

Article

Comfortable but Not Brilliant: Exploring the Incubation Experience of Founders of Technology-Based Startups

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Abstract: Business incubators have been highlighted as vital contributors and value-creation organizations to entrepreneurs during their venture developments by offering them multiple resources and specialized support. Notwithstanding, several authors call attention to the significant literature gap concerning research focusing on entrepreneurs' daily lived incubation experiences to understand their perspectives on incubators. This study aims to explore which aspects are perceived as creating value or limiting the venture development of 16 founders of technology-based startups by interviewing them. Ultimately, it contributes valuable insights about incubation factors that enhance or hinder their overall incubation experience. It suggests that entrepreneurs consider intangible resources and social and relational aspects as the most enriching dimensions of their incubation experiences and concludes with the services they consider to be more important. Moreover, it also reveals negative aspects of the incubation experience, mostly related to the nonregular periodicity of mentoring sessions, training events provided by external entities, and issues while using services provided by external incubators' partners. Several recommendations for enhancing the incubation experience, managerial implications, and opportunities for further research are discussed.

Keywords: business incubation; entrepreneurship; incubation experience; startup; entrepreneurial support; incubator; entrepreneurs; guidelines; development study; innovation



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1. Introduction

Several authors agree on the importance and contributions that business incubators convey to multiple business sectors and areas, corroborating that these organizations play a vital role in fostering sustainable economic growth of local, regional, and national economies and in social development [1–4]. Among their potential, their role in increasing entrepreneurship, technology advancements, competitiveness, innovation, generating wealth creation, and new job opportunities are highlighted [2,5–7].

Furthermore, the entrepreneurial process is pointed out as being facilitated by business incubators [8], and startups that have undergone incubation processes are anticipated to have higher chances of survival and growth than nonincubated ones, even after entrepreneurs complete their tenancy period [9]. During the business incubation process, it is expected that tenants would experience support through multiple services and assistance provided by their incubators to help them develop and strengthen their businesses. Some practical examples of facilities include, among others: training sessions, access to consultancy services, network and venture capital [10], products and services development support [11], and guidance to enter new markets to commercialize their products and services [12,13].

Based on the mentioned multiple functions and considering their offering contributions, it is understandable why several business incubators around the globe have been receiving support from governmental policies and practices, which significantly supported their proliferation over the last decade [5,13,14]. In Portugal, where the present research

took place, the scenario is similar, though on a small scale, given that the national incubation ecosystem is relatively new compared to other European countries, the United States of America, or Asian countries. However, despite the young ecosystem, the last report from the International Data Corporation [15] concluded that the number of business incubators has grown by 40% since 2016, totaling 169 incubators distributed across the country by 2020. The number of startups registered at the time was 2159, representing over 1% of the country's GDP (Gross Domestic Product) and responsible for more than twenty-five thousand job opportunities. This factor places the national incubation ecosystem as one of the best in Europe, positioning it 13% above the average number of startups per capita and producing seven of the European unicorn companies ($n = 208$). The Portuguese entrepreneurial ecosystem is also characterized by comprising 75.2% of startups operating on a business-to-business (B2B) model, primarily linked to technology (33%), fintech (10%), and medical and health (8%) sectors. In addition, the same report also identifies the region of Porto as concentrating the largest number of Portuguese startups in the country, estimating it represents 19% of the national scenario with a total of startups per capita 20% superior to the European panorama average.

Notwithstanding the extensive academic knowledge related to the business incubator industry, the contributions of the different typologies of incubators, and their economic and structural perspectives [5,16,17], numerous researchers call attention to the significant existing gap in the literature concerning qualitative studies focusing on the incubation experience itself from the perspective of incubated entrepreneurs [4,8,18–25]. Paradoxically, this under-explored research area and the linked social and emotional aspects of daily-incubator life are identified as offering the greatest potential “to understand the process of incubation, as relatively little is known about the nature of these experiences and what it is like to be an incubatee” [26] (p. 42). Therefore, empirical works exploring the lived experience of incubated entrepreneurs can provide new insights into how business incubators support or hinder their venture developments [21,23–25], contributing to advancing this field and offering further guidance to incubator managers in enhancing their practices in assisting new and ongoing ventures.

Thus, the present study set out to explore the research question, “What are the perceived aspects that enhance and hinder the incubation experience of founders of technology-based startups?” Specifically, it is aimed to explore and understand which aspects linked to the overall incubation experience are perceived as creating value or limiting venture development based on the personal incubation journey of 16 founders of technology-based startups. These entrepreneurs are tenants in four technology business incubators located in the Metropolitan Area of Porto. As far as the authors are aware, this exploratory study is the first conducted in Portugal addressing this issue through mixed methods research, which expects to extend the previous literature in several ways by contributing the following: (i) entrepreneurs' motivations to found a business and previous venture experiences; (ii) reasons for seeking tenancy; (iii) factors influencing the selection of business incubators for their startups; (iv) perceived benefits and gaps associated with the incubation experience in assisting their ventures; (v) overall assessment of the satisfaction concerning their initial expectation and the contributions of their incubation processes; (vi) dynamics with incubators during the COVID-19 pandemic; and (vii) assessment of the importance of incubation services for their tenancy. Furthermore, this article is part of a second iterative stage of a broader research project following a participatory design approach [27,28], which ambitions to propose a unified conceptual model of a virtual business incubator by actively involving multiple stakeholders during its development and validation. This need and the requirement to merge the different academic perspectives of business organization and management, information and communication systems, and user experience was already advocated in previous research by the same authors [2].

The rest of this article is structured as follows. The next section provides a brief background on the previous research encompassing incubators' evolution over time and understanding the incubation experience followed by detailing the materials and methods

for conducting the research. This manuscript proceeds with the presentation and description of the main results concerning the incubation experience of the participants. Then, a discussion of the main findings and their implications for the field under analysis is provided. It finishes with the conclusions, highlighting the study's limitations and some future research directions.

2. Background

Business incubators (and accelerators) are recognized for playing vital roles in the entrepreneurial ecosystem by supporting the advancement of new ventures and startup companies [17] by offering multiple services and support to their tenants during the incubation journey. According to Nicholls-Nixon et al. [21], an evolution of the type and nature of offered business incubators' services has been registered over time. While the main focus of first-generation incubators regarded the provision of tangible resources above all, such as physical spaces and facilities [23,29], the new-generation incubation models shifted their perspectives to provide intangible resources that support innovation and creativity [30,31], encompassing business advice, mentoring, coaching, and network development [21,23,30] to mention a few examples.

In parallel with these transformations, incubators typologies and their models have also undergone considerable evolution over time, triggered by the rapid proliferation of these centers on a global scale: "Over the past decades, a wide variety of incubation mechanisms have been introduced by policy makers, private investors, corporates, universities, research institutes etc. to support and accelerate the creation of successful entrepreneurial companies" [30] (p. 13). However, there is no literature consensus about the nomenclature and definitions concerning the diverse typologies of business incubators. For instance, some academics [5] classify incubators into the following types: business incubators, corporate incubators, networked incubators, academic incubators, student-run incubators, social incubators, and virtual incubators. Moreover, other authors [16] argue for distinct classifications: university incubator, independent commercial incubator, company-internal incubator, regional incubator, technology business incubator, and virtual incubator. The present research takes into consideration the classification of technology business incubators proposed by these researchers, which defines them as assisting technology-oriented entrepreneurs in their startup's development through business support services and resource provision.

