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**FATORES CRÍTICOS DO DESEMPENHO FINANCEIRO DE EMPRESAS
INCUBADAS**

**CRITICAL FACTORS OF THE FINANCIAL PERFORMANCE OF INCUBATED
COMPANIES**

[TRADUÇÃO INGLESA]

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CASCADEL

2022

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Advisor: Dr^o Ivano Ribeiro

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Fatores críticos do desempenho financeiro de empresas incubadas

Dissertação apresentada ao Programa de Pós-Graduação em Administração em cumprimento parcial aos requisitos para obtenção do título de Mestre em Administração, área de concentração Competitividade e Sustentabilidade, linha de pesquisa Estratégia e Competitividade, APROVADO(A) pela seguinte banca examinadora:



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Cascavel, 1 de julho de 2022

DEDICATION

To God, my creator and the greatest guide of my life.

To my dear wife Lara, Wonder Woman, loyal companion and undoubtedly one of the biggest supporters of my academic, professional, and personal growth, who never wavered in the face of difficulties and who always believed in this very special moment for me.

To my father and my mother, who in their great humility always supported me and gave me the strength to never give up.

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To everyone who in some way cheered for me to become a better student, a better person.

RESUMO

Silva, T. J. da (2022). *Fatores Críticos do Desempenho Financeiro de Empresas Incubadas*. Dissertação de mestrado, Universidade Estadual do Oeste do Paraná, Cascavel, PR, Brasil.

Este trabalho teve por objetivo identificar os fatores críticos do desempenho financeiro de empresas incubadas, no período de incubação, a partir da perspectiva das empresas incubadas. Trata-se de uma pesquisa quantitativa com caráter descritivo. A coleta de dados foi realizada por meio de questionário. Foram feitos 418 envios, sendo 204 para incubadoras via correio eletrônico, para que estas repassassem aos seus incubados, além de 214 para representantes de empresas por meio de aplicativo de mensagens em seus telefones pessoais. Os dados foram coletados no mês de março de 2022 e obteve-se um total de 86 respondentes. O estudo é relevante, tendo em vista que o conhecimento dos fatores críticos de desempenho possibilita a criação de políticas e estratégias de atuação por parte dos gestores das incubadoras com maiores índices de assertividade. A análise de dados foi realizada utilizando o método de Modelo de Equações Estruturais, por meio do *software* SmartPLS 3.0, tendo em vista a possibilidade de relacionar as diversas variáveis conjuntamente. Os resultados da pesquisa mostraram que o suporte gerencial e a facilidade de acesso a recursos financeiros e de financiamento proporcionados pelas incubadoras, influenciam o desempenho financeiro das empresas incubadas. Não foi possível confirmar que a infraestrutura física, o *network* empresarial e o vínculo incubadora-instituição de ensino e pesquisa influenciam o desempenho das empresas. Este estudo contribui à literatura ao apresentar os fatores críticos de desempenho financeiro pela percepção das empresas incubadas. De maneira prática, as incubadoras poderão basear suas estratégias de trabalho levando em consideração o que as empresas consideram como mais importante para o bom desempenho de seus empreendimentos.

Palavras-chave: Estratégia; Incubadoras de Empresas; Fatores Críticos de Sucesso.

ABSTRACT

Silva, T. J. da (2022). *Critical Factors of Financial Performance of Incubated Companies*. Master's degree dissertation, Western Paraná State University, Cascavel, PR, Brazil.

This study aimed to identify the critical factors of financial performance in the incubation period of companies from the perspective of incubated companies. This is available research with a descriptive character. Data collection was carried out by sending the data electronically to 204 incubators, so that they could pass on their incubators, as well as to 214 company representatives through a messaging application on their personal phones. The data were from 2022 month of March and obtained a total of 86 respondents. The study is relevant considering that the knowledge of the critical factors to enable the creation of policies and performance of action by the managers of the incubators with the highest assertiveness indexes. Data analysis was performed using the Structural Equation Model method through SmartPLS 3.0 software, in view of the possibility of relating several variables together. Financial survey results and financial and financial support firms facilitate access to finance provided by finance firms for financial performance. It was not possible to guarantee that the physical infrastructure of the business network and the link in the teaching and research institution promote the performance of companies. This study contributes to the literature by presenting critical performance factors through the perception of incubated companies. The form of practice in incubators can base their work strategies in consideration of what is considered most important for the good performance of their ventures.

Keywords: Business Incubators; Critical Success Factors; Strategy.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANPROTEC Inovadores	Associação Nacional de Entidades Promotoras de Empreendimentos
AVE	Average Variance Extracted
SEM	Structural Equation Modeling
CC	Composite Reliability
VIF	Variance Inflation Value
ERI	Education and Research Institution

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1 INTRODUCTION

Many are factors related to the financial performance of an incubated company. Access to financial resources, physical structure, and support in managerial decisions are some of them, and knowing them in depth is part of the continuous improvement process (Menezes & Vieira, 2022; Caetano, 2022; Alberto & Rodrigues, 2022). Rockart (1978), in his seminal study, highlights that these "critical success" factors are limited, and providing satisfactory results, may ensure good competitiveness for any organization.

Amongst these factors, some are determinants for the success of the partnership between incubators and incubated companies. The incubator can improve the competitive advantage of these companies, providing resources such as organizational, physical, and human (Scarabelli, Sartori & Urpia, 2022). These, in turn, impact infrastructure, networking, and quality of services, key issues for early-stage businesses (Bianchi, Wojahn, & Parisotto, 2020; Godeiro, Dantas, Silva, & Celestino, 2018).

Incubators also provide an environment that enables the development of the incubated companies' innovative aptitudes, mainly by having knowledge and capabilities to help in mentoring and financial support, due to partnerships with fostering institutions and governmental support from the State, in addition to institutional support from higher education institutions, technical and technological support, as well as process management and follow-up (Borges & Bueno, 2020; Carmo & Rangel, 2020).

