach through the conceptual perspectives to arrive at a general knowledge of the phenomena.

Research utilizes a wide diversity of start-up performance metrics but they are similar between the theoretical perspectives. Some studies integrate theories such as RBV and OI, as in Rompho (2018). Nevertheless, over all the research most start-up performance metrics are applied just once or twice, making generalization and comparison difficult through variance in the specific empirical circumstance and contexts. The dearth of research applying similar start-up performance measures hinders the configuration of a clearer view of network learning capabilities. In the network learning capabilities perspective, network capability is principally empirically approached through distinct conceptual perspectives. About half the papers using RBV provide more empirical studies but for SCT and OI, the empirical support is greatly lessened. A theoretical approach can be beneficial in a qualitative environment, as it helps discover conceptual aspects across which network learning capabilities have an impact on new venture performance. However, an empirical perspective is necessary for understanding the value of these aspects and generalising outcomes. The conceptual aspects differ between the theories. One emphasis is on the benefits that a start-up receives. For RBV, these are resources and learning capabilities; for OI, they are shared and collaborative; for SCT, it is social and relationship capital.

The conceptual aspects from different theorists' approaches feed into each other. Papers assuming an SCT perspective centre on how new ventures generate interactions and exchange of resources and learning capabilities (RBV), knowledge sharing and collaboration (OI). Likewise, the new venture requires network learning capabilities (RBV) to generate links and interactions with other actors and located itself structurally in the internal and external network (SCT). Moreover, network learning capability develops strong ties between actors (SCT), where knowledge is shared between the new venture and other actors (KBV). Furthermore, the homophily construct of interactions is influenced by network learning capability across new venture candidates chosen (SCT). It feeds into the absorptive, learning and innovation capacities, which affect the collaboration process (OI) and transfer of knowledge between actors (KBV).

Table 2			
SYNTHESIS OF NETWORK LEARNING CAPABILITY PERSPECTIVE			
Categories	Resource-based view (25 papers)	Open innovation (18 papers)	Social capital theory (23 papers)
Start-ups ecosystem (SE)	The ecosystem provides resources to start-ups (ten papers), such as funding, physical spaces, universities, investors, business experts, accelerators, consultants, general and specific networks, knowledge flow, managerial	The ecosystem offers collaboration processes that include dimensions, roles and impact of specific relationships (18 papers), such as support governmental, business angels, venture capital (VC), crowdfunding support and	The network is generally developed and kept going by the start-up ecosystem managers (nine papers). Hence, when a new venture connects to actors, it adds to the number of interactions in the external network, also improving

	knowledge and mentoring.	business incubation help.	business closure. As a result, network learning capabilities attach to the 'closure' of the network, increasing the feeling of belonging and confidence for the start-up's ecosystem.
Start-ups performance (SP)	Objective measures (12 papers) are size and company growth, employment, market sales, investments and profit. Subjective measures (seven papers) are entrepreneur's satisfaction, survival, success, estimation of growth, competitive performance, outcomes and performance compared to competitors.	Objective measures (seven papers) companies' growth in sales, total funds obtained profit and employment. Subjective metrics (six papers) are early-stage, estimation of profit, satisfaction, survival and success, while other measures (five articles) do not focus on the new venture performance.	Objective metrics (three papers) are market sales, profit, funds obtained, growth and employment. Subjective measures (two papers) are satisfaction costumers, survival, capability building, competitive advantage and success.
Network learning capability (NLC) conceptual aspects	NCL provides new venture resources and capabilities across the relationship with several actors. Special network-related learning capabilities are required for absorption resources and capabilities. The network learning capabilities are conducive to increased performance.	Open innovation plays a crucial role in exploring and exploiting knowledge collaboratively for start-ups development and drive. New ventures suffer the structural lack of tangible and intangible resources that can be overcome with new open innovation processes.	Social capital theory in innovation and entrepreneurship postulates that others' positive behaviour towards the entrepreneur can improve access to knowledge, relationships or impact on other actors and provide a sense of solidarity or support.
NLC research approach	Ten papers offer a theoretical perspective on researching network learning capability while fifteen are empirical.	Most research approaches network learning capability empirically (11 articles) and the remainder theoretically (seven articles).	The social capital theory articles approach the network learning capability empirically (14 papers) and the remainder theoretically (nine papers).
Network learning capability (NLC) practices	NLC offers access to resources in different ways to start-ups, such as spaces, support, investors and mentors, across relationships with other new ventures, and by actively including new ventures in relation to external actors or quietly supporting them to reach out to external actors in the ecosystem. Network learning-related capabilities, such as learning capabilities, absorptive capabilities, network capabilities and innovation capabilities, affect the resources and capabilities.	The OI practices enable the new venture to overcome both novelty and smallness. NLC provides a coordinate network of the principal company and allies, links based on the collaborative vertical and horizontal relationships between network allies, value-capture with allies and the network ecosystems external connections to other networks and enterprise.	SCT provides, on the one hand, physical proximity, linkages between network partners, social events, facilitates connection, training and shared spaces between the actors in the internal network; for another, it involves an external network that increases or decreases the probability of business closure, such as, by motivating entrepreneurs to terminate some relationships.
Start-ups Performance impact	Resources and capabilities related to new venture performance are the university connection, support programs, scaling capability and internal	The start-up seems to perform more critically in terms of market performance when relying heavily on the network. Therefore, the successful start-	Network capabilities affect the structural construct of social capital by supporting and stimulating the new venture to form relationships with other

	and external networking. These are linked to survival, satisfaction with new venture performance and competitive advantage. Internal and external networking has not been related to growth in employment, funds obtained and revenue.	up has to be autonomous; by relying too heavily on their network, their performance reduces as they start copying others. Network structure and Innovation processes reciprocally shape other actors in the network and determine the conditions for new products or services, create new artefacts, accept or reject them and in the process, change their interactions and modify their relations.	actors. The NLC literature has described two key aspects (network physical and cognitive proximity) where both improve network capability and positively affect the start-up's innovative and market performance.
Reflections and further research	The start-up network-ecosystem offers a more detailed perspective on which resources and learning capabilities affect new venture performance constructs. It concentrates on the resources and capabilities most likely to influence new venture performance. Finally, capability dimensions such as absorptive capabilities, innovation capabilities, network capabilities and learning capabilities go beyond recognising what resources are key in leading to new venture performance.	A more detailed view of the mutual impact among the new venture making decisions and OI processes can help understand how the absorption of knowledge from one actor inside the start-up ecosystem can simultaneously balance innovative and market performance. Also, network learning capabilities are very varied; therefore, potential contextual aspects to consider are the type of business, features of the support activities, institutional contextual and features of the relationships.	How social capital has been incorporated into the different relationships and interactions with the network is clear. However, its effect on the performance of the start-up is not so apparent. This literature gap can be ascribed to the greater interest of current studies with the positive impacts of social capital rather than its adverse impacts. For further studies, we propose the incorporation of a broader view of possible consequences.

The studies describe three network learning capabilities improving practices. First, network learning capabilities offer relationship opportunities with fellow start-up's ecosystem. Second, network learning capabilities entail developing interactions with the coach, mentors and consultant of the start-up's ecosystem. Third, the start-up's ecosystem provides a support system and opportunities for network learning capabilities development with actors outside the ecosystem. Finally, the impact on new venture performance, from a network learning capabilities perspective, generates benefits for the new venture: resources, learning capabilities, network capabilities, absorption capabilities, innovation capabilities, shared knowledge, and social capital. However, empirical evidence shows that the use of start-up performance metrics is too different.

We can make suggestions about further research from the three theoretical perspectives. Summarising these recommendations, the network learning capabilities approach be assisted in the power of its theorizing by drawing from social and management approaches, such as the RBV; from the OI approach it can take a concern with the environmental factors assisting collaboration and relationship processes; finally, from SCT it could consider the impact and benefits of social capital. These are the likely fields that further research should explore. Moreover, the three perspectives hold many other promising ideas from which the network learning capabilities perspective can potentially have an impact on organisational ambidexterity, dynamic capabilities, learning analytics

and experiential learning. Nevertheless, because these ideas have not been used in the network learning capabilities perspective, they could not be debated in this review.

Likewise, we detected different but partially used performance metrics and evidence that research implications are dependent on metrics for performance that were utilised. Moreover, the network learning capabilities perspective assumes a broad and recurring set of metrics. We propose an integration of objective (e.g. growth, sales, revenue) and subjective (e.g. estimation of profit, satisfaction) start-up performance metrics. Further measures of start-ups' performance may also be important, such as entrepreneur welfare. Additionally, we propose that further study should use more analytical network capability perspectives. Finally, further studies should generate a more detailed approach to the effect of network learning capabilities on start-up performance. This model requires to going beyond the impact that this network has on new venture performance. Further studies assessing the effects of influence on start-up performance metrics are required.

CONCLUSION AND IMPLICATIONS

The present systematic literature review (SLR) aimed to analyse the empirical and theoretical studies of network learning capabilities on new venture performance through three management perspectives. We examined different network learning capabilities and practices and debated the conceptual aspects of how the practice leads to benefits for new ventures (Champenois et al., 2020). We identified that network learning capabilities have an impact on new ventures although the importance of these practices for network learning capabilities is imprecise. Moreover, the effect of benefits on new venture performance is complex. The benefits are resources, learning capabilities, collaboration process, knowledge shared and social capital, improving or worsening new venture performance, depending on the start-up's performance metrics.

We proposed a research agenda to address the gaps and limitations identified and further the knowledge field. In this way, we have answered two key problems in the network learning capabilities perspective. First, the SLR shows the papers that find a positive impact between network learning capabilities and start-up performance (Garidis & Rossmann, 2019; Marvel et al., 2020; Rompho, 2018; Seet et al., 2020). Hence, we propose a more detailed model of the influence of network learning capabilities as a moderator variable to advance the knowledge area. We started our analysis by discovering and defining the impact of benefits on new venture performance to achieve this model. Second, by examining the three management perspectives, we propose to expand the theoretical and conceptual depth of the network learning capabilities approach (Cao & Shi, 2020; Shepherd et al., 2021; Tripathi et al., 2019). Theories and insights from the RBV, the OI, and SCT can increase the power of the network learning capabilities perspective.

The SLR has restricted itself to conceptual approaches, most often in the network learning capabilities perspectives. We argue that with the addition of other management theories, a greater understanding of the networked learning capabilities approach can be achieved (Cao & Shi, 2020; Weerawardena et al., 2015). Nevertheless, currently, there are too few studies that apply these theories to incorporate these concepts or categories in this SLR. Other important theoretical approaches that have been recommended are dynamics capabilities (Feng et al., 2019; Jeong et al., 2020; Paradkar et al., 2015), organisational ambidexterity (Faridian & Neubaum, 2020), institutional theory (Acs et al., 2018; Islam et al., 2018; Kuratko et al., 2017), entrepreneurial ecosystems (Berger & Kuckertz, 2016; Brown & Mason, 2017; Pustovrh et al., 2020), innovation systems literature (Panetti et al., 2019; Sperber & Linder, 2019) and Actor-Network Theory (Baraldi et al., 2019; Fraiberg, 2017). These alternative perspectives open up opportunities to

evaluate the impact of networked learning capabilities on start-ups performance metrics at the territorial level, such as enterprise development, employment, innovation and growth.

The advice for public policymakers, start-ups ecosystem practitioners, new venture founders, and other actors is that network learning capabilities are not instruments for solving many new venture problems. While network learning capabilities can facilitate some benefits, these can lead to both positive and adverse impacts. The results of this SLR propose that the match between the needs and goals of the new venture and the offerings of network learning capabilities need to be considered for start-up performance improvement. We only made a theoretical selection of start-up performance metrics to assess the influence of network learning capabilities. Thus, start-up ecosystem practitioners and public policymakers should keep track of a broad range of start-up performance metrics and compare them.

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Appendix

Appendix in Table 3

No	Reference	Title
1	Shepherd et al. (2021)	Creating New Ventures: A Review and Research Agenda
2	Zheng et al. (2020)	Entrepreneurial networking during early stages of opportunity exploitation: Agency of novice and experienced new venture leaders (NVL)
3	Wu et al. (2020)	Incubator networks and new venture performance: the roles of entrepreneurial orientation and environmental dynamism.
4	Seet et al. (2020)	Understanding early-stage firm performance: the explanatory role of individual and firm level factors
5	Pustovrh et al. (2020)	The role of open innovation in developing an entrepreneurial support ecosystem.
6	Nair et al. (2020)	Toward the Emergence of Entrepreneurial Opportunities: Organizing Early-phase New-venture Creation Support Systems
7	McDonald and Eisenhardt (2020)	Parallel play: Startups, nascent markets, and effective business-model design.
8	Marvel et al. (2020)	Examining entrepreneurial experience in relation to pre-launch and post-launch learning activities affecting venture performance.
9	Kuckertz et al. (2020)	Startups in times of crisis—A rapid response to the COVID-19 pandemic.
10	Jeong et al. (2020)	The Role of Venture Capital Investment in Start-ups' Sustainable Growth and Performance: Focusing on Absorptive Capacity and Venture Capitalists' Reputation.
11	Hasani and O'Reilly (2020)	Analyzing antecedents affecting the organizational performance of start-up businesses.
12	Guo et al. (2020)	Technology Push or Market Pull? Strategic Orientation in Business Model Design and Digital Startup Performance.
13	Faridian and Neubaum (2020)	Ambidexterity in the age of asset sharing: Development of dynamic capabilities in open source ecosystems.
14	De Groote and Backmann (2020)	Initiating open innovation collaborations between incumbents and startups: How can David and Goliath get along?
15	Champenois et al. (2020)	Entrepreneurship as practice: systematic literature review of a nascent field.

16	Cao and Shi (2020)	A systematic literature review of entrepreneurial ecosystems in advanced and emerging economies.
17	Cacciolatti et al. (2020)	Strategic alliances and firm performance in startups with a social mission.
18	Assenova (2020)	Institutional Change and Early-Stage Start-Up Selection: Evidence from Applicants to Venture Accelerators.
19	Albourini et al. (2020)	The effect of networking behaviours on the success of entrepreneurial startups.
20	Xue et al. (2019)	Information Sharing and Investment Performance in the Venture Capital Network Community: An Empirical Study of Environmental-Social-Governance Start-Ups.
21	Vaznyte and Andries (2019)	Entrepreneurial orientation and start-ups' external financing.
22	Tripathi et al. (2019)	Insights into startup ecosystems through exploration of multi-vocal literature.
23	Tripathi et al. (2019)	Startup ecosystem effect on minimum viable product development in software startups.
24	Sperber and Linder (2019)	Gender-specifics in start-up strategies and the role of the entrepreneurial ecosystem.
25	Singh et al. (2019)	Analyzing the startup ecosystem of India: A Twitter analytics perspective.
26	Panetti et al. (2019)	Exploring the relational dimension in a smart innovation ecosystem: a comprehensive framework to define the network structure and the network portfolio.
27	McGrath et al. (2019)	A process-based model of network capability development by a start-up firm.
28	Marvel et al. (2019)	Accelerating sales in start-ups: A domain planning, network reliance, and resource complementary perspective.
29	Kuckertz (2019)	Let's take the entrepreneurial ecosystem metaphor seriously!
30	Kozubikova et al. (2019)	The impact of political factors' perception on suitability of international business environment: the case of startups.
31	Karami and Tang (2019)	Entrepreneurial orientation and SME international performance: The mediating role of networking capability and experiential learning.
32	Giraud et al. (2019)	Entrepreneurship policy and the financing of young innovative companies: Evidence from the Italian Startup Act.
33	Garidis and Rossmann (2019)	A framework for cooperation behaviour of start-ups.
34	Feng et al. (2019)	The key role of dynamic capabilities in the evolutionary process for a startup to develop into an innovation ecosystem leader: An in-depth case study.
35	Crespo et al. (2019)	The adoption of management control systems by start-ups: Internal factors and context as determinants.
36	Chatterji et al. (2019)	When does advice impact startup performance?
37	Caseiro and Coelho (2019)	The influence of Business Intelligence capacity, network learning and innovativeness on startups performance.
38	Baron and Harima (2019)	The role of diaspora entrepreneurs in start-up ecosystem development-a Berlin case study.
39	Baraldi et al. (2019)	Start-ups and networks: Interactive perspectives and a research agenda.
40	Van Weele et al. (2018)	Start-up Communities as Communities of Practice (CoP): Shining a Light on Geographical Scale and Membership.
41	Symeonidou and Nicolaou (2018)	Resource orchestration in start-ups: Synchronizing human capital investment, leveraging strategy, and founder start-up experience.
42	Rompho (2018)	Operational performance measures for startups.
43	Park and Bae (2018)	When are 'sharks' beneficial? Corporate venture capital investment and startup innovation performance.
44	Marullo et al. (2018)	'Ready for Take-off': How Open Innovation influences startup success.
45	Kee and Rahman (2018)	Effects of entrepreneurial orientation on start-up success: A gender perspective.
46	Kato and Zhou (2018)	Numerical labour flexibility and innovation outcomes of start-up firms: A panel data analysis.
47	Islam et al. (2018)	Signalling by early stage startups: US government research grants and venture capital funding.
48	Dickel et al. (2018)	Networking for the environment: The impact of environmental orientation on start-ups' networking frequency and network size.
49	Cole and Sokolyk (2018)	Debt financing, survival, and growth of start-up firms.
50	Cantamessa et al. (2018)	Start-ups' roads to failure.
51	Bandera and Thomas (2018)	The role of innovation ecosystems and social capital in startup survival.
52	Anwar et al. (2018)	Networking and new venture's performance: Mediating role of competitive advantage.

53	Adomako et al. (2018)	Entrepreneurial alertness and new venture performance: Facilitating roles of networking capability.
54	Acs et al. (2018)	Entrepreneurship, institutional economics, and economic growth: an ecosystem perspective.
55	Zaech and Baldegger (2017)	Leadership in start-ups.
56	Wright et al. (2017)	An emerging ecosystem for student start-ups.
57	Van Rijnsoever et al. (2017)	Network brokers or hit makers? Analysing the influence of incubation on start-up investments.
58	Spender et al. (2017)	Startups and open innovation: a review of the literature.
59	Smith et al. (2017)	Embracing digital networks: Entrepreneurs' social capital online.
60	Roundy et al. (2017)	"The resilience of entrepreneurial ecosystems."
61	Packard (2017)	Where did interpretivism go in the theory of entrepreneurship?
62	Michelino et al. (2017)	Open innovation for start-ups.
63	Men et al. (2017)	Dialogues with entrepreneurs in China: How start-up companies cultivate relationships with strategic publics.
64	Kuratko et al. (2017)	The paradox of new venture legitimation within an entrepreneurial ecosystem.
65	Jin (2017)	The effect of psychological capital on start-up intention among young start-up entrepreneurs.
66	Fraiberg (2017)	Start-up nation: Studying transnational entrepreneurial practices in Israel's start-up ecosystem.
67	Engel et al. (2017)	Toward a dynamic process model of entrepreneurial networking under uncertainty.
68	De Lange (2017)	Start-up sustainability: An insurmountable cost or a life-giving investment?
69	Centobelli et al. (2017)	Knowledge management in startups: Systematic literature review and future research agenda.
70	Brown and Mason (2017)	Looking inside the spiky bits: a critical review and conceptualisation of entrepreneurial ecosystems.
71	Ter Wal et al. (2016)	The best of both worlds: The benefits of open-specialized and closed-diverse syndication networks for new ventures' success.
72	Hallen and Pahnke (2016)	When do entrepreneurs accurately evaluate venture capital firms' track records? A bounded rationality perspective.
73	Colombelli et al. (2016)	To be born is not enough: the key role of innovative start-ups.
74	Berger and Kuckertz (2016)	Female entrepreneurship in startup ecosystems worldwide.
75	Zacca et al. (2015)	Impact of network capability on small business performance.
76	Weerawardena et al. (2015)	The role of the market sub-system and the socio-technical sub-system in innovation and firm performance: A dynamic capabilities approach.
77	Soetanto and Van Geenhuizen (2015)	Getting the right balance: University networks' influence on spin-offs' attraction of funding for innovation.
78	Paradkar et al. (2015)	Innovation in start-ups: Ideas filling the void or ideas devoid of resources and capabilities?
79	Hyytinen et al. (2015)	Does innovativeness reduce startup survival rates?
80	Stam and Spigel (2015)	Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators.
81	Schott and Sedaghat (2014)	Innovation embedded in entrepreneurs' networks and national educational systems.
82	Acs et al. (2014)	National systems of entrepreneurship: Measurement issues and policy implications.
83	Wang and Fang (2012)	The moderating effect of environmental uncertainty on the relationship between network structures and the innovative performance of a new venture.
84	Semrau and Sigmund (2012)	Networking ability and the financial performance of new ventures: A mediation analysis among younger and more mature firms.
85	Naudé (2010)	Entrepreneurship, developing countries, and development economics: new approaches and insights.

REFERENCES

- Acs, Z.J., Autio, E., & Szerb, L. (2014). National systems of entrepreneurship: Measurement issues and policy implications. *Research Policy*, 43(3), 476-494.
- Acs, Z.J., Estrin, S., Mickiewicz, T., & Szerb, L. (2018). Entrepreneurship, institutional economics, and economic growth: an ecosystem perspective. *Small Business Economics*, 51(2), 501-514.

- Adler, P.S., & Kwon, S.W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, 27(1), 17-40.
- Adomako, S., Danso, A., Boso, N., & Narteh, B. (2018). Entrepreneurial alertness and new venture performance: Facilitating roles of networking capability. *International Small Business Journal*, 36(5), 453-472.
- Agarwal, R., Echambadi, R., Franco, A.M., & Sarkar, M.B. (2004). Knowledge transfer through inheritance: Spin-out generation, development, and survival. *Academy of Management Journal*, 47(4), 501-522.
- Ahn, T.U., Han, D.h., & Kang, T.W. (2019). The Effects of Entrepreneur Competence Characteristics on Start-Up Performance: Focusing on the Mediating Effect of the Start-Up Support System. *Asia-Pacific Journal of Business Venturing and Entrepreneurship*, 14(1), 73-83.
- Albourini, F., Ahmad, A., Abuhashesh, M., & Nusairat, N. (2020). The effect of networking behaviors on the success of entrepreneurial startups. *Management Science Letters*, 10(11), 2521-2532.
- Alvedalen, J., & Boschma, R. (2017). A critical review of entrepreneurial ecosystems research: Towards a future research agenda. *European Planning Studies*, 25(6), 887-903.
- Amedofu, M., Asamoah, D., & Agyei-Owusu, B. (2019). Effect of supply chain management practices on customer development and start-up performance. *Benchmarking: An International Journal*.
- Anwar, M., Rehman, A.U., & Shah, S.Z.A. (2018). Networking and new venture's performance: Mediating role of competitive advantage. *International Journal of Emerging Markets*.
- Aslesen, H.W., & Freil, M. (2012). Industrial knowledge bases as drivers of open innovation? *Industry and Innovation*, 19(7), 563-584.
- Assenova, V.A. (2020). Institutional Change and Early-Stage Start-Up Selection: Evidence from Applicants to Venture Accelerators. *Organization Science*.
- Baldwin, C., & Von Hippel, E. (2011). Modeling a paradigm shift: From producer innovation to user and open collaborative innovation. *Organization Science*, 22(6), 1399-1417.
- Bandera, C., & Thomas, E. (2018). The role of innovation ecosystems and social capital in startup survival. *IEEE Transactions on Engineering Management*, 66(4), 542-551.
- Baraldi, E., Havensvid, M.I., Linné, Å., & Öberg, C. (2019). Start-ups and networks: Interactive perspectives and a research agenda. *Industrial Marketing Management*, 80, 58-67.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Baron, T., & Harima, A. (2019). The role of diaspora entrepreneurs in start-up ecosystem development-a Berlin case study. *International Journal of Entrepreneurship and Small Business*, 36(1-2), 74-102.
- Berger, E.S., & Kuckertz, A. (2016). Female entrepreneurship in startup ecosystems worldwide. *Journal of business research*, 69(11), 5163-5168.
- Bigliardi, B., Dormio, A.I., & Galati, F. (2012). The adoption of open innovation within the telecommunication industry. *European Journal of Innovation Management*.
- Bogers, M. (2011). The open innovation paradox: knowledge sharing and protection in R&D collaborations. *European Journal of Innovation Management*.
- Brown, R., & Mason, C. (2017). Looking inside the spiky bits: a critical review and conceptualisation of entrepreneurial ecosystems. *Small Business Economics*, 49(1), 11-30.
- Cacciolatti, L., Rosli, A., Ruiz-Alba, J.L., & Chang, J. (2020). Strategic alliances and firm performance in startups with a social mission. *Journal of business research*, 106, 106-117.
- Cantamessa, M., Gatteschi, V., Perboli, G., & Rosano, M. (2018). Startups' roads to failure. *Sustainability*, 10(7), 2346.
- Cao, Z., & Shi, X. (2020). A systematic literature review of entrepreneurial ecosystems in advanced and emerging economies. *Small Business Economics*, 1-36.
- Caseiro, N., & Coelho, A. (2019). The influence of Business Intelligence capacity, network learning and innovativeness on startups performance. *Journal of Innovation & Knowledge*, 4(3), 139-145.
- Centobelli, P., Cerchione, R., & Esposito, E. (2017). Knowledge management in startups: Systematic literature review and future research agenda. *Sustainability*, 9(3), 361.
- Champenois, C., Lefebvre, V., & Ronteau, S. (2020). Entrepreneurship as practice: systematic literature review of a nascent field. *Entrepreneurship & Regional Development*, 32(3-4), 281-312.
- Chatterji, A., Delecourt, S., Hasan, S., & Koning, R. (2019). When does advice impact startup performance? *Strategic Management Journal*, 40(3), 331-356.
- Chesbrough, H., Vanhaverbeke, W., & West, J. (2006). *Open innovation: Researching a new paradigm*: Oxford University Press on Demand.
- Cole, R.A., & Sokolyk, T. (2018). Debt financing, survival, and growth of start-up firms. *Journal of Corporate Finance*, 50, 609-625.

- Colombelli, A., Krafft, J., & Vivarelli, M. (2016). To be born is not enough: the key role of innovative start-ups. *Small Business Economics*, 47(2), 277-291.
- Crespo, N.F., Rodrigues, R., Samagaio, A., & Silva, G.M. (2019). The adoption of management control systems by start-ups: Internal factors and context as determinants. *Journal of business research*, 101, 875-884.
- Criscuolo, P., Nicolaou, N., & Salter, A. (2012). The elixir (or burden) of youth? Exploring differences in innovation between start-ups and established firms. *Research Policy*, 41(2), 319-333.
- Dahlander, L., & Gann, D.M. (2010). How open is innovation? *Research Policy*, 39(6), 699-709.
- De Groote, J.K., & Backmann, J. (2020). Initiating open innovation collaborations between incumbents and startups: How can David and Goliath get along? *International Journal of Innovation Management*, 24(02), 2050011.
- De Lange, D.E. (2017). Start-up sustainability: An insurmountable cost or a life-giving investment? *Journal of cleaner production*, 156, 838-854.
- DeTienne, D.R., & Cardon, M.S. (2008). The impact of new venture design on entrepreneurial exit. *Frontiers of entrepreneurship research*.
- Dickel, P., Hörisch, J., & Ritter, T. (2018). Networking for the environment: The impact of environmental orientation on start-ups' networking frequency and network size. *Journal of cleaner production*, 179, 308-316.
- Drechsler, W., & Natter, M. (2012). Understanding a firm's openness decisions in innovation. *Journal of business research*, 65(3), 438-445.
- Dutta, S., & Folta, T.B. (2016). A comparison of the effect of angels and venture capitalists on innovation and value creation. *Journal of Business Venturing*, 31(1), 39-54.
- Eftekhari, N., & Bogers, M. (2015). Open for entrepreneurship: how open innovation can foster new venture creation. *Creativity and Innovation Management*, 24(4), 574-584.
- Ehrenhard, M., Wijnhoven, F., van den Broek, T., & Stagno, M.Z. (2017). Unlocking how start-ups create business value with mobile applications: Development of an App-enabled Business Innovation Cycle. *Technological Forecasting and Social Change*, 115, 26-36.
- Engel, Y., Kaandorp, M., & Elfring, T. (2017). Toward a dynamic process model of entrepreneurial networking under uncertainty. *Journal of Business Venturing*, 32(1), 35-51.
- Faridian, P.H., & Neubaum, D.O. (2020). Ambidexterity in the age of asset sharing: Development of dynamic capabilities in open source ecosystems. *Technovation*, 102125.
- Feng, N., Fu, C., Wei, F., Peng, Z., Zhang, Q., & Zhang, K.H. (2019). The key role of dynamic capabilities in the evolutionary process for a startup to develop into an innovation ecosystem leader: An indepth case study. *Journal of Engineering and Technology Management*, 54, 81-96.
- Fraiberg, S. (2017). Start-up nation: Studying transnational entrepreneurial practices in Israel's start-up ecosystem. *Journal of Business and Technical Communication*, 31(3), 350-388.
- Galati, F., Bigliardi, B., & Petroni, A. (2016). Open innovation in food firms: Implementation strategies, drivers and enabling factors. *International Journal of Innovation Management*, 20(03), 1650042.
- Garidis, K., & Rossmann, A. (2019). A framework for cooperation behavior of start-ups. *Journal of Small Business and Enterprise Development*.
- Gedajlovic, E., Honig, B., Moore, C.B., Payne, G.T., & Wright, M. (2013). Social capital and entrepreneurship: A schema and research agenda. *Entrepreneurship Theory and Practice*, 37(3), 455-478.
- Genome, S. (2020). *The Global Startup Ecosystem Report*.
- Giraud, E., Giudici, G., & Grilli, L. (2019). Entrepreneurship policy and the financing of young innovative companies: Evidence from the Italian Startup Act. *Research Policy*, 48(9), 103801.
- Grant, R.M. (1991). The resource-based theory of competitive advantage: implications for strategy formulation. *California management review*, 33(3), 114-135.
- Greco, M., Grimaldi, M., & Cricelli, L. (2015). Open innovation actions and innovation performance. *European Journal of Innovation Management*.
- Gruber, M., MacMillan, I.C., & Thompson, J.D. (2013). Escaping the prior knowledge corridor: What shapes the number and variety of market opportunities identified before market entry of technology start-ups? *Organization Science*, 24(1), 280-300.
- Guo, H., Wang, C., Su, Z., & Wang, D. (2020). Technology Push or Market Pull? Strategic Orientation in Business Model Design and Digital Startup Performance. *Journal of Product Innovation Management*.
- Haines, T. (2016). Developing a startup and innovation ecosystem in regional Australia. *Technology Innovation Management Review*, 6(6), 24-32.
- Hallen, B.L., & Pahnke, E.C. (2016). When do entrepreneurs accurately evaluate venture capital firms' track records? A bounded rationality perspective. *Academy of Management Journal*, 59(5), 1535-1560.

- Harison, E., & Koski, H. (2010). Applying open innovation in business strategies: Evidence from Finnish software firms. *Research Policy*, 39(3), 351-359.
- Hasani, T., & O'Reilly, N. (2020). Analyzing antecedents affecting the organizational performance of start-up businesses. *Journal of Entrepreneurship in Emerging Economies*.
- Herrmann, A., Gassmann, O., & Eisert, U. (2007). An empirical study of the antecedents for radical product innovations and capabilities for transformation. *Journal of Engineering and Technology Management*, 24(1-2), 92-120.
- Huizingh, E.K. (2011). Open innovation: State of the art and future perspectives. *Technovation*, 31(1), 2-9.
- Hyytinen, A., Pajarinen, M., & Rouvinen, P. (2015). Does innovativeness reduce startup survival rates? *Journal of Business Venturing*, 30(4), 564-581.
- Islam, M., Fremeth, A., & Marcus, A. (2018). Signaling by early stage startups: US government research grants and venture capital funding. *Journal of Business Venturing*, 33(1), 35-51.
- Jeong, J., Kim, J., Son, H., & Nam, D.i. (2020). The Role of Venture Capital Investment in Startups' Sustainable Growth and Performance: Focusing on Absorptive Capacity and Venture Capitalists' Reputation. *Sustainability*, 12(8), 3447.
- Jin, C.H. (2017). The effect of psychological capital on start-up intention among young start-up entrepreneurs. *Chinese Management Studies*.
- Karami, M., & Tang, J. (2019). Entrepreneurial orientation and SME international performance: The mediating role of networking capability and experiential learning. *International Small Business Journal*, 37(2), 105-124.
- Kato, M., & Zhou, H. (2018). Numerical labor flexibility and innovation outcomes of start-up firms: A panel data analysis. *Technovation*, 69, 15-27.
- Kee, & Rahman, N. (2018). Effects of entrepreneurial orientation on start-up success: A gender perspective. *Management Science Letters*, 8(6), 699-706.
- Kee, Yusoff, Y., & Khin, S. (2019). The role of support on start-up success: A PLS-SEM approach. *Asian Academy of Management Journal*, 24.
- Ketchen Jr, D.J., Ireland, R.D., & Snow, C.C. (2007). Strategic entrepreneurship, collaborative innovation, and wealth creation. *Strategic Entrepreneurship Journal*, 1(3-4), 371-385.
- Kong, H. (2019). Korean Start-up Ecosystem based on Comparison of Global Countries: Quantitative and Qualitative Research. *Asia-Pacific Journal of Business Venturing and Entrepreneurship*, 14(1), 101-116.
- Kozubikova, L., Kotaskova, A., Dvorský, J., & Ključnikov, A. (2019). The impact of political factors' perception on suitability of international business environment: the case of startups. *Economics & Sociology*.
- Kuckertz, A. (2019). Let's take the entrepreneurial ecosystem metaphor seriously! *Journal of Business Venturing Insights*, 11, e00124.
- Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Reyes, C.A.M., Prochotta, A. Berger, E.S. (2020). Startups in times of crisis—A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, e00169.
- Kuratko, D.F., Fisher, G., Bloodgood, J.M., & Hornsby, J.S. (2017). The paradox of new venture legitimation within an entrepreneurial ecosystem. *Small Business Economics*, 49(1), 119-140.
- Leyden, D.P., Link, A.N., & Siegel, D.S. (2014). A theoretical analysis of the role of social networks in entrepreneurship. *Research Policy*, 43(7), 1157-1163.
- Lichtenthaler, U., & Ernst, H. (2009). Opening up the innovation process: the role of technology aggressiveness. *R&D Management*, 39(1), 38-54.
- Liu, T., & Tang, L. (2020). Open innovation from the perspective of network embedding: knowledge evolution and development trend. *Scientometrics*, 1-28.
- Marullo, C., Casprini, E., Di Minin, A., & Piccaluga, A. (2018). 'Ready for Take-off': How Open Innovation influences startup success. *Creativity and Innovation Management*, 27(4), 476-488.
- Marvel, M.R., Sullivan, D.M., & Wolfe, M.T. (2019). Accelerating sales in start-ups: A domain planning, network reliance, and resource complementary perspective. *Journal of Small Business Management*, 57(3), 1086-1101.
- Marvel, M.R., Wolfe, M.T., Kuratko, D.F., & Fisher, G. (2020). Examining entrepreneurial experience in relation to pre-launch and post-launch learning activities affecting venture performance. *Journal of Small Business Management*, 1-27.
- Mason, C., & Brown, R. (2014). Entrepreneurial ecosystems and growth oriented entrepreneurship. *Final report to OECD, Paris*, 30(1), 77-102.
- Mayring, P. (2004). Qualitative content analysis. *A companion to qualitative research*, 1(2), 159-176.
- McDonald, R.M., & Eisenhardt, K.M. (2020). Parallel play: Startups, nascent markets, and effective business-model design. *Administrative science quarterly*, 65(2), 483-523.

- McGrath, H., Medlin, C.J., & O'Toole, T. (2019). A process-based model of network capability development by a start-up firm. *Industrial Marketing Management*, 80, 214-227.
- Men, L.R., Ji, Y.G., & Chen, Z.F. (2017). Dialogues with entrepreneurs in China: How start-up companies cultivate relationships with strategic publics. *Journal of Public Relations Research*, 29(2-3), 90-113.
- Michelino, F., Cammarano, A., Lamberti, E., & Caputo, M. (2017). Open innovation for start-ups. *European Journal of Innovation Management*.
- Moore, J.F. (1993). Predators and prey: a new ecology of competition. *Harvard business review*, 71(3), 75-86.
- Nair, S., Antonacci, G., Cristol, D., Aashish, K., & Baid, D. (2017). Business Incubation Mechanism for Conducive Start-Up Ecosystem, Xavier Institute of Management & Entrepreneurship.
- Nair, S., Gaim, M., & Dimov, D. (2020). Toward the Emergence of Entrepreneurial Opportunities: Organizing Early-phase New-venture Creation Support Systems. *Academy of Management Review*(ja).
- Naudé, W. (2010). Entrepreneurship, developing countries, and development economics: new approaches and insights. *Small Business Economics*, 34(1), 1.
- Neck, H.M., Meyer, G.D., Cohen, B., & Corbett, A.C. (2004). An entrepreneurial system view of new venture creation. *Journal of Small Business Management*, 42(2), 190-208.
- Ojaghi, H., Mohammadi, M., & Yazdani, H.R. (2019). A synthesized framework for the formation of startups' innovation ecosystem. *Journal of Science and Technology Policy Management*.
- Packard, M.D. (2017). Where did interpretivism go in the theory of entrepreneurship? *Journal of Business Venturing*, 32(5), 536-549.
- Panetti, E., Parmentola, A., Ferretti, M., & Reynolds, E.B. (2019). Exploring the relational dimension in a smart innovation ecosystem: a comprehensive framework to define the network structure and the network portfolio. *The Journal of Technology Transfer*, 1-22.
- Paradkar, A., Knight, J., & Hansen, P. (2015). Innovation in start-ups: Ideas filling the void or ideas devoid of resources and capabilities? *Technovation*, 41, 1-10.
- Park, J.H., & Bae, Z.T. (2018). When are 'sharks' beneficial? Corporate venture capital investment and startup innovation performance. *Technology Analysis & Strategic Management*, 30(3), 324-336.
- Pavlak, M., & Petru, N. (2018). Start-up ecosystem support in the Czech Republic. *Economic Studies & Analyses/Acta VSFS*, 12(2).
- Phangestu, J., Kountur, R., & Prameswari, D.A. (2020). The Moderating Effect of Entrepreneurial Leadership and Competitive Advantage on the Relationship Between Business Model Innovation and Startup Performance. *Journal of Business and Retail Management Research*, 14(3).
- Presutti, M., Boari, C., & Majocchi, A. (2011). The importance of proximity for the start-ups' knowledge acquisition and exploitation. *Journal of Small Business Management*, 49(3), 361-389.
- Pustovrh, A., Rangus, K., & Drnovšek, M. (2020). The role of open innovation in developing an entrepreneurial support ecosystem. *Technological Forecasting and Social Change*, 152, 119892.
- Rekarti, E., & Doktoralina, C.M. (2017). Improving business performance: A proposed model for SMEs.
- Rompho, N. (2018). Operational performance measures for startups. *Measuring Business Excellence*.
- Roundy, P.T., Brockman, B.K., & Bradshaw, M. (2017). The resilience of entrepreneurial ecosystems. *Journal of Business Venturing Insights*, 8, 99-104.
- Ruef, M., Aldrich, H.E., & Carter, N.M. (2003). The structure of founding teams: Homophily, strong ties, and isolation among US entrepreneurs. *American sociological review*, 195-222.
- Saguy, I.S., & Sirotsinskaya, V. (2014). Challenges in exploiting open innovation's full potential in the food industry with a focus on small and medium enterprises (SMEs). *Trends in Food Science & Technology*, 38(2), 136-148.
- Schott, T., & Sedaghat, M. (2014). Innovation embedded in entrepreneurs' networks and national educational systems. *Small Business Economics*, 43(2), 463-476.
- Seet, P.S., Lindsay, N., & Kropp, F. (2020). Understanding early-stage firm performance: the explanatory role of individual and firm level factors. *International Journal of Manpower*.
- Semrau, T., & Sigmund, S. (2012). Networking ability and the financial performance of new ventures: A mediation analysis among younger and more mature firms. *Strategic Entrepreneurship Journal*, 6(4), 335-354.
- Seo, S.Y., Kim, S.D., & Lee, M.S. (2018). The Effects of Knowledge Assets on the Performances of Startup Firms: Moderating Effects of Promotion Focus. *The Journal of Asian Finance, Economics and Business (JAFEB)*, 5(4), 187-199.
- Shapiro, G., Tackett, T., Dawson, P., & Markoff, J. (1998). *Revolutionary demands: A content analysis of the Cahiers de Doléances of 1789*: Stanford University Press.

- Sharif, N., & Tang, H.H.H. (2014). New trends in innovation strategy at Chinese universities in Hong Kong and Shenzhen. *International Journal of Technology Management*, 65(1-4), 300-318.
- Shepherd, D.A., Souitaris, V., & Gruber, M. (2021). Creating new ventures: A review and research agenda. *Journal of Management*, 47(1), 11-42.
- Singh, S., Chauhan, A., & Dhir, S. (2019). Analyzing the startup ecosystem of India: a Twitter analytics perspective. *Journal of Advances in Management Research*.
- Sipola, S., Puhakka, V., & Mainela, T. (2016). A start-up ecosystem as a structure and context for high growth. In *Global entrepreneurship: Past, present & future*: Emerald Group Publishing Limited.
- Smith, C., Smith, J.B., & Shaw, E. (2017). Embracing digital networks: Entrepreneurs' social capital online. *Journal of Business Venturing*, 32(1), 18-34.
- Soetanto, D., & Van Geenhuizen, M. (2015). Getting the right balance: University networks' influence on spin-offs' attraction of funding for innovation. *Technovation*, 36, 26-38.
- Sorooshian, S. (2017). Adaptation of a Business Performance Measurement System for Malaysian Smaller Enterprises. *Quality-Access to Success*, 18(157).
- Spender, J.C., Corvello, V., Grimaldi, M., & Rippa, P. (2017). Startups and open innovation: a review of the literature. *European Journal of Innovation Management*.
- Sperber, S., & Linder, C. (2019). Gender-specifics in start-up strategies and the role of the entrepreneurial ecosystem. *Small Business Economics*, 53(2), 533-546.
- Spigel, B., & Harrison, R. (2018). Toward a process theory of entrepreneurial ecosystems. *Strategic Entrepreneurship Journal*, 12(1), 151-168.
- Stam, Arzlanian, S., & Elfring, T. (2014). Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators. *Journal of Business Venturing*, 29(1), 152-173.
- Stam, E., & Spigel, B. (2015). Entrepreneurial ecosystems and regional policy: a sympathetic critique. *European Planning Studies*, 23(9), 1759-1769.
- Symeonidou, N., & Nicolaou, N. (2018). Resource orchestration in start-ups: Synchronizing human capital investment, leveraging strategy, and founder start-up experience. *Strategic Entrepreneurship Journal*, 12(2), 194-218.
- Tedmanson, D., Verduyn, K., Essers, C., & Gartner, W.B. (2012). Critical perspectives in entrepreneurship research. In: Sage Publications Sage UK: London, England.
- Ter Wal, A.L., Alexy, O., Block, J., & Sandner, P.G. (2016). The best of both worlds: The benefits of open-specialized and closed-diverse syndication networks for new ventures' success. *Administrative science quarterly*, 61(3), 393-432.
- Tomlinson, P.R. (2010). Co-operative ties and innovation: Some new evidence for UK manufacturing. *Research Policy*, 39(6), 762-775.
- Tripathi, N., Oivo, M., Liukkonen, K., & Markkula, J. (2019). Startup ecosystem effect on minimum viable product development in software startups. *Information and Software Technology*, 114, 77-91.
- Van Rijnsoever, F.J., Van Weele, M.A., & Eveleens, C.P. (2017). Network brokers or hit makers? Analyzing the influence of incubation on start-up investments. *International Entrepreneurship and Management Journal*, 13(2), 605-629.
- Van Weele, M.A., Steinz, H.J., & Van Rijnsoever, F.J. (2018). Start-up Communities as Communities of Practice: Shining a Light on Geographical Scale and Membership. *Tijdschrift voor economische en sociale geografie*, 109(2), 173-188.
- Vaznyte, E., & Andries, P. (2019). Entrepreneurial orientation and start-ups' external financing. *Journal of Business Venturing*, 34(3), 439-458.
- Wang, M.C., & Fang, S.C. (2012). The moderating effect of environmental uncertainty on the relationship between network structures and the innovative performance of a new venture. *Journal of Business & Industrial Marketing*.
- Weerawardena, J., Mort, G.S., Salunke, S., Knight, G., & Liesch, P.W. (2015). The role of the market sub-system and the socio-technical sub-system in innovation and firm performance: A dynamic capabilities approach. *Journal of the Academy of Marketing Science*, 43(2), 221-239.
- West, J., & Bogers, M. (2014). Leveraging external sources of innovation: a review of research on open innovation. *Journal of Product Innovation Management*, 31(4), 814-831.
- Wong, P.K., Ho, Y.P., & Autio, E. (2005). Entrepreneurship, innovation and economic growth: Evidence from GEM data. *Small Business Economics*, 24(3), 335-350.
- Wright, M., Siegel, D.S., & Mustar, P. (2017). An emerging ecosystem for student start-ups. *The Journal of Technology Transfer*, 42(4), 909-922.

- Wu, W., Wang, H., & Tsai, F.S. (2020). Incubator networks and new venture performance: the roles of entrepreneurial orientation and environmental dynamism. *Journal of Small Business and Enterprise Development*.
- Wymer, S.A., & Regan, E.A. (2005). Factors influencing e-commerce adoption and use by small and medium businesses. *Electronic markets*, 15(4), 438-453.
- Xue, C., Dang, X., Shi, B., & Gu, J. (2019). Information Sharing and Investment Performance in the Venture Capital Network Community: An Empirical Study of Environmental-Social-Governance Start-Ups. *International journal of environmental research and public health*, 16(6), 1023.
- Zacca, R., Dayan, M., & Ahrens, T. (2015). Impact of network capability on small business performance. *Management Decision*.
- Zaech, S., & Baldegger, U. (2017). Leadership in start-ups. *International Small Business Journal*, 35(2), 157-177.
- Zheng, C., Ahsan, M., & DeNoble, A.F. (2020). Entrepreneurial networking during early stages of opportunity exploitation: Agency of novice and experienced new venture leaders. *Entrepreneurship Theory and Practice*, 44(4), 671-699.

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