The extant literature on business incubators and their mechanisms reflects on their contribution and positive impact on the development of new businesses in general, which "may reflect an implicit assumption that belonging to an incubator is inherently beneficial" [21] (p. 4). Nevertheless, despite the identified significant literature gap concerning studies focusing on entrepreneurs' daily lived incubation life experience [4,8,18–25], previous research encompassing this subject shed light on several aspects from a first-person viewpoint.

From a value creation perspective, the incubation process in technology business incubators was mainly perceived through receiving help to explore, assess, and validate current market needs of products or services [25]. Moreover, it is suggested that tenants involved in university incubation programs perceive the interconnection between tangible and intangible resources as being on the basis of distinct value creation: supporting venture development through entrepreneurial learning, fostering community collaboration and mutual support, and providing legitimacy to external stakeholders [21].

Mentoring is also pointed out as offering several benefits, despite enclosing some gaps and harms. Among the benefits, it facilitates venture progress and tenants' personal development as entrepreneurs. On the contrary, incubator tenants mentioned experiencing challenges and needs that were unwilling to be assisted, problems with the organization and coordination of mentoring meets, and unsatisfactory interpersonal aspects of the relationship with mentors [32].

Furthermore, other aspects of incubators linked to social and relational contexts, such as relational bonds between incubators managers and entrepreneurs [23,24,33], can also influence tenants' performance related to their business development.

Concerning the COVID-19 pandemic, the lack of academic literature related to the functions of business incubators, the established dynamics, and their impact on tenants' incubation experience is also stressed [34]. However, a recent study [35] focused on this specific subject, concluding that services sector's entrepreneurs perceived that the support tools, actions, advice, and services provided by their incubators during this period positively impacted their experience, contributing to their survival in times of crisis.

Studies of this nature are also vital at a topical level, both on an international and national scale, especially if taking into account the COVID-19 pandemic's effects on global and local economies. In the case of Europe, it is estimated that the resulting adverse economic effects have higher impacts on the cases of small-sized and medium-sized enterprises [36], which represent 99.8% of European enterprises and about 66.6% of employment [37]. Furthermore, considering that most startups are part of the small- and medium-sized enterprises ecosystem, the identification and deeper understanding of entrepreneurial experiences during the COVID-19 pandemic can further support the promotion of more adjusted incubation programs to support sustainable economic and business development in times of crisis [38].

The following sections of the present study foresee taking a step in the direction of exploring the lived experience of incubated entrepreneurs to get new insights and understanding of the aspects perceived by founders of technology-based startups as supporting or hindering their venture developments and, ultimately, their overall incubation experience.

3. Materials and Methods

3.1. Participants' Sampling

Identifying founders of startups that participate as tenants in incubators is a challenging task [39,40], especially for researchers in Portugal. On one side, to the authors' knowledge, any online database to search for active startups in the country is not available on a municipal, regional, or national level. On the other side, few business incubators make available information about the incubated startups' names on their websites or social media platforms, which makes it hard to access entrepreneurs participating in incubation programs. Furthermore, studies covering the subject under analysis can be susceptible to exposing their tenants' nonsatisfactory or even negative incubation experiences [32,41], which makes collaboration with these organizations somewhat complex and, therefore, research in this field even more difficult.

In order to sample participants for the study, the National Network of Incubators (RNI) platform [42] was first consulted to identify the business incubators located in five municipalities of the Metropolitan Area of Porto (Portugal), namely Vila Nova de Gaia, Gondomar, Maia, Matosinhos, and Porto. It was decided to circumscribe the present study to these places, given that the higher number of business incubators in the north region of continental Portugal are located in these areas ($n = 20$).

Next, the business incubator centers' websites were analyzed in detail to investigate (i) if they are still active and running; (ii) the number of startups or projects currently incubated and their names; (iii) the success ratio of former incubated startups; and (iv) the main activity sectors of the incubated startups or projects. Since almost none of the required information was made available on the majority of the consulted websites, the business incubators were then contacted to gather this data and asked for collaboration in the study via telephone ($n = 11$) and email ($n = 9$) when it was not possible to talk directly with the incubators' managers via telephone. During this phase, it was concluded that: four incubators were not currently active; one incubator was active but did not have any participating startups at the time of contact; three incubators were active but did not disclose the number of incubated startups or their names; eight incubators were active and informed they had between eight and more than 30 startups incubated, but only four made available the names of incubated startups; and it was not possible to gather any data from four incubators since no answers were obtained either via telephone or email. Table A1 in

Appendix A summarizes the main results from this stage where the municipalities' and incubators' names were anonymized and coded to ensure confidentiality.

The last phase for sampling the participants comprised the collection of the direct contacts of startup founders who participate as tenants in the four business incubators who previously informed the name of their startups by searching their official websites and LinkedIn and Facebook accounts. A total of 67 founders were contacted via email and requested collaboration for this research, and 16 entrepreneurs from four business incubators expressed their interest in voluntarily collaborating in the study. Finally, the interview dates were agreed upon and scheduled with each participant.

3.2. Research: Instrument, Procedure and Data Analysis

A semi-structured interview guide was developed as the instrument for data gathering, consisting of open-ended and close-ended questions. The first part of the interview included five open-ended questions dealing with the demographic and educational background of the respondents. The second part consisted of eleven open-ended questions to allow entrepreneurs to explore their motivations to own a business and provide details about their startups and the incubators where they are tenants. The third part related to past business experiences of the entrepreneurs, i.e., before founding their current startups, through three open-ended questions. The fourth part of the interview was explorative with ten open-ended and two closed-ended questions. The ten initial questions focused on respondents' reasons for applying for the actual business incubator, their positive and negative incubation experience so far, how they describe it in up to five keywords, and the dynamics with the incubator centers during the COVID-19 pandemic. The two closed-ended questions used a five-point Likert satisfaction scale to measure their initial expectation of incubation compared to what it has been in practice and the incubators' contribution in helping their business development. The final part of the interview consisted of seventeen closed-ended questions to assess the importance attributed to a set of services during the incubation process by using a five-point Likert scale.

Data collection occurred between June and July of 2022 via video chat ($n = 15$) and a telephone call in one case. A document explaining the research objectives, the protocol, the collection and use of data, and its anonymity and confidentiality was previously sent to each participant by email when arranging their interviews. Furthermore, the informed consent to participate in the research was briefly discussed before starting the interview, and all respondents gave their consent to start audio recording the correspondent session. The average duration of the interviews was 35 min excluding the initial protocol, with the total duration ranging from 18 to 66 min.

A code was randomly attributed to all sixteen participants, and each interview was transcribed verbatim in the original language (Portuguese). Only significant excerpts were later translated into English by the authors to be included in the results section of the present article. Due to the considerable audio-recorded total time generated during the data collection, the artificial-intelligence-based transcribe plugin of Microsoft Office 365 was used to convert speech to text transcripts. Then, each transcript was manually checked and corrected against the original recordings to ensure their completeness and accuracy. Finally, a database containing the answers to the closed-ended questions was created based on the interview transcripts.

The transcribed interviews were analyzed by adopting the thematic analysis method [43,44] which encompasses a six-phase approach to identify, analyze, and report patterns and connections within the data set. The qualitative data analysis was conducted based on data related to the interviewees' answers, which were systematically coded and iteratively arranged into refined themes and subthemes. The coding process followed an inductive approach, meaning the identified themes were strongly derived from the collected data, and their identification was based on a semantic level, i.e., the explicit meaning of the data was considered to identify the different patterns.

Concerning the answers to the demographic and educational background of the interviewees and the data gathered with the close-ended questions (included in the created database), descriptive statistics, and exploratory data analysis were performed about these topics under research.

4. Results

The present section organizes into seven subsections to present and describe the main results of this study concerning the incubation experience of the participants as follows: (i) entrepreneurs' profile and motivations to found a business; (ii) business incubation context and startups characterization; (iii) seeking tenancy and selecting a business incubator for their startups; (iv) perceived benefits and gaps of the entrepreneurs' incubation experience; (v) overall assessment of the incubation experience; (vi) dynamics with the business incubators during the COVID-19 pandemic; and (vii) assessment of the importance of seventeen services during the business incubation process.

4.1. Entrepreneurs' Profiles and Motivations to Found a Business

The ages of the entrepreneurs ranged from 22 to 45 years old (34 years old on average) with a predominant age group between 30 and 39 ($n = 7$) followed by 22 to 29 ($n = 5$) and 40 to 45 years ($n = 4$). The interviewees were primarily male ($n = 10$), and 15 completed higher education, with more than half having at least a master's degree ($n = 9$). Their field of education was diverse: economics, innovation, or business management ($n = 6$); engineering or technology ($n = 5$); arts ($n = 2$); biology or food technology ($n = 2$); and mathematics in one case. About two-thirds of the interviewed entrepreneurs were Portuguese ($n = 11$), three were Brazilian, and two participants had dual citizenship: one had Portuguese and Brazilian nationalities, and another reported being Brazilian and Spanish.

It should be noted that six interviewees were first-time entrepreneurs whereas ten participants mentioned they had at least one past entrepreneurial experience before founding their current startups. According to them, the previous experiences—although in more traditional contexts than the present innovative ones in most cases—allowed them to learn a lot in a practical way about the challenges of running a business, understanding the market better, and how to effectively communicate and sell their products or services. Moreover, in six cases, participants revealed that these experiences were vital to help them refine their startups' core ideas and business objectives. In the words of entrepreneur E6, "we had brought a lot of experience [from the previous business] that helped me immensely later when we created [startup name], and also to understand in a much more real way almost everything concerning to the inherent challenges of a company that starts from the scratch".

All entrepreneurs founded ($n = 3$) or cofounded ($n = 13$) the startups in which they work and occupy top management positions, i.e., fifteen as Chief Executive Officers (CEO) and one as Chief Financial Officer (CFO). More specifically, their business operation profile was as follows: ten were both CEO and cofounders, three were both CEO and founders, two were co-CEO and cofounder, and one entrepreneur was the CFO and cofounder of her/his startup.

Among the entrepreneurs' motivations for founding their startups, the qualitative analysis of their interviews revealed eight different ones.

Eleven participants pointed out that their primary motivation was to follow a passion while developing their ideas through innovative and creative ways, which they considered hard or even impossible to do in corporations, research centers, or other organizations in which they previously worked. A representative citation by E7 follows: "It is difficult to explore some ideas or follow more creative approaches within a pre-established organization and try to implement them, even if there are resources to do so. Thus, some people sometimes feel forced to do things individually, like in my case".

The second and third most highlighted motivations regarded filling identified opportunities in the market ($n = 7$) and having the autonomy to run their business operations

($n = 7$). Seven entrepreneurs mentioned that their life experiences, past working ones, and the social isolation context motivated by the COVID-19 pandemic contributed to helping them understand gaps in the market. Regarding their desire for autonomy to run their business operations, entrepreneurs mentioned having the freedom to create meaningful values for their companies to follow, adjusting diverse business management processes, and ultimately being the decision-makers of their firms.

Creating a job for themselves or pursuing new career directions was also pointed out by interviewees five and two, respectively, as motivations for founding a startup. Additionally, participants mentioned addressing community problems ($n = 3$) and contributing to solving social issues ($n = 2$) as their main drives. Lastly, one founder stated wanting to generate passive income as an additional reason to set up her/his company.

4.2. Business Incubation Context and Startups Characterization

The main results concerning the business incubation centers in which the entrepreneurs are tenants, the incubation model in which they participate, and the characterization of their startups are presented in the present subsection. Of particular importance at this point is stressing that the codes used to describe the business incubation centers differ from the ones initially presented in Table A1 to safeguard their confidentiality and prevent cross-information matching.

Fifteen participants confirmed they were tenants in technology business incubators at the time of their interviews, and one had recently completed her/his incubation around eight months ago. More than two-thirds of their startups were incubated in business incubation center A ($n = 11$), three at business incubation center B, and the remaining two at incubators C and D. Therefore, the results from the present study mainly reflect entrepreneurs' incubation experiences in contexts of technology business incubators that have ecosystems with strong links to higher education institutions, research and innovation centers, and industries.

Half of the entrepreneurs said they opted for a virtual incubation model for their startups since they do not require a physical space to run their business, and teams are used to working remotely. One interviewee stated she/he changed from a physical incubation model to a virtual one about a year ago due to financial reasons. The other half of the participants were incubated in physical spaces: Four owned office spaces for their startups, pointing out that having a private space is also essential to receive clients and have meetings; the remaining four interviewees opted for sharing their office with other startups in coworking spaces since this option allows them to stay in contact with multiple entrepreneurs while still having access to dedicated rooms to meet with clients or partners whenever needed.

The duration of their incubation ranged from 1 to 67 months with an average of 24.2 months ($SD = 17.4$). Six entrepreneurs said they had been incubated between 13 and 24 months, followed by five participants who specified they entered their respective incubators up to 12 months before participating in this study. The remaining interviewees have experienced more extended incubation periods, respectively, between 25 and 36 months ($n = 3$) and more than three years ($n = 2$).

When asked about the year of formal set up of their startups, approximately half of the interviewees ($n = 7$) revealed it happened between 2020 and 2021 during the COVID-19 pandemic, and two entrepreneurs informed it was after this period, in 2022. On the other hand, six founders stated their startups were already formally set up and perfectly operating before this period: between 2016 and 2017 ($n = 4$) and between 2018 and 2019 ($n = 2$). Additionally, one participant revealed still needed to formally register her/his startup at the time of her/his interview. Concerning these last results, it is highlighted that six entrepreneurs founded their companies before starting their tenancy in their actual business incubation centers while the other ten formally set up their startups after being incubated for a while.

Regarding the development stage of the participating startups, two entrepreneurs mentioned their companies were in an initial preseed stage, i.e., they were in the process of developing their concept but did not launch the Minimum Viable Product at the time of their interviews. However, seven participants' companies had their products or services developed and were in the process of achieving the breakeven point—early stage and seed—while the other seven startups were in the grow or scaleup development stage.