Business incubators were created to assist enterprises before their birth, going through the entire maturation process until their launch in the market. The origin of this business model dates back to 1959, in New York City, the United States. In Brazil, the first experiences were only reported in the late 1980s. The most common types of incubators in Brazil are traditional ones, which house companies from traditional sectors; mixed ones, which allow both companies from technological and traditional sectors; social ones, which aim at incubating popular cooperatives and associations; and technology-based incubators (National Association of Entities Promoting Innovative Enterprises [ANPROTEC], 2016).

A technology-based incubator houses companies that have products or services generated from technological processes and have high added value. One of the main advantages of this type of enterprise is the capacity to develop the local and regional environment, i.e., the commitment of business incubators goes far beyond that signed with the

incubated companies and with the development of products and technological solutions, often covering society in general (Bianchi et al., 2020).

In Brazil, Law 10.973/2004 was created, known as the Innovation Law, which provides incentives for innovation and scientific and technological research in a productive environment. The main objective of this law is to stimulate the creation of specialized and cooperative innovation environments (Brazil, 2004). Subsequently, Law 13,243/2016, the Legal Framework for Science, Technology, and Innovation was sanctioned, which provides for the stimulus to scientific development, research, scientific and technological training, and innovation. This law brought greater flexibility and autonomy to technological innovation environments, defining the area of action of each of the actors involved (Brazil, 2016).

In several countries around the world, the business incubation system has proven to be an efficient way to assist startups, showing that incubated companies have a high level of performance compared to companies that are not incubated (Almeida, Pinto, & Henriques, 2021).

In Chile, seventeen of the twenty registered incubators relate the determinants of success, to the number of incubated companies and projects, as well as the number of employees hired (Ramírez, Moreno, Améstica, & Silva, 2019). In Trinidad and Tobago, there is a growing acceptance that incubation is a tool with the valid potential to promote business development and innovation, although most incubators are in their early stages (Allahar & Brathwaite, 2016).

In both Australia and Israel, a collaboration between incubated companies, graduate companies, and incubator management provides an increase in technology and market knowledge, and highlights the role of universities as a source of new ideas and in the development of new products and processes (Rubin, Aas & Stead, 2015). In Saudi Arabia, knowledge sharing and knowledge gathering have positive effects in the incubator environment leading organizations to achieve their goals in a faster way (Binsawad, Sohaib, & Hawryszkiewicz, 2019).

In Thailand, incubation programs are one of the main policy mechanisms to support innovation, and business incubators housed in university environments act as intermediaries with the industrial sector to provide interactive linkages and promote the effective use of Research in universities (Wonglimpiyarat, 2016). In Nigeria, professional assistance in business and business management are key factors for the success of incubated companies, thereby promoting local and regional entrepreneurship (Iyortsuun, 2017).

In China, incubator development has a significant impact on regional innovation performance, and also identified communication infrastructure as an important moderator of the relationship between incubator capabilities and regional innovation performance. Private ownership influences regional economic development, whereas state-owned incubators do not influence the regional economic convergence process (Wang et al., 2020).

Thus, knowing the critical performance factors from the perspective of incubated companies contributes to the development of strategies that provide a more assertive service to this public, which is the reason for the existence of this enterprise. One must also emphasize that interest in the theme arose from the study conducted by Silva (2010), who studied the determining elements in the performance of incubated technological companies in Brazil. The current study incurred due to adaptations in the research instrument related to the current time and geographical location.

1.1 RESEARCH PROBLEM

Incubation of companies may prove to be a relevant element in their performance, aiding in the development of products, generating jobs and boosting sales and consequently, profitability (Amaral & Neto, 2020). The commitment of the partners, the technical capacity of the team and the market opportunities are also highlighted as relevant factors for the success of the ventures (Castro & Silva, 2017).

The incubator manager has a primordial role, due to his ability to deal with several tasks, solve setbacks, develop enterprises, assume responsibilities and face limiting situations of his leadership (Silva, Zonatto, & Hollveg, 2022). In addition, the manager can contribute through training, courses, and consulting. The greater the performance of managers, both ahead of the incubators and in the business world, the greater the assistance and networking activities at the incubator will be (Maciel, Feitor, Gurgel, & Gurgel, 2022). Managers who do not have an entrepreneurial profile or have it in a more timid way, weaken the access of the incubated to other business networks, as well as prove less efficient in training and in the formation and continuation of partnerships (Camarero, 2017).

The incubator plays a fundamental role in the development of enterprises in their initial phases, especially by offering resources such as training, increasing social capital, the network of contacts and, when applicable, legitimacy by adding the name of the Higher Education Institution (HEI) to which the incubator belongs, besides having a fundamental role in stimulating entrepreneurship, contributing to regional development through the generation

of jobs and retention of intellectual capital. The incubator provides customization in attendance, the development of infrastructure and technical knowledge and the network of contacts, which enable the exploration of market opportunities, thus reducing threats from competitors (Treptow et. al., 2019; Gomes & Marcondes, 2016).

Business incubators have shared environments that can be enjoyed by all incubated companies. Free access to these environments is a differential for small companies, considering the high cost of acquisition and capital tie-up. This infrastructure is formed by meeting rooms, cafeterias, libraries and auditoriums, in addition to laboratories with access to different types of technologies, commonly found in technology-based incubators (Bruneel, Ratinho, Clarysse, & Groen, 2012).

Lalkaka (1996) highlighted, in his seminal study, that it is essential for the success of newly incubated companies, the formation of relationship networks, whether institutional or among the entrepreneurs themselves. The strategic planning for the long term, as well as the possibility of fomentation and financing by means of incubation programs, are a differential for the success of companies.

The performance of technology-based business incubators is important for local and regional economic development, helping to reduce company mortality, create and improve new technologies, and expand a market with a high degree of innovation (Wolniak, Grebski, & Skotnicka-Zasadzień, 2019).

The greater the knowledge about the factors affecting the business, whether in a micro or macro environment, the better the decision-making process will be, whether at the strategic, tactical, or operational level. It is necessary, therefore, that the strategy be robust and efficient, enabling the results to be better than those of the competition (De Winnaar & Scholtz, 2020).

The business decisions made by the managers of companies, have a great impact on the future of organizations, either in the medium or long term. To this end, it is essential to identify the problems, analyze the options, define all the stages of strategic planning and have the greatest possible knowledge of all areas of the organization to make better decisions (Remenova & Jankelova, 2019).

Starting from this bias, it is considered that in the literature there are several studies evaluating and listing the services provided by business incubators, however, mostly answered by the incubators' managers. Corroborating, Siddiqui, Al-Shaikh, Bajwa, and Al-Subaie (2021) presented the critical factors of performance by incubators: support services,

network support, financial support, economic development, and the success of companies that finished the incubation period.

Santisteban, Mauricio, and Cachay (2021) demonstrated that incubators seek to offer greater knowledge absorption capacity, as well as to promote an innovative and entrepreneurial culture, in addition to customer satisfaction by increasing the quality of products and services offered. Thus, to know the factors related to the financial performance of incubated companies is essential to meet demands in the incubation period and for the development of policies and strategies by the incubator's managers.

1.1.1 Research Question

What are the critical factors of financial performance from the perspective of incubated companies in Brazil?

1.2 OBJECTIVES

1.2.1 General

Identify the critical factors of financial performance from the perspective of incubated companies in Brazil.

1.2.2 Specifics

- a) Characterize the companies incubated at technology-based incubators;
- b) Measuring the performance of incubated companies, as of their managers' perception of performance;
- c) To identify, in order of relevance, the critical factors of financial performance during the incubation period, from the perspective of incubated companies.

1.3 JUSTIFICATION AND CONTRIBUTION OF THE TECHNICAL PRODUCTION

For an incubator to perform work that meets the needs of entrepreneurs, it is necessary to understand what their greatest difficulties and future perspectives are. Knowledge of these

factors will enable the creation of actions that stimulate new businesses and foster the culture of entrepreneurship (Yuan, Hao, Guan, & Pentland, 2022).

From a practical standpoint, this study is justified due to the importance that a business incubator has in economic development, whether in the generation of value and income through the creation and improvement of technologies, as well as in the generation of jobs and taxes (Gallon, Ensslin, & Ensslin, 2011).

From an academic standpoint, this research is justified considering the gap in the literature concerning critical performance factors from the perspective of incubated companies, given that most studies encountered focus on incubator managers (Cruz, Rezende & Santos, 2022).

1.4 DISSERTATION STRUCTURE

This study is divided into 5 chapters. Chapter 1 contains the introduction, which discusses the origin of the critical performance factors model, the technological base incubators, as well as their advantages and legal aspects, research gap, problem and research question, justification, and objectives: general and specific. Chapter 2 deals with the theoretical referential, which supports the ideas presented and is subdivided into five subsections: managerial support, entrepreneurial network, physical infrastructure, incubator/education, research institution bonds, and finally, ease of access to financial resources and financing. Chapter 3 presents the methods of data collection and analysis of this research. Chapter 4 presents the results of this research. Chapter 5 presents the discussion of the results, and finally, chapter 6 the conclusions, as well as the study's limitations and suggestions for future research.

2 THEORETICAL AND PRACTICAL REFERENCES

Critical success factors are defined as the characteristics and competencies required in certain key areas of the organization, which directly influence the success or otherwise of the ventures. In other words, they are resources that, when well managed and executed, can make organizations achieve their goals (Blok, Thijssen, & Pascucci, 2017).

Success in the business world can be understood as a set of favorable results from a sequence of attempts, it can also be considered as obtaining greater profits for the company, or adding value to its products. There are several ways for a company to achieve success, however, being in an incubator may accelerate the attainment of these objectives (Evangelista, 2010).

A company incubator is an institution created to benefit all the players involved, be they employees, managers, or entrepreneurs, besides the community itself. For this institution to be successful in its mission it is necessary to manage the actions developed by the entrepreneurs. Thus, knowing the critical factors of incubator performance becomes essential for the proper planning and execution of these actions (Carmo & Rangel, 2020).

The role of the incubator manager goes beyond the performance of administrative and routine tasks. Managers must be seen as collaborators and partners of the incubated companies, both in the organizational and business domain. Support is offered in recommendations to policy and professional decisions, in addition to the formulation of performance measures and monitoring systems that focus on processes and not just results (Kakabadse, Karatas-Ozkan, Theodorakopoulos, McGowan & Nicolopoulou, 2020).

To obtain performance in the initial activities of a business incubator, one must take into account the physical infrastructure of the site, as well as the marketing strategies adopted to promote the venture. The incubator's main objective is to create a business incubator that can provide the necessary support for the incubation process. The assistance in the preparation and implementation of strategic planning is a fundamental factor in the success of incubated companies (Ortigara, Grapeggia, Juliatto, Lezana, & Bastos, 2011).

In a study conducted concurrently in two business incubators in the United States of America and Poland, incubated companies assigned a high priority to some factors, which would greatly improve the quality of services provided by incubators: increased financial benefits to the generation of new jobs; tax exemption for new companies, increased

specialized legal technical support for intellectual property protection and in patent registration and protection, more help with business management and accounting, and a larger number of students and faculty working together with the companies (Wolniak, Grebski, & Skotnicka-Zasadzien, 2019).

The younger and more inexperienced the entrepreneur is, the more he or she uses the resources offered by business incubators, this is the result found in a study conducted in Romania in the year 2017. In this study, some of the main factors that entrepreneurs value most when incubating their companies were highlighted, including the quality of human resources, the opportunities for product creation and development, the proximity to investors, the network of contacts and mentoring, the exchange of experiences between entrepreneurs, the proposition of coherent values and business models, and the post-incubation support (Ceașu, Marquardt, Irmer, & Gotesman, 2017).

In another study conducted in the European Union in 2012, the physical infrastructure was highlighted as an essential factor for incubated companies, which generally consists of reception and office services, parking, and a cafeteria or snack bar. Besides the physical infrastructure, the study pointed to the managerial support offered to incubated companies as a differential factor, employing training courses, workshops, and seminars. Easy access to the network of contacts also appears as being essential, mainly since there is the possibility of consulting several specialists and people with greater experience in different business areas (Bruneel et al., 2012).

Practically the same results could be visualized in Denmark in 2016. After the researchers applied a questionnaire using the Likert scale method, which was answered by 100 people in charge of incubated companies, the result was the five factors that, in the vision of entrepreneurs, are considered most important when incubating a company: the network of contacts was considered the most important factor in the vision of entrepreneurs, followed by the support offered to the business, whether in the legal, administrative or accounting areas. In addition to the courses offered in the various areas. Physical office facilities and the experience of incubator managers complement the list (Monsson & Jorgensen, 2016).

Another factor that determines the growth of an incubated company is the ratio of the size of the company, relative to that of the incubator. Smaller companies with a smaller staff have a greater chance of success and profits when they are housed in larger incubators, however, companies with a larger number of employees are less likely to profit from the greater amount and diversity of resources offered by large incubators. Companies operating

with large technologies also require a larger and specific number of resources, which are not always possible to find in smaller environments (Klingbeil & Semrau, 2017).

Corroborating the results found, Lalkaka (1996), in his seminal study, identified several success factors of technology-based incubators:

- a) Establishing goals and selecting sponsors;
- b) Creation of links and professional network;
- c) Planning of the physical spaces, to stimulate creativity and innovation;
- d) Leverage policy and legal support;
- e) Building a dynamic management team;
- f) Selection of enterprises most likely to survive and grow;
- g) Adding value by offering quality services to users;
- h) Availability of funding for the incubator and the incubated companies;
- i) Performance monitoring and results evaluation;
- j) Strategic planning for the future.

The development and growth of incubated companies occur as of efficient and effective management of incubators, an agent responsible for the intermediation between entrepreneurs and the insertion of their services and products into the consumer market. The critical performance factors listed above are essential for this insertion to occur satisfactorily and to last as long as possible. Both incubator managers and entrepreneurs know how important it is to succeed in these key points. The opposite may lead to the organization compromising, thus failing to meet its goals and objectives and, consequently, failing in its mission (Binsawad, Sohaib, & Hawryszkiewicz, 2019).

2.1 MANAGEMENT SUPPORT

The success of a company depends on how well it is managed. The process of managing encompasses steps such as planning, organizing, and controlling its resources, whether they are personnel, financial, or material. The manager of a company must contribute so that everything happens satisfactorily, making the company reach its objectives, remaining as long as possible in the market, and generating as much profit as possible (Gomes & Marcondes, 2016).

Most technology-based companies have their corporate board formed by entrepreneurs who have, as their main knowledge, the technical aspect, resulting from the area of knowledge

in which they operate. Thus, the entrepreneur seeks to focus his attention on the development of his services or products, postponing management issues to a later time (Ramirez et al., 2019).

Thus, the company's management may be compromised. The search for a business incubator is one of the alternatives to mitigate this insufficiency of knowledge, considering that one of the services offered by incubators is the support provided in managerial areas, from the elaboration of a good business plan to the teaching of management tools and processes, which are indispensable for the success of the organization (San Martin, Lunardi, & Dolci, 2021).

Given this, it is assumed that managerial support is one of the factors that can be determinant of the success of an incubated company. Based on this argumentation, hypothesis 1 originated.

H1 - the management support offered by incubators positively influences the performance of incubated companies.

2.2 NETWORK EMPRESARIAL

The success of a company can be directly related to the relationships formed and established in the business context. Developing a network of professional contacts and cultivating relationships with the right partners can be an excellent way to boost the company's positive results. Thus, the business network becomes an extremely important artifice that, if used properly, can generate a competitive advantage for companies (Cruz, Pimenta, Carvalho, & Maciel, 2016).

A well-structured network of contacts is essential for managers and entrepreneurs to exchange professional experiences, whether in the commercial, administrative, marketing, or technical areas, thus allowing the company to project itself in the labor market. However, this relationship needs to be developed as a two-way street, so that this exchange of experiences is favorable to all involved. The sharing of information allows managers to improve their processes and even compare their performance with the performance of other entrepreneurs (Antunes, Araújo, & Almeida, 2020).

However, the entrepreneur must consider that building a network of contacts is not something simple and requires a lot of planning and dedication. An efficient and effective entrepreneurial network goes far beyond adding as many people as possible to their social networks, it is necessary to build expressive content, interaction with contacts, and relevant

and true links, in which the entrepreneur must maintain frequent contacts with other entrepreneurs, thus ensuring a stable and continuous relationship (Rubin et al., 2015).

One of the benefits provided by incubators to incubated companies is precisely the fact that they are close to each other, sharing shared physical spaces, and maintaining contacts, often daily. Given this, it is assumed that the entrepreneurial network is one of the factors that may be determinant of the success of an incubated company. Based on this argumentation, hypothesis 2 originated.

H2 - the entrepreneurial network offered by incubators positively influences the performance of incubated companies.

2.3 PHYSICAL INFRASTRUCTURE

Starting a new enterprise usually demands a very high financial outlay from the owners. To open a company, there is a whole bureaucratic and legal procedure that, depending on the economic situation of those involved, often makes it unfeasible to open the business. Besides these issues, companies whose products and services derive from and depend exclusively on technological processes demand high initial equipment acquisition costs. Building and equipping state-of-the-art laboratories are not very difficult and can exceed the figure of millions (Feil & De Conto, 2018).

One of the advantages that a business incubator provides to its incubates is the possibility for them to enjoy several shared spaces. Depending on the type and model of the incubator, these may vary, such as office services, receptionist or secretary, cleaning service, toilets and changing rooms, meeting rooms, video conferences, libraries, snack bars, restaurants, concierge, surveillance, computer labs, among other facilities. Furthermore, there is the possibility of using laboratories in specific areas with equipment acquired for this purpose, or yet, the use of laboratories at universities and research centers, depending on the partnerships established by incubators with the public or private sector (Raupp & Beuren, 2011).

In some incubators, there is also the possibility of using and enjoying this physical infrastructure for a certain period, even after the incubation period. This certainty and possibility allow the entrepreneur to develop his activities with a little more tranquility, directing his efforts to the development of his products and services, until they are at maturity, yielding the expected financially (James & Maria, 2017).

Thus, it is assumed that the physical infrastructure is one of the factors that can be determinant of the success of the incubated company. Based on this argumentation, hypothesis 3 originated.

H3 - the physical infrastructure offered by incubators positively influences the performance of incubated companies.

2.4 LINK INCUBATOR AND TEACHING AND RESEARCH INSTITUTION

It is undeniable that information and knowledge are the most expressive tools in driving economic development. One of the goals of an educational institution is precisely to act in the creation and dissemination of knowledge and science, components capable of promoting transformations with positive real results and impacts on society (Waizbort, 2015).

The connection between these educational and research institutions with companies happens as a consequence of the understanding of the relevance that this partnership can result in. The former fulfilling its role as producer and propagator of knowledge, leaving some of the theoretical bases taught in the classroom and practically applying all this knowledge in the labor market, and the latter benefits from this know-how to establish and improve innovative products and processes making it more competitive (Sun, Cheng, Lu & Hu, 2020).

Most Brazilian incubators are connected to some kind of teaching or research institution. Enterprises established in incubators have greater chances of success, given the strong driving mechanism for the development of the small entrepreneur. Companies should take advantage of the opportunities offered in these knowledge production environments to obtain some kind of competitive advantage (Feil & De Conto, 2018).

Thus, it is assumed that the link between an incubator and an educational and research institution is one of the factors that can be determinant for the success of the incubated company. Based on this argumentation, hypothesis 4 originated.

H4 - the bond between an incubator and teaching and research institutions positively influences the performance of incubated companies.

2.5 EASY ACCESS TO FINANCIAL RESOURCES AND FUNDING

The financial return from starting a business is not immediate. The entrepreneur needs to work hard, patiently, and with dedication for a long time to become independent and obtain a return on his investment. In most cases, this time-lapse may take months or even years until

the enterprise reaches a certain degree of maturity, which makes it independent to the point of no longer needing to use third-party resources, reaching a point of balance between income and expenses, thus being able to walk with its legs (Castro & Silva, 2017).

Therefore, there are few cases in which the entrepreneur does not need to use some kind of financial leverage to boost his company, either through loans or financing. Many financial institutions and development agencies make credit lines available for micro and small entrepreneurs. However, besides the amounts being considered insufficient, the bureaucracy and the impositions made by financial institutions make it unfeasible to contract this type of concession (Vanderstraeten, Witteloostuijn & Matthyssens, 2020).

Every enterprise needs financial contributions or capital injection, either to start their activities, to overcome critical periods, or even to make investments that can enable companies to achieve goals and objectives towards growth and financial independence. A company's need for capital contribution can be divided into three stages. The first relates to initial funding, a stage in which the company needs financial resources for analysis, validation, and feasibility of launching its product or service. Expansion financing is the stage that follows the initial one; it is at this stage that the company needs to expand its possibilities by promoting its growth. Finally, acquisition financing is the moment by which the company aims to acquire machinery, facilities, or even other companies (Wang et al., 2020).

One of the characteristics of incubators is to promote local and regional economic development. This position brings visibility that provides an opportunity for a large number of partnerships with the most diverse support institutions: municipalities, universities, third sector entities, and funding agencies, among others. In this way, there is a great possibility of incubated companies obtaining this type of assistance more easily than they would if they were not incubated, assistance which is fundamental for the development of companies (Wonglimpiyarat, 2016).

In this way, it is assumed that ease of access to financial resources and funding is one of the factors that can be determinant of the success of an incubated company. Based on this argumentation, hypothesis 5 originated.

H5 - The ease of access to financial resources and funding provided by incubators positively influences the performance of incubated companies.

Considering the hypotheses presented, which scrutinize critical performance factors for incubated companies, found in literature, both international and national, the research was conducted using an instrument containing questions based on the constructs, to test the hypotheses proposed herein.

3 RESEARCH METHOD AND TECHNIQUES

The methodology is a set of procedures and rules used by a particular scientific method. The method is the way of proceeding along a path. In science, methods are the basic tools that initially organize thinking into systems and orderly outline the scientist's way of proceeding along a path to reach a goal (Richardson, Peres, Wanderley, Correia, & Peres, 2012).

3.1 RESEARCH DESIGN

From the standpoint of the problem approach, this is a quantitative study, since it is characterized by the use of quantification in the data collection stages, as well as in the treatment of this information through statistical techniques (Flick, 2013). In the quantitative method, researchers use large samples and numerical information.

From the perspective of objectives, this is a descriptive study, which delimits what it is and addresses four aspects: description, recording, analysis, and interpretation of current phenomena, aiming at their functioning in the present. A descriptive study describes a phenomenon or situation through a study conducted in a particular space-time or the simple description of a phenomenon (Creswell & Clark, 2013).

In addition, statistical inference methods are the most recommended to achieve the proposed objectives. In as much as objectives are concerned, the study has an explanatory nature since it intends to determine relations between variables, in this case, the hypotheses listed in the theoretical framework chapter, which are directly related to the success of incubated companies.

This study uses bibliographical and surveys research. The bibliographical research, or research of secondary sources, comprises the published bibliography related to the subject matter of the study, from loose publications, scientific articles, surveys, theses, and others, and aims to place the researcher in direct contact with everything that has been written about a given subject (Gil, 2002).

Survey research is characterized by the direct questioning of people whose behavior you want to know. Information is requested from a significant group of people about the problem studied, and then, through quantitative analysis, the conclusions corresponding to the data collected are obtained (Gil, 2002).

3.2 VARIABLES AND DATA COLLECTION INSTRUMENT

To research critical performance factors from the perspective of incubated companies, it was decided to apply an electronic questionnaire. This preference was because data collection is easier given the practicality of sending the instruments to respondents, as well as receiving their replies and subsequently, performing data analysis.

The variables were measured using a questionnaire adapted from Silva (2010). As a consequence, adjustments in meanings and suppression of variables were fundamental to the molding of the research instrument. The original questionnaire has thirty-six questions divided into introductory questions, seven blocks corresponding to the variables, and three blocks corresponding to performance. For this research, the first part containing introductory questions was used, aiming to draw the respondents' profiles and, in a way, get them closer to the questioner, according to Appendix A. The independent variables and the dependent variable, as well as their measurement mode, will be listed and explained below:

1) The managerial support offered by incubators to incubated companies is a fundamental and indispensable support to entrepreneurs at the beginning of their activities because not all entrepreneurs possess management capabilities and skills. Therefore, the role of the incubator becomes indispensable for the initial development of the business. This variable was measured by applying five questions on a five-point Likert scale.

2) The business network provided to entrepreneurs upon setting up at an incubator is a differential for the company. The professional contacts established during this period may determine future successful partnerships, besides the present mutual learning. This variable was measured by applying four questions with a five-point Likert scale.

3) The available physical infrastructure is not only limited to the physical facilities, such as meeting rooms, laboratories, cafeteria, and parking lot, but also the joint labor of cleaning and surveillance services, among others. Being at the beginning of an activity, many companies do not have sufficient financial resources to acquire and maintain such facilities, allowing the company to spend its resources on the final activities of its area of activity. This variable was measured through five questions, two of them using a five-point Likert scale and three of a percentage nature.

4) The link between the incubator and teaching and/or research institutions, such as colleges, universities, or research centers is a great differential for the entrepreneur. The fact of being linked to an institution whose main objective is the creation and propagation of

knowledge propels the companies' success. This variable was measured utilizing two questions with a Likert scale of five points.

5) The ease with which incubated companies can obtain access to financial resources and financing due to the fact of being incubated may be crucial for the development of the business in the initial stages. There are several credit lines offered in partnership with these institutions and the use of this financial leverage is one of the advantages offered by incubators. This variable was measured using two questions with a five-point Likert scale.

The measuring of corporate performance was conducted as on the perception of entrepreneurs concerning financial aspects, using the questionnaire adapted from Maciel (2020), the performance dimension being related to the five independent variables utilizing seven questions with a five-point Likert scale and this is what this research proposes to answer.

3.3 DATA COLLECTION PROCEDURE AND SAMPLE

Data collection took place using an electronic questionnaire which was sent to company managers or their legal representatives covering five dimensions, in addition to the dependent variable, performance, and considering critical performance factors under the perspective of incubated companies.

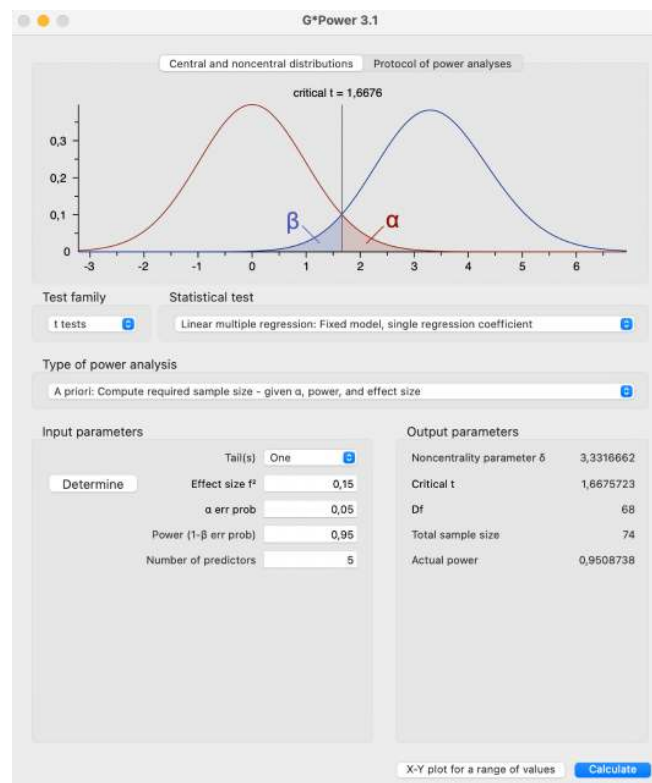
As with every data collection technique, the questionnaire demonstrates several advantages: reduction in application time, in addition to enabling the reaching of a larger number of people simultaneously; it enables the covering of a wider geographic area; access to replies occurs in a faster and more precise manner; there is greater freedom in replies and greater security in information content, given the certainty of anonymity on the part of the respondent; there is more uniformity in evaluation, given the impersonal nature of the instrument (Flick, 2013).

The questionnaires were sent to 204 incubators so that they might pass the instrument on to the incubated companies. Of this total, 7 incubators responded that there were no incubated companies at the moment and 9 responded that they would forward the questionnaire to the incubated companies. Furthermore, it was also sent to 214 company representatives using the Whatsapp® message application. After three weeks, a total of 86 answered questionnaires were obtained, which were the final sample of the research.

To estimate the power of this sample size, the software G* Power was used, which aims to perform sample calculations and high reliability. As can be seen in Figure 1, using a

median effect (f^2) of 0.15 with a significance level of 0.95 (β) and sampling error of 5%, for the questionnaire in question, which is composed of 5 independent variables, the minimum number for the sample was 74 respondents. Therefore, the number of 86 responses reached in the field research proved to be adequate for the tests to be carried out through Structural Equation Modeling.

Figure 1 - Sample Calculation



Source: Software G* Power v. 3.1 (2022).

3.4 DATA ANALYSIS PROCEDURES

In the research, five factors were analyzed (independent or grouping variables) and their relation with the performance of the companies (dependent or response variable). The response variable was measured using the perception of performance by managers of incubated companies.

As this is quantitative research, we opted for the use of Structural Equation Model Analysis (SEMA) using the SmartPLS 3.0 software. This method makes it possible to analyze the relationship between several variables jointly and allows for the weighting of a set of dependency relationships. The software in question is free and can be obtained at

<http://www.smartpls.com/cr>. The user needs to register and then download the program to a personal computer. The program itself makes available some resources in which it is possible to train and practice how the software works.

The SEMA is characterized as a multivariate statistical modeling technique, which is widely used in the Social Sciences and Humanities. It can be seen as a mixture of factor analysis and regression and is used given the possibility of building theories from repressed constructs, thus making it possible to build a structure that explains the covariance between the variables considered (Neves, 2018).

3.5 LIMITATIONS OF RESEARCH METHODS AND TECHNIQUES

The researcher must consider the pros and cons before planning the methodological strategies that will be used in the data collection process. Among the limitations to the use of the questionnaire, we highlight the considerable number of incomplete or incorrectly answered answers; the open questions that require more time from the respondent, technical and conceptual competence, logical reasoning, and writing skills; considering the absence of the researcher at the time of filling out the questionnaire, it becomes very complex to clarify any doubts regarding the wording of some questions, undermining the expected result; its universe of respondents is reduced since it is assumed the existence of a level of education compatible with the content of the proposed questioning; relative compromise of the fidelity of the answers recorded by the contact (Flick, 2013).

Moreover, there are limitations in the initial stage due to variable levels of induction as to the formulation that the questions suggest. Subsequently, there is little possibility for the researcher to be able to supervise and verify the veracity of the recorded responses and the circumstances under which they were written. If too many questions are asked, the person who is answering the questionnaire may get tired and not answer it completely or simply not provide reliable answers to finish quickly, if few questions are asked, the risk is to not ask clearly what is desired (Gil, 2002).

4 RESULTS

4.1 CHARACTERIZATION OF THE PARTICIPANTS

The five questions had the purpose of characterizing the respondents. In as much as the first question is concerned, respondents were questioned as to whether the incubator was linked to an educational and research institution. 87.2% answered affirmatively, while 12.8% answered negatively.

Regarding the degree of innovation, 32.6% consider their products to be classified as very high, 39.5% of the respondents classify them as high, and 26.7% as a medium degree of innovation. Only one response (1.2% of the total) rated their product as low innovation. The next question asks whether the company originated from a university research project. Most respondents said no, which represents 61.6%, while the other 38.4% answered yes.

Regarding the location of the incubator, the results are shown in Table 1. Considering that some companies had head offices in more than one municipality, the numbers are higher than the number of replies obtained. Due to a large number of cities, only the states were considered. We highlight that the great majority of the companies are located in the state of Paraná.

Table 1 - Respondents per state of the federation

State	Quantity
Paraná	61
Rio Grande do Sul	13
São Paulo	08
Rio de Janeiro	02
Ceará	01
Amazonas	01
Santa Catarina	01
Mato Grosso do Sul	01

Source: Survey results (2022).

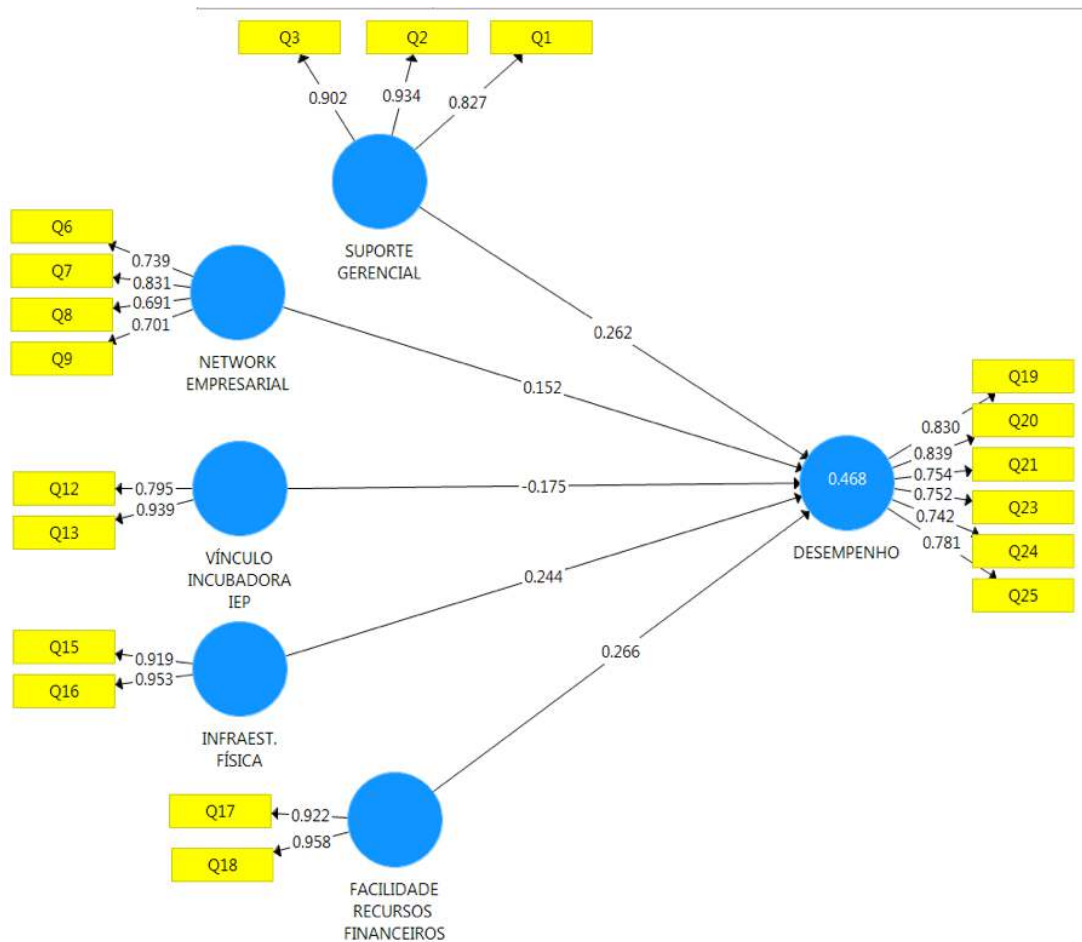
4.2 ANALYSIS OF THE MEASUREMENT MODEL

The first step was to apply the method for estimating the measurement model, which verifies the non-apparent relationship related to the observed variables. In the first analysis structure generated by the software, which included all variables, it was verified if the factor loadings of the observable variables had values greater than 0.7.

Factorial loadings greater than 0.6 indicate that the observed variables converge satisfactorily to form their respective construct (Hair, Hult, Ringle & Sarstedt, 2014). Thus, it was decided to exclude the variables that presented values below this threshold. About the construct, Managerial Support, the variables (questions) Q4 - the company seeks support in the management and commercial areas from universities and/or Teaching and Research Institutions close to the incubator, and Q5 - I believe that support in the management and commercial areas can improve the results of an incubated company, were excluded.

Despite Q8 - the company maintains relations with companies located at incubators in other regions, referring to the construct Entrepreneurial Network, being below 0,7, it was decided to keep it, because of being close to 0,7, and within the minimum of 0,6, as pointed out by Marôco (2014). Furthermore, variables Q10 - the company receives support in the product development process from the Teaching and Research Institution linked to the incubator, Q11 - cooperation (product development, product commercialization, fundraising, articulation In the case of the incubator, Q11 - cooperation (product development, product commercialization, fundraising, articulation, among others) occurs (or occurred) between the company and some Educational and Research Institution close to or linked to the incubator, and Q14 - what percentage of products or services offered by the company derives from some research that was developed at some Educational and Research Institution close to the incubator, referring to the construct Incubator and Educational and Research Institution Linkage. Finally, variable Q22 was suppressed - financial projections consider the possibilities of using own or third party resources, referring to the dependent construct, the Performance, generating the final analysis structure (Figure 2).

Figure 2 - final analysis model



Source: Survey results (2022).

Subsequently, the convergent and discriminant validity of the model was verified, as shown in Table 2. The discriminant validity aims to verify whether the measure under study is not unduly associated with indicators of different constructs. In this study, we used the Fornell-Larcker criterion to assess validity, which aims to compare the square roots of the Average Variance Extracted (AVE) values of each independent variable with Pearson's correlations between the variables. This discriminant validity points out where the latent variables are autonomous from each other (Hair, Hult, Ringle, & Sarstedt, 2014). As can be seen in Table 2, all AVE values are greater than the rest of the correlations, which demonstrates discriminant validity between the constructs.

Table 2 - Pearson's Correlation and Square Root of EVI

	Performance	Facility Finalcial Resources	Support Managerial	Infrastructure Physical	Network Enterprise	Vínculo Incubadora IEP
Performance	0.784					
Facility Resources Financial	0.477	0.940				
Management Support	0.399	0.197	0.936			
Infrastructure. Physical	0.457	0.413	0.328	0.742		
Network Enterprise	0.528	0.372	0.236	0.502	0.889	
IEP Incubator Connection	- 0.202	-0.017	0.053	0.093	-0.189	0.870
ALFA	0.881	0.871	0.866	0.861	0.733	0.699
CC	0.905	0.938	0.918	0.934	0.830	0.861
AVE	0.615	0.884	0.790	0.876	0.551	0.757
VIF		1.264	1.135	1.593	1.517	1.093

Note: * Bold diagonal values correspond to the square root of the AVE. Source: Research results, (2022).

Table 2 also shows the convergent validity of the constructs, which were analyzed through the internal consistency of the constructs, using Cronbach's Alpha (ALFA), Composite Reliability (CC), and Average Extracted Variance (AVE). Cronbach's Alpha ranges from 0 to 1, in which a value above 0.6 has internal consistency reliability considered satisfactory; the same situation is repeated for Composite Reliability, which must have values above 0.6 to be considered plausible (Hair et al., 2014). However, the AVE must be equal to or greater than 0.50, which means that the latent variable explains more than half of the variance of its indicators (Hair, Black, Babin, Anderson, & Tatham, 2009). According to Table 2, all constructs reached values greater than 0.50, thus achieving convergent validity.

The variance inflation value (VIF) is used to determine multicollinearity among the variables. The VIF measures the coefficient between all variables in the model and indicates the degree of correlation between them. A VIF value of 1 indicates that there is no multicollinearity between the variables. A VIF value between 5 and 10 indicates a high correlation between the variables (Hair et al., 2009). It is desired that each variable has its strength of relationship with the dependent variable and that the VIF value is as close to 1 as possible. In Table 2 it is possible to verify that all VIF values are within the acceptable limit, which indicates low multicollinearity between the variables.

4.3 HYPOTHESIS TESTS

Structural Equation Model (SEM) analysis demonstrates one or more linear regression equations, which depict how the dependent variables need the independent variables. Their

coefficients are called Path Coefficients and demonstrate the strength of this relationship, i.e. how much one construct is related to another. