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Research Article

Why startups fail in emerging entrepreneurial ecosystems?

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Fernando Antonio Monteiro Christoph D'Andrea[a]*, Diego Alex Gazaro dos Santos[b], César Vinícius Pereira Costa[b], and Aurora Carneiro Zen[b]

[a] *Embry-Riddle Aeronautical University, Daytona Beach, FL, USA*

[b] *Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil*

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***Corresponding author:**

Fernando Antonio Monteiro Christoph D'Andrea
dodandrea@gmail.com

Abstract

Objective: Entrepreneurs are responsible for innovation, but they do not act in the vacuum, the greater the support for their action, the improve the chances of success. Startups - technology-based companies with high potential for growth and impact - are associated with the existence of entrepreneurial ecosystems that facilitate entrepreneurial action. This paper goal is to provide evidence that help to explain why startups fail in an emerging entrepreneurial ecosystem. **Method**: We perform exploratory research in which entrepreneurs whose startups failed in the emerging entrepreneurial ecosystem of Porto Alegre, Brazil, were interviewed. We complement the analysis with the collection of secondary data. **Results**: Building on Isenberg's (2011) six domains, we generate ideas on how each of them in emergent entrepreneurial ecosystem may influence startup mortality. Our results indicate that emerging entrepreneurial ecosystem could be much better in avoiding the premature failure of startups. Policy and Finance are the most problematic domains, while culture, support, and markets are the three middle-ground dimensions. These last three need improvement, but they are not as critical as the first two. **Contributions**: This paper contributes to the entrepreneurial ecosystems literature by exploring how emergent ecosystems contribute for discontinuity of promising startups**. Originality**: Besides entrepreneurial mistakes, problems that are out of the entrepreneur control can also cause a venture's death (Cardon et al., 2011). Building on this, we use Isenberg's (2010; 2011) model for understanding the influence of the entrepreneurial ecosystem on the circumstances that entrepreneurs faced that determined their startup failure (Jenkins & McKelvie, 2016). **Social Contributions**: by better understanding why startups fail in emerging entrepreneurial ecosystems, we support policymakers in their focus on possible improvements of the features that seem most relevant to entrepreneurs. The public agents can then work to provide a better environment for future entrepreneurial endeavors.

Keywords: Entrepreneurial Ecosystem; Startup Failure; New Venture Failure; Innovation; Emerging Markets.

Por que startups em ecossistemas empreendedores emergentes fracassam?

Resumo

Objetivo: Empreendedores e suas inovações são chave para o desenvolvimento econômico e social. Startups (empresas baseadas em tecnologia que tem alto potencial de crescimento e impacto) de sucesso são geralmente associadas à existência de ecossistemas empreendedores. Este artigo busca compreender por qual motivo as startups morrem em ecossistemas empreendedores emergentes. **Método**: usamos pesquisa exploratória, nela entrevistamos empreendedores que passaram pelo processo de morte de suas startups no ecossistema empreendedor emergente da cidade de Porto Alegre, RS, Brasil. Também coletamos dados secundários sobre o mesmo ecossistema. **Resultados**: baseado nos seis domínios de Isenberg (2011), geramos ideias sobre como cada um destes domínios influencia a mortalidade de startups. Os resultados demonstram que este ecossistema poderia ser muito mais capaz de sustentar as startups, evitando suas mortes precoces. Políticas Públicas e Finanças são os domínios mais problemáticos, enquanto Cultura, Suporte e Mercados são dimensões que precisam de melhorias, mas são menos críticas que as duas primeiras. **Contribuições**: o artigo contribui com a literatura em empreendedorismo ao explorar os ecossistemas empreendedores emergentes e, em especial, tratar da influência destes ambientes nas mortes das startups. **Originalidade**: além de erros do próprio empreendedor (ou de seu time), problemas fora do controle deste agente podem causar a morte de startups (Cardon et al., 2011). Assim, usamos o modelo de Isenberg (2010; 2011) para compreender a influência do ecossistema empreendedor nas circunstâncias que levam à morte precoce das startups (Jenkins & McKelvie, 2016). **Contribuições Sociais**: ao melhor compreender o motivo pelo qual as startups morrem em ecossistemas empreendedores emergentes, formuladores de políticas públicas podem focar sua atenção no que aparece ser mais relevante para o sucesso dos empreendedores. Tais agentes públicos poderão, então, trabalhar para melhorar o ambiente para futuros empreendedores.

Palavras-chave: Ecossistemas empreendedores; Mortalidade de Startup; Falência de novos negócios; Inovação; Mercados emergentes.

INTRODUCTION

Innovation is key to economic and social development. It more easily happens whenever there is physical agglomeration, which allows for greater specialization and provides more entrepreneurial opportunities (Cantner et al., 2021). Entrepreneurial judgment and especially action (Foss & Klein, 2012, 2020) are what will give rise to innovation. In a broad sense, entrepreneurs are innovators (Bylund, 2016) who may copy existing solutions, spreading their adoption to previously untouched areas of the market, or mainly that commercialize market breakthroughs (Bylund, 2020; D'Andrea & Mazzoni, 2019; Elias et al., 2020).

In this paper, we see startups as one of the main instruments by which entrepreneurs can propose value through innovation. Startups are new ventures that work in trying to discover, develop, and undertake economically viable and scalable business models to create and explore opportunities (Ehrenhard et al., 2017). Because of the high levels of uncertainty, these businesses face a number of challenges, particularly in the early stages of their life cycle, leading to high percentage of failure (Kücher & Feldbauer-Durstmüller, 2019). One important cause of these failures is a lack of support from the environment (Nair & Blomquist, 2019; Khelil, 2016).

The entrepreneurial ecosystem is the set of environmental conditions that influence the creation, growth, and perpetuation of new ventures (Isenberg, 2011). Well-functioning entrepreneurial ecosystems stimulate the creation of highly successful and impactful ventures that, importantly, not only propose new value, but also serve as inspirations for a new wave of entrepreneurs (Autio et al., 2014; Wurth et al., 2022) in a self-fulfilling virtuous cycle. Importantly, a healthy ecosystem allows for longer survival of its organizations. At the same time, whenever the entrepreneurial ecosystem is unsupportive, it will contribute to the startup's negative outcomes. Therefore, looking into how do ecosystems influence startup failure is a necessity.

In this sense, many studies identify the influence of entrepreneurial ecosystems in successful startups (e.g. Roundy et al., 2017; Stam, 2015). While the number of scholars looking at startup failure is smaller (see Cantamessa et al., 2018 for a recent exception). With this gap in mind, the paper contributes to the literature taking this less common perspective and looking at the failed endeavors. Our goal is to provide insights into how the domains of an entrepreneurial ecosystem may influence its startup mortality. Exploring this issue can help scholars to better understand how entrepreneurs can avoid the "valley of death" (Gbadegeshin et al., 2022) and thus drive their businesses to better outcomes. We use those insights to offer improvement avenues for the ecosystems, policy and otherwise. Those developments would increase the chances of success of the businesses nested in those ecosystems.

To achieve this goal, we build upon Isenberg's (2010) entrepreneurial ecosystem domains. This exploratory and qualitative study looks at the ecosystem of Porto Alegre, in the south of Brazil. The city is the fourth in Brazil by number of startups (Startup Base, 2022), it has a solid human capital formation, a number of actors and initiatives that aim at fostering innovation. At the same time, this emergent ecosystem is seeking to become a reference through global impact initiatives, such as the South Summit (2022) and the Caldeira Institute (Instituto Caldeira, 2022). These facts suggest that Porto Alegre can be studied as a proxy for similar emergent ecosystems and that our results would hold greater external validity, and, despite our chosen method, can provide better generalizability.

This paper proceeds as follows, in the next section we discuss the theoretical framework. We then talk about startup failure. The fourth section summarizes the method, while the fifth presents the results. Contributions, limitations, and further research close.

ENTREPRENEURIAL ECOSYSTEMS: A THEORETICAL FRAMEWORK

The socioeconomic configuration that facilitates the emergence of new ventures with high growth potential is called an entrepreneurial ecosystem (EE). EE is a set of interdependent actors and factors that coordinate to enable productive entrepreneurship within a territory (Spigel & Harrison, 2018; Wurth et al., 2022). A well-functioning EE must be able to foster the emergence of new high-impact businesses and avoid promising businesses failure.

A number of models offer theoretical explanation for entrepreneurial ecosystems. Among the main ones, Spigel's (2017) presents ecosystems as a set of cultural, social and material attributes that sustain and reinforce each other. Nicotra et al. (2018) argue that EEs are composed of financial, institutional, knowledge, and social capitals that provide appropriate variables and data sources for measuring and configuring EEs. In this paper we adopt Isenberg's (2010), the most widespread of these models according to Google Scholar with over 1,800 citations versus about 1,500 of Spigel's and less than 200 of Nicotra's et al. (2018) as of April 2022. Isenberg (2010) suggests that EEs can be better analyzed by looking at six interrelated domains: Policy, Finance, Culture, Support, Human Capital, and Markets.

On the Policy dimension, the government must provide institutional support (O'Connor & Audretsch, 2023) and feed the ecosystem (Stam, 2015) mainly through the promotion of better conditions for entrepreneurship to prosper (Mason & Brown, 2014). This means reducing, ideally eliminating, the governmental constraints to entrepreneurial action. Many possible actions exist under this umbrella, for example, taxes payment simplification; legislation facilitating and decriminalizing bankruptcy, protection of shareholders over creditors, providing legal grounds and protection to angel investors; easier access to capital markets; simplification of employment contracts and support for the unemployed. Those will facilitate entrepreneurial activity and depend upon policy makers (Autio et al., 2014). However, policy alone is incapable of fostering the entrepreneurial process.

The Finance domain deals with the availability, access, and visibility of financial resources, e.g. seed capital, angel investment, venture capital (VC) and bank loans (Stam, 2015). Only by having access to Finance, startups will be able to grow, without it, promising ideas starve (Kshetri, 2014; Islam et al., 2018). Additionally, money is not the only important asset that comes with financial investment. Soft skills, such as mentorship, networking, access to consumers, and even availability of a professional workspace, traditionally accompany financial partners (Zahra et al., 2014; Quas et al., 2021). Importantly, many successful entrepreneurs end up serving as early investors in other startups, they become ecosystem leaders and mentors for new entrepreneurs (Mason & Brown, 2014) supporting the development of the whole EE (Isenberg, 2010).

The Culture domain emphasizes the influence of the general attitude of the population towards entrepreneurship and entrepreneurs. Culture will be highly influential in the propensity of people to take the entrepreneurial path, facing the uncertainty, possible failure, and all the financial and social consequences that come with it. In this realm, failure is known as a natural part of the entrepreneurial process, and it is a common step in entrepreneurs' careers before they reach success (Isenberg, 2010). Hence, societies that aim higher in socioeconomic development must value entrepreneurship and must learn how to embrace and deal positively with entrepreneurial failure. A supportive cultural environment can be created by the spread of successful stories via formal and informal education which could be achieved by the insertion of entrepreneurship in formal curricula, by the existence of events that talk positively about entrepreneurship, b the existence of competitions and prizes for new businesses, and by media coverage that covers entrepreneurs positively. Those

different initiatives have the potential to forge the culture and, in the medium-long run, provide a better environment so more people are encouraged to become entrepreneurs (Isenberg, 2010, see also, D'Andrea, 2023).

The fourth EE domain is Institutional Support, which refers to actors that foster the connections on the EE and back up new businesses, providing infrastructure and support services. This domain can be divided into three major groups: infrastructure providers, non-government entities, and service providers. The first includes telecommunications, transportation, logistics, coworking spaces, energy, and science parks (Isenberg, 2010) as well as public safety conditions, an especially important part of the discussion in emergent economies (Endeavor Brasil, 2017). Non-government entities include business accelerators, hubs and business incubators (Arruda et al., 2015). Finally, professionals and service providers are composed of lawyers, accountants, business consultants, software developers and hardware suppliers that need to be used to deal with the specificities of startups (Mason & Brown, 2014).

The Human Capital is the fifth domain and refers to the availability of skilled workers who will allow for the new ventures to bring in competent people increasing these new ventures' odds of success (El Shoubaki et al., 2020; Florida, 2002). Because the most entrepreneurial regions highly correlate with the ones in which highly skilled workers are present, this domain focuses on the importance of the existence of high-level training and education for individuals that will eventually work at startups as employers or owners (Zahra et al., 2014). The presence of those people also attracts other high-skilled professionals from other geographical regions (Cadorin et al., 2021; Neck et al., 2004) fomenting a talent attraction virtuous cycle of preparation, recycling and recombination of ideas. In that realm, the existence of educational institutions, mainly high-level universities, is seen as crucial to the success of the ecosystem.

The sixth domain is Markets. It emphasizes the benefits startups could derive from networks and the relationships with larger corporations. Larger companies may play different roles; they attract high-skilled personnel and offer training for professionals that might end up working for or even funding startups. They create programs to foster the emergence of new ventures that might solve some of the problems they foresee or currently face. They may invest directly, providing resources (financial and otherwise), workspace, and commercial opportunities – as first clients, for instance – for startups. Further, those networks provide the entrepreneurs with access to new opportunities (Faroque et al., 2017) and learning which is facilitated by geographical proximity (Fu et al., 2013). The relationship between larger corporations and startups encourages new ventures through knowledge spillovers, and it becomes a source of information, resources, and access to markets (Zahra et al., 2014).

These six dimensions point to the elements an EE must have to facilitate the thriving of startups. However, every single EE is peculiar and the level of idiosyncrasies is high (Spigel, 2017). Although most good practices may be similar among ecosystems, a final model, suitable for all situations, does not exist. In particular, emergent EEs, being hosted in emerging economies, will face institutional constraints typical of those territories (Gaughan et al., 2018). They may have specificities concerning the emergence and disappearance of new businesses. In particular, the influence of the environment in emergent EE and how it impacts the failure of its startups is highly contextual and influenced by the venture's location (Nair & Blomquist, 2019).

STARTUP FAILURE IN ENTREPRENEURIAL ECOSYSTEMS

Startup failure can be viewed as a result of unexpected events or avoidable errors leading to the undesirable outcome of the abandonment of the business activities and the startup closure (Nummela et al., 2016). These events include cases of insolvency, bankruptcy, poor performance, among others. In addition to entrepreneurial mistakes, problems outside of the entrepreneur's control may lead to the death of a new venture (Cardon et al., 2011). These problems arise from the surrounding environment and Isenberg (2010, 2011) suggests that they can be used to understand how the EE influences their outcomes (Jenkins & McKelvie, 2016).

In this sense, public policies or macro-environment factors that are not conducive to entrepreneurship in the Policy domain are known to be highly influential to business failure. Exemplarily, startups may fail because of an unsupportive government when the legal, regulatory, financial, and political frameworks do not correspond to the needs of the company (e.g. Minniti, 2008). The same governmental environment affects the potential customers' willingness to pay for the solution or significantly increases the startup expenses (e.g. Cantamessa et al., 2018). These are contextual, thus unavoidable, conditions, the entrepreneur has no control over them and must take them as given (see Elert & Henrekson, 2017; and Samadi, 2019 for a different view of how the entrepreneur sees its relation to the governmental arrangements). These conditions, however, vary substantially from place to place (Maté-Sánchez-Val et al., 2018) and governments must consider these idiosyncrasies in their quest to improve entrepreneurship policies (Cardon et al., 2011; Lerner, 2009).

Among the types of failures for startups, the most common in the absence of funding. Bankruptcy occurs when the funding is not sufficient to maintain the startup operations (Spigel, 2017), limiting the capacity of operation and consequently jeopardizing businesses survival (Kshetri, 2014). Therefore, in the Finance domain, lack of funding may lead a startup to insolvency and cause its early death (Cantamessa et al., 2018; Schwarzkopf, 2016). Additionally, high startup failure rates in the ecosystem suggest a deeper problem with the environment and one of the consequences is that the subsequent supply of financial capital for new ventures tends to be reduced, thereby reducing the possibilities of success of other businesses and, in the worse cases, starving the ecosystem as a whole (Nair & Blomquist, 2019).

Plus, the Cultural domain may encourage or discourage individuals to take entrepreneurial action (Hustedde, 2007), encouragement occurs by the provision of support to new and failed entrepreneurs. When present, this cultural trait helps individuals to overcome the fear of failure (Spigel, 2017). In fact, failing may have an important educative role, as it provides learning opportunities (Jenkins & McKelvie, 2016) to the entrepreneur and to others in the same ecosystem. At the same time, entrepreneurs must face financial, social, and psychological costs as their startup dies, and failures may be traumatic (Ucbasaran et al., 2013). Hence, the lack of a conducive culture to entrepreneurship hinders entrepreneurship as a whole (Nicotra et al., 2018).

In the Support domain, non-governmental entities must help startups thrive and prevent failure primarily through the availability of knowledge and opportunities to learn from past mistakes and successes of other ventures. These support institutions, contribute substantially to startups' survival. They enhance the startups' social capital through networks and by providing easier and faster access to physical, financial, human, knowledge, and technological resources. In complex and uncertain environments, mobilizing sufficient resources, securing legal recognition, creating awareness among potential customers, and negotiating favorable terms with stakeholders are crucial steps for startups (Nair & Blomquist, 2019), more even so to the ones in their early stages. These Support institutions and professionals help entrepreneurs prevent errors in

contract design, avoid costs of not adopting a formal interaction with stakeholders, and, in general, contribute to minimizing the most common pitfalls that lead to premature failure (Azoulay & Shane, 2001).

The Human Capital domain helps to avoid startup failure through the availability of highly trained and educated personnel that can become part of the team as founders, employees, or contractors. Training and education should be present not only in the technical skills, but also in management. As expected, the lack of business capabilities is a critical failure driver (Chatterji et al., 2019; Nummela et al., 2016). This domain highlights the importance of educational centers, especially universities, for the training of entrepreneurs and people that will work for and with them, the existence of those institutions positively influences the odds of success for startups (Maté-Sánchez-Val et al., 2018).

Lastly, in the Markets domain, a lack of viable connections between startups and large companies contributes to the failure of the new ventures and the ecosystem's failure as a whole (Auerswald, 2015). This happens also because large companies may provide access to the market as early adopters of the startup's solutions. Being an early adopter is especially important for the first tests, sales, and, as a consequence, to the survival of the startup in its early, and most fragile, stages (Schwab, 2005). Additionally, networks are crucial because their inexistence hinders information flows, knowledge spillovers, and access to resources for the new ventures (Kücher & Feldbauer-Durstmüller, 2019; Nair & Blomquist, 2019).

Because they are fundamentally relevant, researchers and practitioners must get to know more about startup failures, why they occur and the overarching consequences of these events. Research has investigated this for a while and besides the evident direct impact on the new business and the psychological burden on their personnel, startup failure can jeopardize the overall availability of resources in the ecosystem (Boso et al., 2019; Khelil, 2016; Mueller & Shepherd, 2016). This happens especially when there are issues on the financial and cultural domains. Furthermore, whenever startup failures are clustered around a given segment or a given time, it signals to other potential players in the environment that something is fundamentally wrong. This may discourage actors from getting involved thereby weakening the EE (e.g. Roundy et al., 2017).

On the other hand, knowledge spillovers are the good side of a startup disappearance. Ideally, failures provide learning for different players, release people's brains, and free financial resources, hitherto constrained in other initiatives, for ventures that remain in business (Nair & Blomquist, 2019). Therefore, startup failures will be beneficial and can be seen as a necessary event in a healthy EE because they allow for the continuation of the processes of experimentation and reshuffling of capital that lead to innovation via creative destruction (Packard & Bylund, 2018). As in biological ecosystems, new organisms feed on the remains of the ones that once lived, the death of startups in an EE could mean that success for the ones that remain is closer because they can now build on the failed remainings (Ucbasaran et al., 2013).

METHOD

We use an exploratory multi-case approach to identify why startups fail in the emergent EE of Porto Alegre. The city was chosen as the locus of this research for several reasons. Located in the southmost state of Brazil, this metropolitan area holds about 4.3 million inhabitants. It has a per-capita GDP of about USD 18,000, twice the Brazilian average (Instituto Brasileiro de Geografia e Estatística - IBGE, 2019) and has the 6th largest GDP among Brazilian cities. Moreover, Porto Alegre is geographically and culturally close to the capitals of Argentina and Uruguay, increasing the number of business ideas and possibilities. Secondary data was collected from public sources such as the Brazilian Youth Secretariat (2018) and the Porto Alegre Municipality as well as from the private institutional actors such as Endeavor Brasil (2017). These informations were used to understand the bigger picture, e.g., the role of startup businesses in Porto Alegre and why they disappear.

In-depth interviews were conducted to bring up the perceptions of former startup entrepreneurs that were or should have been inserted in Porto Alegre's EE. Data was collected on one-to-one in depth interviews, consisting of individual discussion sessions between interviewer and interviewee (Hair et al., 2008). These sessions aimed at evoking interviewee's perceptions and opinions (Creswell, 2009) on the reasons why their startups failed and what, if any, was the influence of the ecosystem domains on that result.

The number of interviews followed the criteria of of saturation or exhaustion of information. In other words, we stoped adding interviews when the additional information coming from new interviews became close to be irrelevant (Creswell, 2007; Guest et al., 2020).

All interviews were done during a 90 days interval. One or more of the researchers maintained continuous informal conversations with the interviewees for a longer time, using text messages and calls. This happened from the time before the interview was conducted to the time during the analysis of the discourse to a total of approximately six months of total communication for every interviewee. These informal texting and phone sections were used to establish a closer relationship between the research team and the interviewee before the actual interview, and then to clarify interview information during the analysis. Interviews were conducted by one author and were independently analyzed by two of them.

Data collection from primary and secondary sources started in May 2018 and analysis was finished by November in the same year. We used three criteria in the sample selection. The founding and command of operations should have been located in Porto Alegre, excluding businesses that had their headquarters elsewhere. Two, to allow for more vivid memories of the happenings, the date of final activities should range between early 2016 and the first quarter of 2018. The third criterion was success. It has been defined based on the presence of one of the two indicators, either: a. the startup had some revenue coming from its core business at some point during its existence, or b. actual client acquisition was formalized in legally valid contracts.

We followed the aforementioned criteria and relied on a convenience sample accompanied by a snowball approach. The process started with failed entrepreneurs known to one of the authors, this author had about a decade of experience working for an accelerator in the ecosystem and was acquainted with a number of failed startup entrepreneurs. His background and contacts were the starting point to begin contact with the interviewees. The snowball allowed us to get in touch with twenty-three failed entrepreneurs that fit the criteria, out of which ten founders were interviewed.

Interviewees responded to a semi structured questionnaire divided in three broad areas:

a. on themselves as entrepreneurs – their previous experience, involvement with the industry, networking within the community and etc.;

b. on the startup that they lead: the business idea, including its business model, the involvement of other individuals in the venture as partneres, angel investors, mentors, etc., the steps that occurred between the business ideation, its formalization and its failure, including different results and milestones such as contracts signed, employeed hired, revenues acquirerd and etc.;

c. on the entrepreneur's views on Porto Alegre's EE. This part of the interview focused on the six domains. and how each of them interfered with the fate of the business.

As in any semi-structured interviews, specificities of every entrepreneur and their ideas guided the discussion. This specific part of the interviews was coded to allow for more direct comparison between the founders and their startups (see Table 1). On the third, and most important part of the interview for our purposes, we focused on guiding the former entrepreneurs in their reconstruction of the processes that led to the failure of the venture using the EE domains, here our coding was guided by Isenberg's (2010) domains which also informed the analysis.

The interviews were all conducted in Portuguese by one of the researchers and took circa 65-70 minutes each. All interviews were audio-recorded with the consent of the interviewees and the responses were assessed using discourse analysis (Gill, 2000). In particular, we used the perspective that stresses the functional and action orientation of the discourse. This methodological approach looks at what the accounts are designed to accomplish without necessarily looking at the specific wording that have been used by the interviewee. The ideas that the interviewee is trying to convey in his responses is what matters for the scientific analysis.

Following Gill (2000) we chose discourse analysis over other qualitative techniques for a few specific reasons. This technique embraces the different ways in which people use language to describe the same phenomena, this feature allows us to read from the different interviewees and go beyond their words, looking for consistencies in their meaning about the phenomena under study. Such an approach would not be possible - nor would it be as effective to our objectives in this paper - if we had chosen instead to analyze the words of the interviewees or if we, instead, would have chosen a quantitive approach. Our chosen method, therefore, allows us to construct the reality of the Porto Alegre emerging EE by looking at the pieces of information that the interviewwes provide in their discourse. In addition, discourse analysis allows people to "do things" (Gill, 2000, p. 175), and by using the technique we allow the interviewees to (re)build their experience with the failed business and the interconnections of this failure with the surrounding ecosystem. Finally, it is important to notice that discourse analysis is fundamentaly rooted in the interpretation of reality that is given by the interviewees in the interviews and by the interviewers during the analysis of the discourse. Because of this, this technique will not automatically lead to generalizable results, however, it provides informed clues on the "how" of the phenomenon, which is the fundamental aspect of a qualitative research. With informed "hows" at hand, researchers can further investigate the phenomena using other methodological approaches.

Relying on Gill (2000) and Creswell (2007, p. 56), we "restor[ed] [or] reorgan[ed] the stories into some general type of framework". The EE domains (Isenberg, 2010) were used as the restoring framework. Rounds of analysis of each interview were done independently by at least two researchers to secure intercoder reliability (Lombard et al., 2002). In cases in which disagreements were found, researchers discussed and solved the matter. The goal was to use the discourse of the failed entrepreneurs to provide a picture of their understating and perception about the influence of the EE on their startup' failure.

RESULTS

Startup entrepreneurs in emerging EE must face structural challenges that threaten their ventures form the very early stages, this is not diffeernt in Brazil. Comparative numbers give an idea of the challenges faced by startup entrepreneurs in this Latin-American country: around US$ 9,5 billion were invested in startups in Brazil in 2021 (Reuters, 2022), a little under 4% of the amount that was invested in the US in the same year, circa US$ 330 billion (Griffith, 2022). Brazil's ranks 50/100 in access to venture capital, Israel, for example, ranks 70. On average, it takes 13 days to open a business in Brazil, in Singapore a similar process can be done in under 1.5 days (The World Bank, 2022). Brazilian legislation was rated 2 (out of seven) in its easiness to hire and fire personnel; and the educational system is one of the worse in the world and the country is not capable of attracting highly educated individuals. Alarmingly, on average, 70% of the profit in Brazil is spent on taxes (Brasil - Secretaria Nacional de Juventude, 2018). To make things even more of a challenge, Brazil was facing political turmoil from 2016 to 2018 (e.g. Doval & Actis, 2016), the period in which this research investigated the entrepreneurial ventures.

At the same time, Brazil - a country of 220 million individuals and one of the 10 largest in the globe - is very heterogeneous. The environment to entrepreneurship is considerably better in some places than others. Porto Alegre is among the ten most entrepreneurial and innovative Brazilian cities (Mauerberg Jr. et al., 2020) and it is actually the fourth city in the country by number of startups - about 650 as of April, 2022 (Startup Base, 2022) behind São Paulo, Florianópolis and Curitiba, all in the Southeast and South.

Table 1

Characteristics of the interviewees

Entre-preneur	Age	Basic training / Education	Former Experience	Role	Foundation (semester)	Final activities (semester)
E1	21	Some college on Computer Engineering	None	CEO	2016/2	2017/2
E2	26	Mechanical Engineer	5 years in Automotive industry	CEO	2016/2	2017/2
E3	34	Automation Engineer, Minor in Computer Engineering	Software and Automation for about 10 years	CEO	2016/2	2017/2
E4	24	Some college on Civil Engineering	Years in Civil engineering. Managed a restaurant, participated in entrepreneurial challenges	CEO	2016/1	2016/2
E5	34	International Business	Years in tourism and automotive industries	CEO	2016/1	2016/2
E6	24	Business Management	Previous experience as a company owner	CEO	2013/2	2016/1
E7	28	Mechanical Engineer	5 years in Engineering, no previous experience in running businesses	CEO	2017/2	2018/1
E8	26	Some college on Electrical Engineering	Two startups before	CEO	2014/1	2017/1
E9	33	Business Management Bachelor	Two companies, one startup, before that	CEO	2017/1	2017/2
E10	20	Business Management Bachelor	Freelancer Business consultant	CMO	2015/1	2016/2

Note: Elaborated by the authors.

Porto Alegre's current position can be partially credited to the numerous initiatives that seek to promote innovation and foster startups and their culture, aiming at transforming Porto Alegre in a "Startup City" (Pacto Alegre, 2019). The city is, for example, home for three Scientific Parks (two of which have been previously selected the best in the country); of the Instituto Caldeira, an innovation hub that is a national reference; and of innovation movement driven by the fourth helix actors (academia, business, government, and society) (e.g. Carayannis & Campbell, 2009), the Pacto Alegre. And several other innovation initiatives, like the Porto Alegre's Sustainable Innovation Zone (ZISPOA), the InovaPoA, an innovation and technology office directly connected to the municipal mayor; the Poa.hub, a public incubator, among others. Exemplarily of this tendency to foster innovation and startup mentality is that the city will host the 2022 South Summit (2022), one of the major global events on entrepreneurship and innovation.

Some numbers complement the picture. A recent report (An Lab – Innovation Lab., 2018) pointed that Porto Alegre had over 100 non-startup actors in its startup environment. Including over 35 coworking spaces, about 15 incubators, 5 accelerators, about 20 support entities, 5 funding agents, and over 15 higher education institutions.

All this information demonstrates that Porto Alegre is an important EE and, despite our methodological choice, this study and its results have the ability to inform other research. This new scientific investigations may test our conslusions and lead to broader generalization of our findings. We analyzed Porto Alegre's EE and its environmental conditions using Isenberg (2010) domains to understand how each of them may impact the failure of startups. Table 1 presents the characteristics of the 10 entrepreneurs that were interviewed.

All the interviewees are men, and all of them have either management or engineering backgrounds. The lack of women entrepreneurs in the environment is noticeable. This result could be partially explained by the sampling, however, the cultural background of that region is notably male-centric. And there is a lack of feminine presence in Latin America's startups (e.g. Kuschel et al., 2017). This suggests opportunities for this population, because the level of performance in startup is the same regardless of the gender (Demartini, 2018).

The median age of the interviewees is fairly low, 27 years old by the time of the funding, and ranged from 20-35, two of the founders werer 21 or under. Azoulay et. al. (2018) showed that successful entrepreneurs are, on average, 45 years old and carry substantial industry and entrepreneurial experience before achieving success. In this sense, the background of the interviewees is interesting, most have some industry experience and some even have previous experience with startups. The evidence and the theory both suggests that the individual aspects were not singlehandedly responsible for the failures of the endeavors, indicating the relevance of the ecosystem. Lastly, the experience that those individuals had in these failed endeavors will be a plus in their possible future ventures or in their work as employees. In a nutshell, even though their startups were not long lasting, their experience may feed the city's EE forstering its development.

Another relevant finding is lifetime of the companies. On average the entrepreneurs maintained their efforts for about one year, while two have reached 3 years – normally considered a milestone in which a business leaves the startup phase and becomes established. The fact that the entrepreneurs were capable of quickly detecting the dead-end of their startups is relevant and suggests maturity. Allowing a business to fail frees resources while the individuals modify their focus and redirect their efforts to more promising endeavors, either entrepreneurially or as employers, elsewhere.

The six domains

More importantly for the objetives of this research are the findings related to the six domains of EE. The entrepreneurs' perspective on each domain provides evidence for better understanding this emergent ecosystem, allowing for the insights to be used in similar EE. Table 2 presents a simple assessment of the entrepreneurs about each domain, as well as a relevant comment that they made about the EE and their experience.

Overall, the responses indicate that many improvements need to be made to foster this EE and, as a consequence, startup creation, development, and survival in Porto Alegre. For example, E6 says: "there are many legal difficulties, and on the financial side, investors are hard to find because there is no legal framework that defends angels – and early investors – from eventual financial responsibilities of the company". This and the other issues - that will be discussed below- inform not only about Porto Alegre's EE, but also about how other EEs could be directed to avoid Porto Alegre's pitfalls and improve the odds of success of their own startup ventures.

Our results allow us to suggest which improvements are most needed and how they could be reached. For example, E3 and E6 explicitly suggested that universities should have a more hands on approach to businesses. Likewise, issues with government bureaucracy were mentioned as very relevant by E2, E6, E9 and E10; some of the bureaucratic problems are also associated to the access to funding and finance. In particular, the uncertainty that comes with the lack of a legal framework that encompasses startups and the legal relations between entrepreneurs and investors (especially Angels and VC's), leads to poor or inexistent access to finance, as mentioned in particular by E7 and E8.

In the Market domain, entrepreneurs mentioned that startups have a hard time connecting with bigger businesses. These connections could serve to develop and improve the proposed solutions, this has been mentioned as a big issue by E1, E2, E3 and E7.

The Human capital dimension is considered to be of high-level and is undoubtfully the best of the six domains in Porto Alegre. For example, E6 says that "in general people have good levels of education and skiils in both technology and management". At the same time, E5, E8 and E10 suggested that the skillset was very uneven and that E6 says "people do not actually know what is like to work for a startup" and it is "hard to engage people, especially when there is little or no money involved" (E9). Regardless of these problems, reports such Zen et al. (2019) reinforce this ecosystem's ability to train highly skilled people in diverse disciplines, which is of utmost importance for a healthy and thriving EE's (Zahra et al., 2014). The dimensions of Culture and Support are considered of average quality, they need to improve, but they do not influence as negatively as the remaining two, Public Policy and Finance. In specific, the culture is "improving" (E6) and "failure is not seen as a problem anymore, but as experience" (E1).

Support institutions are seen as fairly good. As for the institutions, they are getting better and players such as SEBRAE, a public organ that helps micro and small entrepreneurs of all industries (mentioned by E6, E7 and E8), and universitites (mentioned by E2, E4 and E10) have been mentioned as helpful to the process and still improving. Howevere, the majority of the support institutions are not yet ready to deal with the dynamism of startups. The case of SEBRAE is exemplary as it is mostly seen as not fully ready to help startup people (E2, E3 and E10). Interviewees suggest that professionals that specialize in startups and their specificities are starting to become more common. Institutions such as spaces in which individuals in the very early stages could join together, brainstorm, learn, and maybe even build new startup teams are much needed. An infrastructural organization that could provide services to would-be entrepreneurs in pre-acceleration phases

Table 2

Evaluation of the influence of the domains by the entrepreneurs

	Domain influence for the failure?*						
ENT	Public Policy	Finance	Culture	Institutional Support	Human Resources	Markets	Relevant comment
E1	1	2	3	3	1	3	Bigger players would need to be much more open to collaborate with startups in the development of the solutions.
E2	3	2	1	1	2	3	For startups to havee better odds, policy needs to be much better. Taxation should be easier and access to funding, including from government sources, should be avaliable.
E3	2	1	2	2	1	3	People should be better educate about what it is like to work for/in a startup, schools must focus on hands on exercises. Improve the access to funding is also critical.
E4	2	2	1	2	2	2	There needs to be further involvement of the public entities with initiatives to foment the statup culture. Investments should be directed to early stage idea development, because later stages have easier access to capital.
E5	2	2	1	1	2	2	Despite being good on the technical side, people are not ready to work in startup environemnts and prefer regular jobs. Further, it is hard to close deals and interact with larger businesses to develop the idea.
E6	3	1	1	1	2	2	The government does more harm than good to the startups. People are not ready to work in the startup environment and schools should play a significant role in this. People need to be more hands-on and proactive.
E7	2	3	2	2	1	3	The biggest challenge is how to get to the potential consumers, the big players. This same thing relates to access to finance and mentoring. People are skilled, but networking is key improve the odds.
E8	2	3	2	3	2	2	Taxes and funding are major issues. There is a lack of coordination between the different efforts to support the ecosystem. In addition, other businesses and service provides were not reliable and the culture of the environment overall still needs improvements.
E9	3	2	2	1	2	2	No public policy initiative to support the venture in the initial stages and difficulties in accessing the market and showing evidence of value in the product/service.
E10	3	1	2	1	1	1	The policy environemnt is the biggest issue. There are no incentives and even public employees that should help, were not capable. There is no connection between the initiatives.

Note: * 1 the effect was negligible; 2 there has been some effect; 3 the domain was cricial to the startup failure.

would be very welcome to the development of the EE, facilitating the formation of networks and allowing early-stage entrepreneurs to share and polish their ideas and practices. Scrapping bad ideas, failing and pivoting fast will help in the development of more solid businesses and this could be achieved faster if there were a supporting institution to mediate and accelerate the process. Another downside is the widespread preoccupation with violence in the city (E1, E2, E3, E4 and E5).

The existence and development of relationships between actors is very important for the Market domain. Better networks can facilitate access to Finance, labor, and even better public policy. From the emergent EE perspective, further understanding the development of these relationships is still to be understood. Networking helps as the information flows occur faster and more accurately. These networks also tend to provide a freer and faster flow of information and knowledge (Englis et al., 2007). It also helps to create a culture that supports entrepreneurship and is directed towards the acceptance of failure as part of the learning in the entrepreneurial process

In this realm, the network in Porto Alegre's EE has much to improve. Business' and technology developer's networks are mostly disconnected and would benefit a lot from a much closer collaboration to generate knowledge spillovers and growing possibilities of successful collaboration (E2, E4 and E9 mentioned this specifically) . One problem that increases the difficulty of this domain is that the entrepreneurial teams in the failed startups tended to have similar backgrounds and consequently similar networks. Conversely, diversity of backgrounds tends to be associated with higher probability of startup success (Kakarika, 2013). Infrastructure and educational institutions have a big role to play on this specific aspect of the Cultural domain. They can foster collaboration between different educational areas and, mainly, they can provide their students possibilities of teaming up with individuals from different areas in interdisciplinary projects, helping to create diversified networks that would spill over positively in the startup creation (Cantner et al., 2021; Nicotra et al., 2018).

On the Cultural domain, access to real-life, close-by, examples that one can directly refer and relate to is very important. Interviewees (e.g. E2, E7, E9) indicate that having the possibility of contacting others that have been in similar situations and networking with successful entrepreneurs from the area and from outside would be a precious thing to foster the development of the ecosystem. In other words, successful entrepreneurs serve as role models and inspiration for startup founders (Cantner et al., 2021). Seeing that regular people, coming from similar situations, succeed in their ventures and recognizing that these individuals faced similar difficulties can breathe fresh air to these entrepreneurs. Those three domains, Support, Market and Culture are fairly well developed, but the two that remain, Public Policy and Finance, still need to get much better.

Brazil and its three governmental levels - Federal, State and Municipality – need generous Policy changes to improve the environment for startups. In Porto Alegre, specifically, a greater support from the public sphere was mentioned as needed by six interviewees. This would appear especially in better Policy initiatives without which these businesses have a much harder time to appear and flourish. In addition, four interviewees (E2, E3, E4 and E9) directly mentioned that governmental support is not easy to find. In other words, even the initiatives that exist to support entrepreneurs are perceived as not adequately marketed by the governments. The result is that startup entrepreneurs do not benefit as much as they could from these initiatives. Since communication is a critical tool to enable the mobility of knowledge in innovation networks (Dhanaraj & Parkhe, 2006), municipal and state levels governments need to better communicate the

available policies and programs that could benefit startups. A fairly straightforward way to improve on this domain would be to better use information and communication technologies, especially social networks, as they allow real-time communication at relatively low costs (Cavallini et al., 2016).

Perhaps more importantly, the different government levels must work to substantially improve the bureaucratical practices, reducing or ideally even removing barriers to startup movements especially in their early stages. In specific, a much more straightforward tax code for both entrepreneurs and investors is needed. This is very important since startup funding is usually a geographically bounded phenomenon, with new ventures receiving investments mainly from local investors (Ghio et al., 2019). By providing clear legal pathways, the government reduces uncertainty for the investor and increases the chances of external funding to reach the startups. Responses suggest that, without a clearly setting boundaries via legislation, especially in what concerns responsibility on liabilities, a further development of the EE in Porto Alegre, and in Brazil more broadly, will hardly happen.

One possibly relevant factor connected to the overall political environment was that the timeframe chosen to perform the analysis, between early 2016 and early 2018, was particularly politically unstable in Brazil (e.g. Doval & Actis, 2016). Interestingly, this has not been mentioned by the entrepreneurs as being influential in their failures.

On the Finance domain, access to smart money in the early stages was broadly mentioned as a cause for failure (E4, E6 and E8). Financial resources are among the most important attributes in an EE (WEF, 2013), as they give the startup time to learn about the market while developing its own skills and arriving at better solutions. Moreover, financial resources can foster innovation through investment opportunities that generate knowledge (including via academic research), develop new technologies, and help in the early stages of innovative startups (Kshetri, 2014).

The access to finance in Porto Alegre's EE is hindered especially by the Brazilian overwhelmingly complex legislative background, previously mentioned on the Policy domain discussion and the lack of a background legislation for startups. All interviewees were emphatic in saying that the legislation that commands access to Finance needs to become more friendly to this type of business, this is especially true in regards to the legislation on Angel Investing and Venture Capital. Still, on the financial side, interviewees recognize that the mentorship that comes with smart money can accelerate learning, help entrepreneurs avoid failures, and provide them with needed networking resources, as the theory predicts. Besides, smart money also eases the transition between the investment phases, from business angel investment to venture capital and finally arriving at IPOs (Brown & Mason, 2017).

The very recent advancements in the regulatory side, especially the Brazilian Startup legislation "Marco Legal das Startups" (Governo Federal - Brasil, 2021), should help to improve the situation in the country as a whole as time passes.

Overall, three of the points about Porto Alegre's Policy and Finance domains were also seen as some of the main problems in the Brazilian EE. The Brazilian Youth Secretary (Brasil - Secretaria Nacional de Juventude, 2018) points to reducing bureaucracy, to facilitating the access to capital via angel investment, and to spreading the word about public policy initiatives that may facilitate the entrepreneurial action, as three of the four main problems that hamper the development of a greater quantity and a better quality of startups in Brazil. The same report points the fourth problem a being the lack of entrepreneurial education in the country, which connected to the cultural domain and does not seem to be among the biggest problems in Porto Alegre (e.g. Zen et al., 2019). These overlapping conclusions provide evidence that our findings are in line with the general understanding of the Brazilian situation and that despite the very large environmental differences in the country, a good chunk of the problems that hamper startup development lay at the federal level.

The objetive of this paper was to provide evidence to help to explain why startups fail in an emerging entrepreneurial ecosystem. Our evidence suggest that the EE domains in Porto Alegre influence in the outcomes of its startups and that the Porto Alegre's EE is getting better, but at a very slow pace. A lot remains to be improved in all six domains.

PRACTICAL CONTRIBUTIONS, LIMITATIONS AND FURTHER RESEARCH

Since changing relevant legislation is mostly outside of the scope of municipalities in Brazil, public policy should provide a stable and safe (in terms of municipal legislation and security) environment, so startups are less likely to fail. Also within the municipality's reach is the provision of spaces and opportunities for networking between the current and future entrepreneurs possibly including spaces and programs offering mentorship for very early-stage individuals that are still in the ideation phases. Recent initiatives by the municipality are starting to work towards these solutions (Weber, 2022).

Finance also depends on proper legislation that is outside of the scope of the municipality, but some things can be done. Recently, for example, Porto Alegre's city council established an public innovation and investment fund for startups (Mendonça, 2020). The aforementioned launch of the Brazilian startup legislation should significantly improve the environment, especially in the Finance dimension, and further investigation on this realm is much needed.

Still on the Finance domain, possible investors must do their part. They need to be more capable of understanding the risks and possibilities involved with startups and how they differ from more common investments. They should learn more about the market and its peculiarities, this includes their participation as mentors. Associations of investors and the help of private institutions can help to develop those skills. One thing that intersects Policy and Finance is the possibility of providing public funds (or grants) for startups as has been recently done by the municipality. This type of policy should be used very carefully (or maybe even completely avoided) for two main reasons: the complex financial situation of the municipality, and; the almost certain use of political influence – instead of business-related indicators - in the distribution of those resources (e.g. Lerner, 2009).

The cultural aspect is also hard to change, and in spite of the educational domain being positive in Porto Alegre, there is a lot to be improved. Entrepreneurs have to be ready to face the environmental difficulties imposed by a more conservative background about business failure of the people in southern Brazil. Individuals should be capable of joining forces with others that share similar cultural points of view, build networks and spread the word. Private institutions and universities could support programs to try to change, in the long run, the average mentality of the public, including the support for a more common participation of women as founders, since rapid cultural change is hardly possible (Williamson, 2000). Furthermore, successful local startups should be seen and marketed as role models. Successful startup founders must become role models and should be invited to talks and lectures in classrooms, events, acceleration programs, incubators, and educational institutions. A public space in which this could happen would be very helpful in building this uncertainty bearing culture among the possible entrepreneurs and the public overall, while spreading the world about the importance of resilience and learning in the entrepreneurial process.

Support institutions have a lot to improve. Most coworking spaces, accelerators, incubators, and consultants need to work to develop their own networks and some need to develop technical abilities to better deal with startups. Most of those institutions are isolated from each-other which makes it harder for the individuals that they aim at helping to develop better and faster. Exemplary of this situation is the overlapping capabilities and support offered by some institutions, while some other areas remain uncovered. Professionals - accountants, lawyers and consultants - need to specialize and be able to deal with those newer forms of organization and their specificities. Exemplarily, of the positive impact of the Support domain on startups' perpetuation is a recent study showing that circa 70% of the Brazilian startups that reach incubation survive (Sebrae, 2016). Some things are improving and the emergence of the Caldeira hub is, for example, a major move for the evolution of the EE.

As for the Human Capital, one thing to be improved is the provision of information on how startups work as compared to traditional businesses. Students support with viable alternatives to initiate their startups while within the educational system is also something to improve. Concurrently, individuals in traditional organizational environments must have avenues to better understand and, if interested, develop the needed capabilities to be ready to work for and with startups. This is in itself an opportunity for educational institutions in that EE. Furthermore, university professors should incorporate discussions on startups in their common teachings of strategy, new ventures and entrepreneurship. Also, higher education institutions should provide spaces for students from different areas to join forces, develop new ideas and knowledge, generating new networks among different specialties building on social proximity (Ben Letaifa & Rabeau, 2013). Startup founders must be aware of the implications of having an entrepreneurial team, especially because factors such as self-motivation and financial capacity to engage on the process of putting together and sticking to a startup are very relevant to the odds of success. Funders should also be aware of the difficulties they will face in case they decide to fly solo and not to have partners in their endeavors.

Discussions with current and former entrepreneurs should be part of the educational curricula. This would show to students that success is possible, and that failure is also part of the learning process. Finally, higher educational institutions should pay attention to the formation of human capital on entrepreneurship research. In this regard, two of the three largest universities in the city have master's and PhD programs on innovation, but theoretical and field research on entrepreneurship, especially on its early stages, is uncommon.

Fomenting entrepreneurial networks and connecting newbies to larger companies early on should be a goal of this EE. Entrepreneurs need to be able to test their solutions with potential adopters. This could be facilitated by public and private institutions (such as universities and makers rooms). Furthermore, the cultural aspect of the larger companies has to be considered. Established companies must be more open to collaborating with startups as 'angel customers'. Of course, such initiatives have to be beneficial for the larger companies, but they are fundamental to startups, since they end up providing capital to keep the startups rolling while adding client's portfolio that will facilitate the acquisition of more customers, and, possibly more important, they allow for the development of know-how and field experience in testing and implementing the solutions.

Our findings come from one case study and use discourse analysis, therefore, our generalization is limited. At the same time, our sample selection could lead to unintended biases. The single interview per case is also a drawback, since it does not allow for triangulation. Despite these problems, the evidence is consistent with other studies adopting complementary approaches both in Brazil and abroad. Importantly, our case agrees with previous literature: emerging entrepreneurial ecosystems need support from different actors in the different domains, imposing simple, top-down solutions will hardly lead to success.

To further understand the emerging entrepreneurial ecosystem phenomena, replications of this research in different cities across the globe are advisable. Our prospective approach is a first step to understand a scientific problem, for a deeper understanding of any emergent EE, and especially its relationship with startup failure, it would be important to have a panel following ventures along their different development stages and try to understand how each of domain impacts startups as time passes. In this sense, our research serves as input to further developments on startup failure.

There is much to be done in the understanding and identifying the necessary characteristics and features of emerging entrepreneurial ecosystems and how they support or hinder entrepreneurial action. Looking at unsuccessful entrepreneurs in those settings provided insights into the overall understanding of the ecosystem, in particular, to its weakest points. And, as a consequence, how the ecosystem contributes to the failure of startups. Our results thus provide evidence to support the development of better public and private solutions to the current and future initiatives in Porto Alegre's and other emerging entrepreneurial ecosystems.

Conflit of interest statement

The authors declare that there is no conflict of interest.

Authors' statement of individual contributions

Roles	Contributions			
	D'Andrea F. A. M. C.	Santos D. A. G. dos	Costa C. V. P.	Zen A. C.
Conceptualization	■			■
Methodology	■			■
Software		N.A.		
Validation				■
Formal analysis	■	■		
Investigation	■	■	■	■
Resources	■	■	■	■
Data Curation	■	■	■	■
Writing - Original Draf	■	■	■	
Writing - Review & Editing	■			■
Visualization	■			
Supervision				■
Project administration	■			
Funding acquisition				

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AUTHORS BIOGRAPHIES

Fernando Antonio Monteiro Christoph D'Andrea *is Assistant Professor of Entrepreneurship at the O'Maley College of Business, Embry-Riddle Aeronautical University in Daytona Beach, FL, USA. He holds a PhD in Entrepreneurship from Oklahoma State University and his research deals with entrepreneurial uncertainty and the interplay between institutions and entrepreneurship.*

E-mail: dodandrea@gmail.com

Diego Alex Gazaro dos Santos *is is a profeessor at the Graduate program in Management at Atitus Educação. He holds a PhD and MS in Management from the Universidade Federal do Rio Grande do Sul (UFRGS). He research interests are in entrepreneurship and innovation ecosystems, open innovation corporate innovation, business models, entrepreneurship and Startups.*

E-mail: diegogazaro@gmail.com

César Vinícius Pereira Costa *is a an entrepreneur at Semente Negócios, he holds a Master's degree in Innovation, Technology and Sustainability from the Graduate Program in Businss at the Universidade Federal do Rio Grande do Sul/UFRGS. His research interest is in innovation management, startups and sustainability.*

E-mail: cesarvpcosta@gmail.com

Aurora Carneiro Zen *is Associate Professor at the Department of Management, Escola de Administração (EA) at the Universidade Federal do Rio Grande do Sul (UFRGS), her research is focused in innovation management, entrepreneurship, entrepreneurial ecosystems, and startup management.*

E-mail: aurora.zen@ufrgs.br