According to the entrepreneurs, the most common number of founders involved in creating their startups was two in half of the analyzed cases ($n = 8$). Next, three companies were created by one founder and another three startups by four founders. The less common number of founders involved in creating startups was three, registered only for two cases.

Another subject under analysis was the size of each startup, measured by the number of employees at the moment of the founders' participation in this research, which ranged from 2 to 16 employees ($M = 6.56$; $SD = 3.86$). Six startups had between 5 and 7 workers followed by between 2 and 4 employees ($n = 5$), 8 to 10 collaborators ($n = 3$), and two companies having more than ten workers.

Lastly, it should be mentioned that about one-third of the technology-based startups were from business sectors linked to digital media ($n = 6$) followed by software ($n = 3$) and two from the education technology (edTech) sector. The other five startups' business sectors were artificial intelligence, biotechnology, design and ecommerce, food technology, and the internet of things.

4.3. Seeking Tenancy and Selecting a Business Incubator for Their Startups

During their interviews, the sixteen entrepreneurs revealed several reasons for seeking tenancy for their startups, how they got to know about their actual business incubators, and why they opted to select them instead of others. These aspects will be explored in detail in the following subsections.

4.3.1. Reasons for Seeking Tenancy

The main reason pointed out by eight entrepreneurs for seeking tenancy was having access to their incubators' ecosystems and being part of its community. On the one hand, this integration would place them near other startups they considered respected references in similar areas, allowing them to expand their network while keeping up with new developments. On the other hand, this participation would allow them to access external contacts and the current tacit knowledge of these incubation centers, facilitating the creation of new partnerships.

Four founders mentioned that their motivations for tenancy had to do with wanting specialized support to develop their businesses further. Another four participants were invited to start their respective incubation programs by incubator managers or government officials. They understood it as an opportunity to continue developing their already validated ideas into startups.

In another three cases, participants stated that their applications to the respective incubators were mainly motivated by fulfilling the contractual conditions of funding grants they received to develop their business ideas. One entrepreneur mentioned her/his main reason for tenancy related to submitting applications for venture capital financing calls since it was required to be linked to an incubator center.

Furthermore, one founder (E15) explained that her/his principal motivation for tenancy was being able to have an alternative physical workspace in a strategic location that would "offer an additional possibility to our collaborators working in a place outside our main office, and could also be used to have meetings".

4.3.2. Information Obtained about the Business Incubators

Participants said they got to know about the incubators in which they are tenants in six different ways. Six founders pointed out it was during the times they were students in higher education institutions. In other cases, interviewees stated that other entrepreneurs

recommended them their attending incubators ($n = 3$); they got to know the centers during past work experiences with companies that were incubated there at the time ($n = 3$); or other organizations suggested they search about these incubators for being more aligned with their business projects ($n = 3$). Concerning this last aspect, entrepreneur E5 explained: “We [co-founders of the startup] had an interview with a business incubator from [municipality], but their skills and interests were out of the scope of our project, so they ended up recommending us [the attending incubator]”.

The less expressive ways the founders obtained primary information about the business incubators were through traditional media and social media ($n = 2$), and one participant informed it was during an entrepreneurship event that she/he attended.

4.3.3. Reasons for Selecting Their Business Incubators

The data analysis allowed concluding twelve factors related to business incubation centers that made entrepreneurs select these organizations instead of others for incubating their startups. The two most expressive reasons, highlighted by half of the interviewees, were, respectively, the physical location of the incubator ($n = 8$) and the pre-existing network opportunities established in the community ($n = 8$). Concerning the first, interviewees considered that being located in the north of Portugal, especially in the metropolitan area of Porto, allows them an advantageous geostrategical position to access other European and American markets and clients while benefitting from highly qualified labor for reduced costs. One representative quotation from E9 follows: “When we started to plan our company, my partners insisted it should be in Portugal because it is in the center of Europe, and the city of Porto has everything, including the airport and a port. And obviously, it has big advantages compared to other European countries, including the salary to hire researchers or managers, for instance, which is much cheaper. That is what most companies in Portugal end up thinking about”. Regarding the pre-existing networking opportunities and sense of community in their incubators, entrepreneurs explained that they considered valuable the fact that they could connect with other startups in different stages of development and share experiences or collaborate for mutual benefit. Additionally, they envisioned strategic cooperation with already integrated partners from several industries and expanding their network by interacting with other external stakeholders from Porto, such as artists, entrepreneurs, and creative organizations.

Furthermore, the most reported reason by seven founders was the physical infrastructures and facilities their incubators offer, encompassing individual or shared workspaces, meeting rooms, meal facilities, access to the internet, and leisure spaces, among others. Moreover, seven participants also stressed that their incubators’ connections to higher education institutions were essential for keeping them linked to research and development centers, accessing necessary spaces and interfaces, and staying in touch with graduating students and experts.

Next, six interviewees stated that already being familiarized with their incubator was a decisive reason for their choice. In contrast, five founders who did not have any prior experiences with business incubators commented that the empathy and synergies they felt during their first meeting with the managers were crucial in their choice.

According to another five participants, the advantageous costs over the offered benefits were also vital, especially for startups in preseed stages. In the words of E9, “most startups rely on the financial support of its founders or partners, which may not be much, and even so [the incubator] provide high-quality services and infrastructures for a low price”. In this regard, three entrepreneurs also informed that the supplied technological perks and partnerships were crucial to their tenancy decision. As explained by E6, “We understood that the actual partnerships to access credit programs of service providers, such as the Amazon Web Services (AWS) and Stripe, would be advantageous and give us a boost while having an immediate economic impact”. For one interviewee, a decisive factor was the opportunity that the incubator offered her/him to personalize the perks and benefits according to her/his startup needs at the moment.

Moreover, the founders mentioned additional reasons for selecting their incubators: the staff's specialized knowledge and qualified experience for mentoring startups in related business areas ($n = 3$) and the existing recruitment and internship programs to help entrepreneurs attract talent and hire high-qualified employees ($n = 3$).

Finally, the last factor highlighted by four founders was the reputation, visibility, and recognition that their incubators have in the national innovation industry panorama. These aspects were stressed as giving credit to their startups from the beginning: "having the [incubator] name associated with us is a significant seal to have at the start" (E10).

4.4. Perceived Benefits and Gaps of the Entrepreneurs' Incubation Experiences

During their interviews, the 16 entrepreneurs revealed which aspects they perceive as benefits that contribute to positive incubation experiences ($n = 12$) and gaps or difficulties they have been dealing with during their tenancy ($n = 9$) that hinder the overall experience. These findings will be presented and addressed in detail in the following two subsections.

4.4.1. Perceived Benefits That Contribute to Positive Incubation Experiences

Twelve entrepreneurs stated that mentoring and coaching sessions had contributed the most to help them develop and expand their businesses during their tenancy. These sessions promote positive incubation experiences, as highlighted by the founders, since they receive much feedback and monitoring of their projects' statuses based on their needs at the moment, which tends to be an iterative process that happens in nonregular timeframes. Moreover, mentorship sessions help them validate their advancements with experts and redefine marketing or selling strategies according to shifts in the market. Besides these contributions, mentors were also pointed out as providing valuable help concerning searching for needed key contacts or new partners as well as guiding founders to attend specific events, workshops, or training happening soon and recommending suitable funding opportunities.

Eleven participants stated that the workshops, training sessions, webinars, and other events promoted by their incubators were contributing to positive experiences of their tenancy. On the one hand, attending a variety of events with experts sharing knowledge about diverse themes—such as marketing, finance, business management, pitch preparation, investment funds, fundraising, and patent register, among others—was considered very important, in general, for providing them a holistic entrepreneurship training and mindset. On the other hand, two founders from startups in the early stage and scaleup stage mentioned having participated as guest speakers in events to share their experiences with other tenants. These opportunities "promote the creation of mutual help between those starting and business and those who are a little more advanced", according to E3.

Sharing experiences and socializing were additional incubation aspects highlighted as positive by nine entrepreneurs—four participating in virtual and five in physical incubations. All participants agreed that being among peers is the most enriching dimension of incubation, allowing them to exchange ideas and learn how to overcome similar difficulties through other entrepreneurs' examples. Notwithstanding, the five founders incubated in physical models (office and cowork) referred that this tends to happen spontaneously and almost daily, during coffee breaks and other casual circumstances, allowing them to share moments of concern, pain, difficulties, celebrations, and joy related to their company's developments. Moreover, they noted that these social moments with peers contribute to helping to maintain good mental health, as clarified by E7, "because sometimes people in my position are almost on a mission against the world, trying to develop our idea, which sometimes is a bit lonely challenge. And being in a space like this helps immensely to refocus our perspective and to be soberer".

Furthermore, the networking opportunities enabled by the incubators were stressed as having a positive impact on the experiences of nine interviewees. Apart from the networking promoted during workshops, training sessions, and other events, the entrepreneurs stated that their incubators sometimes play an active role in connecting them with other

organizations on an institutional level and ensuring their participation in specialized fairs to show their products to a broader public.

Next, nine participants said they perceived their access to internal and specialized external services as benefits of their incubation, contributing positively to their overall experience. Regarding the internal services, the entrepreneurs pointed out the regular internal communication through newsletters where they can check up-to-date information related to approaching events, workshops, and contests, among others: “what really provides us access to useful information without having to spend our time searching for it” (E9). Another positive aspect linked to internal services regards the media presence their incubators ensure to spread information about the startups whenever required. This aspect is well-illustrated in the following statement from E11: “At the time when we had no recognition in the market, they helped us introduce to the media, and we had so much visibility. We had over 50 articles online, went to television about 7 times, were invited to do various interviews for blogs and small magazines, and appeared in physical newspapers. So, we had extraordinary media coverage”.

Concerning the access to specialized services provided by external partners with whom their incubators have established protocols, nine entrepreneurs expressed that it benefited their businesses’ development in several ways. The provided examples include legal support during the initial stages of formalizing their business; dealing with intellectual property licensing; and getting copyright license agreements, accounting services, and patent registration; among others.

Another aspect identified by half of the participants as a positive benefit of the incubation experience was getting greater credibility in the market and more visibility, which can have direct implications for their businesses. As commented by E13: “I have had several clients and potential ones that approached us because we are in [incubator name], and it certainly brings some positive points to our startup and gives us a greater visibility in the market”.

The same number of entrepreneurs ($n = 8$) also acknowledged that their tenancy allowed them to have contacts with multiple institutional and private investors during events organized by their incubators and in other funding rounds, as explained by E2: “One very positive thing of incubation is that there are several pitch days, so we pitched to Portugal Ventures, Bynd [Venture Capital], Founders Fund, Indico [Capital Partners], and Saab [Ventures]. So, this was something I would not have access to without [incubator name]”. Furthermore, entrepreneur E9 also mentioned the role of her/his incubator in “mediating one-to-one meeting opportunities with many of these entities, which perhaps would not have been possible so quickly if I was not incubated in [incubator name]”.

Seven founders commented on how physical infrastructures and facilities contribute to the overall incubation experience. They mentioned that having access to comfortable and renovated workplaces allows them to enjoy their physical tenancy—either in an office or a coworking space—apart from being highly convenient for meeting with clients, investors, incubator staff, or other stakeholders. One entrepreneur also stressed positively that her/his incubator has modular spaces, which allows startups to move to new rooms as the teams grow up to a certain limit.

Regarding the benefits linked to technological perks and partnerships, five interviewees said that having exclusive conditions to access Amazon, Microsoft, Google, IBM, and Stripe services (for two years or up to considerable limits of credit) is highly advantageous to developing and testing their products with competitive expenses.

Lastly, four founders identified the existing protocols with external institutions and enterprises as benefits of their incubation for being a critical help when hiring human resources to integrate their startups’ teams. As clarified by E7, “it allows us to save many resources associated with the entire process of attracting this type of talent for our project”. Moreover, three entrepreneurs stated having received support and guidance from their incubators during the preparation, revision, and submission of applications to

funding competitions, which was highlighted as aspects that contributed to their positive incubation experiences.

4.4.2. Perceived Difficulties or Gaps That Contribute to Negative Incubation Experiences

Apart from the previously elucidated benefits of incubation, participants also stated difficulties or gaps they have been dealing with during their tenancy that negatively affect their incubation experience. The most common, pointed out by nine founders, relates to the nonregular periodicity of sessions with mentors or coaches and the shift of mentors during critical stages of their business projects. Entrepreneurs stated that these aspects constrain their incubation experiences for introducing delays in developing their startup's activities. As explained by entrepreneur E3, "the meetings with mentors do not go quite as I initially imagined. I find myself having to contact them whenever I need something, but it does not work for more shy founders. I think that for the incubator to really be able to play its role, it should be established a more protocolized follow-up from our tutors, either once a month or every three weeks". Moreover, participants also mentioned that these situations sometimes make them feel abandoned during their journeys or extra stressed for having to wait, in some cases, several weeks to receive feedback from their mentors. According to E11, "for us, to be able to schedule a meeting or getting feedback is very time-consuming and turns exhaustive, so it is not a good experience".

The second gap, mentioned by three entrepreneurs, relates to training events given by external entities on their incubators, which they regarded as irrelevant or focusing essentially on selling services rather than contributing to their business development needs. This aspect is well-represented in an observation made by participant E7: "I have attended several training sessions, and often when other companies offer it, it turns out to be advertising sessions to their services. Maybe this is a crass comment, but the truth is that there are many things and information they give us that we can learn on YouTube".

Another difficulty, underscored by two founders, was having issues when they needed to use the services of specific external partners of their incubators, namely from lawyers' offices, accounting offices, risk management support services, and intellectual property protection companies. On the one hand, they mentioned that these companies are not very committed to providing support to incubator tenants, making it impossible to access these partners' services when needed, as clarified by E6: "We contacted [lawyers offices partners], and some did not respond. Others answered us in the first instance but then no longer replied. So, we ended up formalizing our company through an external contact we found outside [incubator name] because these partners were not giving us the support we needed". On the other hand, these partners' interests were mentioned as not always being aligned with the founders' needs. For example, E7 described a situation she/he had with an intellectual property partner company: "We were going to patent our technology, but after we got a better understanding about how things work on a legal level, it was pretty clear to us that this would be a huge strategic mistake. And no one from [incubator name], as an intermediary, has even talked to us about this". To enhance these aspects while protecting the strategic interest of the tenants, entrepreneurs suggest that their incubators implement control and evaluation mechanisms of the service provider entities and ensure their quality and alignment with the entrepreneurs' goals.

Two founders of startups from the biotechnology and food technology business sectors pointed out another gap: Their incubators do not have laboratory spaces equipped with the required conditions for developing their products in-house. For this reason, entrepreneurs mentioned the inconvenience of having to make extra investments to establish partnerships with external laboratories.

Five participants mentioned the remaining difficulties or gaps individually for contributing negatively to their incubation experiences. One interviewee stated having difficulties getting in contact with investors apart from the sporadic events happening in her/his incubator, which sometimes she/he does not know about in time. One suggestion for improving this aspect would be to have a schedule focused on these events that tenants

could access in time so that they could start preparing themselves in advance for pitch moments with investors.

Another founder stated having difficulties contacting, expediting needed connections, and arranging meetings with C-level decision makers of several national organizations and the lack of support provided by her/his incubator during this process. According to her/him, this situation has negatively affected the business development and the performing speed of her/his startup: “when you enter the entrepreneurship world on a global scale, it is much more aggressive, and you constantly have to look at your competitors. And this limitation reflects in the speed and scale of my startup, to the point that I decided two months ago to take a plane and go to strategic countries to make these high-level connections by myself” (E11).

Moreover, another participant expressed that the fact that the incubator does not offer any acceleration program also limits the development speed of her/his startup at the present stage and is pondering a startup relocation for this reason.

Next, one interviewee referred to having already contacted her/his incubator managers about a gap opportunity that could be improved to promote more regular meetings directed to startup founders. Although considering these moments tend to happen spontaneously, the founder believed that having a dedicated space during a fixed weekday and hour would encourage the participation of all and enhance the socialization and network aspects.

The last perceived reason contributing to hindering one entrepreneur’s incubation experience relates to the high costs of tenancy versus uncertainty, especially in the early stages of business development. In her/his words, “whether we like it or not, being incubated always has a cost. And in the beginning, most entrepreneurs struggle with money. So, my biggest criticism is that there is a high cost for entrepreneurs trying something before validating their products and being sure they will sell” (E14).

4.5. Overall Assessment of the Incubation Experience

As previously mentioned, entrepreneurs were requested to use a five-point Likert scale to assess their satisfaction regarding two factors: (i) their initial incubation expectation compared to what it has been in practice and (ii) the contributions of their incubators for their businesses’ development.

Concerning the first topic under assessment, the results ranged from “3—neither satisfied nor dissatisfied” to “5—very satisfied”, revealing that the sixteen entrepreneurs consider that their initial incubation expectation compared to what it has been in practice is satisfactory in average ($M = 4.08$; $SD = 0.76$). It is worth mentioning that the results obtained for the cases of tenants in virtual incubation ($M = 4.33$; $SD = 0.82$) and in physical incubation ($M = 3.86$; $SD = 0.69$) were very similar.

The results related to their incubators’ contribution in helping them develop their business ranged from “1—very dissatisfied” to “5—very satisfied”, revealing that the founders consider that the contributions of their incubators has been satisfactory for their businesses development on average ($M = 3.53$; $SD = 1.06$). When observed individually, it is concluded that the results from the founders in virtual incubation ($M = 3.57$; $SD = 1.51$) and in physical incubation ($M = 3.5$; $SD = 0.53$) are similar, although the standard deviation was higher for the case of virtually incubated tenants.

Furthermore, the participants were challenged to summarize their overall entrepreneurship experience as incubator tenants in up to five keywords. Figure 1 presents these results in a word cloud, including the 41 different keywords represented according to the frequency of their mention (a total of 58 keywords were registered). From its analysis, it is possible to conclude that the words that most convey the founders’ overall incubation experience are challenging ($n = 5$), resilience ($n = 3$), learning ($n = 3$), growth ($n = 3$), creativity ($n = 2$), stimulating ($n = 2$), support ($n = 2$), pleasant ($n = 2$), sharing ($n = 2$), fun ($n = 2$), and networking ($n = 2$). Finally, one entrepreneur enunciated the expression “comfortable but not brilliant” for considering it best summarizes her/his overall incubation experience.

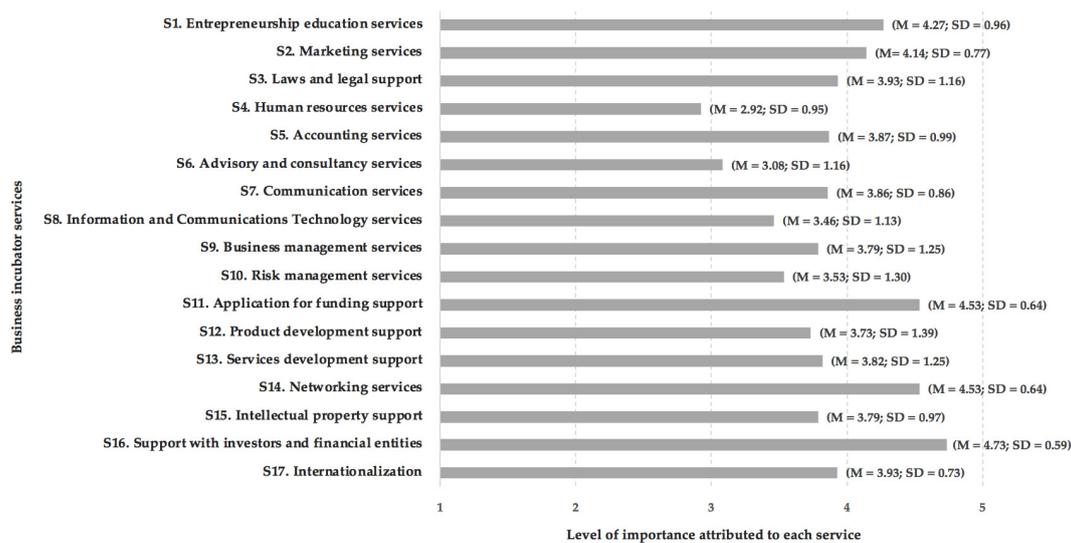


Figure 2. Average of the importance attributed to seventeen business incubation services for the development of technology-based startups.

At this point, it is also necessary to call attention to the fact that interviewees commented that the importance of these services varies along the incubation process, according to the business sector, and also the startup development stage. However, given the small sample size, it was not possible to conduct robust inferential statistical analysis to conclude the statistical significance of variables, so these results must be interpreted through the lenses of an exploratory approach.

In general, the results showed that the average importance attributed to 94.1% of the business incubator services under evaluation was superior to the midpoint “3 = moderately important” of the five-point Likert scale. This means that only one service, S4—Human resources services ($M = 2.92$; $SD = 0.95$), was evaluated on average below this threshold, although the obtained mean value reveals its moderate importance for founders of technology-based startups participating in this study. Concerning this last service, entrepreneur E13 explained that “human resources support is important to have only for startups with a certain number of employees because, in the beginning, the founders tend to be responsible for hiring people and have a very close relationship with them”.

Furthermore, five services (29.4%) were rated between “4 = very important” and “5 = extremely important” during the startups’ incubation periods: S16—Support with investors and financial entities ($M = 4.73$; $SD = 0.59$), S11—Application for funding support ($M = 4.53$; $SD = 0.64$), S14—Networking services ($M = 4.53$; $SD = 0.64$), S1—Entrepreneurship education services ($M = 4.27$; $SD = 0.96$), and S2—Marketing services ($M = 4.14$; $SD = 0.77$).

The following eleven incubation services, corresponding to 64.7%, were assessed between “3 = moderately important” and “4 = very important”: S17—Internationalization ($M = 3.93$; $SD = 0.73$), S3—Laws and legal support ($M = 3.93$; $SD = 1.16$), S5—Accounting services ($M = 3.87$; $SD = 0.99$), S7—Communication services ($M = 3.86$; $SD = 0.86$), S13—Services development support ($M = 3.82$; $SD = 1.25$), S15—Intellectual property support ($M = 3.79$; $SD = 0.97$), S9—Business management services ($M = 3.79$; $SD = 1.25$), S12—Product development support ($M = 3.73$; $SD = 1.39$), S10—Risk management services ($M = 3.53$; $SD = 1.30$), S8—Information and communications technology services ($M = 3.46$; $SD = 1.13$), and S6—Advisory and consultancy services ($M = 3.08$; $SD = 1.16$).

Finally, three entrepreneurs mentioned seven additional services—not represented in the figure—they consider to be between “4 = very important” and “5 = extremely important” to have access during their incubation experiences, which are not represented in the figure. These services are correspondence services, project management, team management, operations management, psychological and therapeutic support, business diagnostic, and price benchmarking.

5. Discussion and Research Contributions

The present study's results contribute valuable insights regarding the incubation process experienced in the first person by addressing the research question, "What are the perceived aspects that enhance and hinder the incubation experience of founders of technology-based startups?" Studies of this nature are advocated as contrasting to the extant literature on incubators that makes *a priori* assumptions about how incubation creates value [5,16,17], responding to the call of several researchers to elaborate the incubation experience from the first-person viewpoint [4,8,18–26]. Through interviewing 16 founders of technology-based startups, which are tenants in four technology business incubators, it was possible to understand multiple aspects linked to the overall incubation experience that they perceive as fostering or limiting the development of their ventures, allowing "the phenomenon of incubation to be understood holistically by examining the entrepreneur's experience of how incubation helped them move their ventures forward" [23] (p. 869).

Concerning the sample characterization, it was understood that most participants had previous entrepreneurship experience, and all occupy top management positions in their current technology-based startups. Half of them were virtually incubated at the time of their interviews while the other half was physically incubated, being under a tenancy for an average period of about two years. Moreover, most of their startups were in the early stage and seed or scaleup stages. Entrepreneurs' reasons for seeking tenancy were mainly connected to participating in the ecosystem, finding specialized support to develop their businesses, or to continue developing their already validated ideas into startups. The analysis of the reasons for selecting the business incubators allowed concluding that, in several cases, entrepreneurs' experiences with incubators started even before entering tenancy. As mentioned by some participants, social and relational aspects linked to their incubators were at the basis of their decisions, such as the knowledge of the pre-existing network and community, familiarity with the incubator, or synergy with the incubator managers.

More specifically, the findings directly linked to the research question guiding this study, i.e., the aspects perceived by entrepreneurs as enhancing or hindering their incubation experience, offer valuable new insights about the incubation process in some cases and corroborate the findings of previous literature in others. Concerning the perceived benefits that contribute to positive incubation experiences, the results reveal that entrepreneurs consider intangible resources as the most valuable resources provided during incubation. This aspect is aligned with literature discussing the evolution and assistance provided by new-generation incubators, which shifted their focus to offering intangible resources to support their tenants' ventures and foster innovation [20,23,30,31]. Among those, mentoring, coaching sessions, workshops, training, and other events were highlighted as the most representative in helping founders develop and expand their businesses during their tenancy. On the one hand, mentoring and coaching sessions allow for multiple types of feedback, such as monitoring projects' status, validating ideas, refining strategies, facilitating connections with key contacts or new partners, and providing guidance to attend important events. Similar results were reported for cases of tenants participating in other incubation contexts in Sweden and Canada [20,25,32], which concluded that "the advice and guidance of mentors can help entrepreneurs to learn important lessons, not only through their own direct experience, but also vicariously through the experiences of those advising them" [32] (p. 32).

On the other hand, attending various events with experts sharing knowledge about diverse themes was considered positive in most cases for providing holistic entrepreneurship training, mindset maturing, and learning from their examples. The potential of events which promote both formal and informal learning was already well-discussed in the literature of business incubation management through the lenses of situated learning theory for their contribution to the entrepreneurs' development [23,45]. Additionally, having access to internal incubator services and specialized external ones, receiving support for funding applications and the already existing protocols for helping in hiring human resources

for their startups were concluded as complementary resources contributing to positive incubation experiences.

Social and relational aspects experienced during the incubation process were pointed out as one of the most enriching dimensions, resulting in enhanced overall experiences for adding extensive value during their ventures' development process. Being among peers allows entrepreneurs to exchange ideas and collaborate, learn how to overcome similar difficulties through other entrepreneurs' experiences, and also contribute to helping them maintain good mental health. Other authors suggest that belonging to the incubated community and interacting with multiple stakeholders fosters the potential for entrepreneurial development [23,46], which is supported by the results of this study. Moreover, the enabled networking opportunities allow entrepreneurs to reach multiple investors and connect with different stakeholders on an institutional level. These results introduce new insights from the perspective of incubated entrepreneurs concerning the importance of the internal community and collaboration that is created during the incubation process, which other researchers identified as a gap since it "has not previously been a focal point for value creation in the business incubation literature" [21] (p. 11). Furthermore, it is also worth mentioning that entrepreneurs consider incubation to help their mental health positively by decreasing their feelings of isolation during this process since the variety of human resources participating in incubators can be sources of valuable emotional and social support [21,47].

Concerning the tangible resources offered by their incubators, some founders identified that having suitable physical spaces and infrastructures is highly convenient for meeting with clients, investors, incubator staff, or other stakeholders, apart from the advantage of having a dedicated office or coworking spaces. Another vital aspect for founders of technology-based startups is having access to technological perks and partnership benefits. This aspect positively influenced their overall experience, given the advantages inherent to developing and testing their products since the early stages of their ventures for competitive prices. Although similar contributions of tangible and intangible resources were already discussed in the literature [20,23,30,31], this research offers new contributions regarding the high importance of technological perks and partnership benefits offered by incubators for the development of technology-based startups. Possibly, these results would have been different if our sample was comprised of startups not based in technology.

Finally, half of the participants identified another positive benefit of their incubations was getting credibility in the market and more visibility, which in some situations resulted in direct implications for their businesses. Again, these results are aligned with past research conclusions [21,48], which agree that when the incubators are respected in the entrepreneurial ecosystem, "it credibility signals to these providers that these ventures have attractive prospects for success" [21] (p. 879).

Despite these contributions, the present research results also revealed negative aspects of the incubation experience, notably linked to difficulties or gaps entrepreneurs have felt during their tenancy. The most significant had to do with the nonregular periodicity of mentoring sessions or shift of mentors during critical stages of their ventures. These situations were pointed out as having direct and indirect implications during their business developments, such as introducing delays in advancing the scheduled activities and making them feel abandoned or extra stressed during their journeys. In this sense, this study corroborates with previous research findings focusing on entrepreneurs' perceived negative value of mentoring during incubation [21,32], adding contributions to incubation literature that focuses mainly on the beneficial offerings of mentoring services [17,19]. Based on the results, it is suggested that business incubator managers should pay special attention to the importance and impact that these intangible resources can have on the development of their tenants' ventures [20] and ensure that entrepreneurs' needs are aligned with the contributions that mentors and coaches can add to their ventures [25,32], on a regular basis.

Another gap perceived by participants during their incubation experiences regarded training events given by external entities on their incubators, which they perceived as

irrelevant to their business development needs or because they mainly focused on selling services. Furthermore, several issues were concluded whenever tenants needed to use services provided by external incubators' partners. For example, these companies are not committed to providing support to them, their interests are not always aligned with the incubates' needs, and incubators do not have any control and evaluation mechanisms to ensure the provision of quality services by their partners. These results introduce new perspectives on the literature encompassing the provision of business support services during the incubation process [19,49].

The remaining difficulties and gaps perceived by the participants as contributing to negative incubation experiences related to more isolated cases: the lack of specific infrastructures, difficulties in getting in contact with investors and expediting needed connections, lack of regular founders' meetings, not having access to acceleration programs, and the high costs of the tenancy versus uncertainty.

Regarding the dynamics with the business incubators during the COVID-19 pandemic, the results concerning negative experiences are consistent with the previous literature [35,38] related to the uncertainty of the market, social circumstances, and health issues, which ultimately affected the development of their ventures. However, the adjustment of their incubators during confinement periods was stressed as very positive, with events, training sessions, and contact with mentors occurring through several information and communication platforms. Moreover, the digitalization aspect was highlighted as very significant for keeping entrepreneurs connected to their incubators and for contributing to carry on their venture development during a time of crisis, which is aligned with the previous literature [35], but not as a factor that completely changed their businesses' operations during this time, since the startups in the sample already remained on digitization and remote work on a daily basis. In summary, the aspects mentioned above are on the basis of comfortable but not brilliant incubation experiences. These are reflected in the overall satisfaction expressed by entrepreneurs related to the contributions their incubators offer for their businesses' development and also on their initial incubation expectation compared to what it has been in practice. Additionally, the results concerning the incubation services that should be prioritized, based on the importance attributed to them for the development of technology-based startups, offer practical insights to incubator managers and other professionals working with entrepreneurship programs, in addition to the new contributions it introduces in the incubation literature. This research, therefore, extends previous knowledge concerning the incubation experience from the subjective perspective of incubated entrepreneurs, contributing to the gap of qualitative studies focusing on this subject which has been advocated by several authors for years [4,8,18–25]. Furthermore, at an international level, it contributes to understanding what it is like to be an incubator tenant in a young ecosystem under fast development—considered one of the best in Europe that is positioned as 13% above the average number of startups per capita [15]—by introducing new perspectives about positive and negative aspects linked to the incubation experience.

6. Conclusions

The present study extends previous research in the underexplored field of the incubation experience of 16 entrepreneurs who are tenants in four technology business incubators located in the metropolitan area of Porto, Portugal. Particularly, it sheds light on the multiple aspects perceived by these founders of technology-based startups as contributing to enhancing and hindering their incubation experience. It concludes that entrepreneurs reported incubated experiences were generally positive and mainly motivated by intangible resources provided during incubation and by social and relational aspects experienced during the incubation process. However, it also revealed negative aspects of the incubation experience, mostly related to the nonregular periodicity of mentoring sessions or shift of mentors, training events provided by external entities, and several issues while using services provided by external incubators' partners. Furthermore, it is concluded a set

of incubation services that should be prioritized to enhance the entrepreneurs' overall experience and development of their technology-based startups.

This research has several limitations. Firstly, by using semistructured interviews as the instruments for gathering qualitative and quantitative data about the entrepreneurs' incubation experience, the results were based on their subjective perceptions. Following ethnographic approaches to complement understanding the several dimensions inherent to the incubation experience would provide richer insights.

Secondly, the reduced sample size does not allow for concluding statistically significant results or if differences exist for the cases of virtually incubated and physically incubated participants. As mentioned in the methods section, identifying founders of startups that participate as tenants in incubators was a challenging task, and based on the available data, it is estimated that the present study only covers the perspectives of founders of 3.9% of the startups located in the metropolitan area of Porto. Moreover, it was only considered the perceptions of participants from four technology business incubators, founders of technology-based startups who were under or had recently finished their incubation. Additionally, most participants already had previous entrepreneurship experience, and most of their startups were in the early stage and seed or scaleup stages. Therefore, it is outside of the scope of this study to generalize the findings of this research if it was considered another methodological approach and a more significant number of participants. This research only aimed to find patterns regarding the perceived aspects that enhance and hinder the incubation experience of interviewed entrepreneurs. Biases may affect the data because most participants were tenants in the same incubator, offering limited implications about their overall experience.

Notwithstanding the mentioned limitations, this study's findings are expected to offer new insights to academics and practical contributions to incubation managers and other professionals running entrepreneurship programs. Moreover, these results can be used as a starting point for future research concerning the incubation experience and help authors to advance in the proposal of a unified conceptual model of a virtual business incubator by actively involving the perspectives of multiple stakeholders.

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Institutional Review Board Statement: Not applicable. In Portugal, any study in which sensitive topics are not addressed and which excludes tests performed on humans (for example, drugs) does not require prior approval from the ethics board. Even so, ethical procedures generally accepted in social research were applied. The empirical study was anonymous, confidential, and participation was voluntary. Each respondent gave informed consent for data collection and processing and future publication of results. Participants received information about (1) general study objectives, estimated time, and general participation characteristics; and (2) the right to refuse to participate in the study and to discontinue participation at any time. No personal information was requested, and the data considered to characterize the sample do not allow the identification of any participant. Thus, we believe that the rights of the respondents were assured.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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Appendix A

Table A1. Activity and number of startups/projects of the 20 incubators identified in the five municipalities of the metropolitan area of Porto.

Municipality Code	Business Incubator Code	Currently Active	Number of Incubated Startups/Projects
M1	BI1	No data available	No data available
	BI2	No	–
M2	BI3	Yes	No data available
	BI4	No data available	No data available
M3	BI5	No	–
	BI6	Yes	0
	BI7	Yes	No data available
	BI8	Yes	8
M4	BI9	Yes	13
	BI10	Yes	15
	BI11	No data available	No data available
	BI12	No data available	No data available
	BI13	No	–
	BI14	Yes	18
M5	BI15	Yes	>30
	BI16	Yes	No data available
	BI17	No	–
	BI18	Yes	30
	BI19	Yes	14
	BI20	Yes	>30

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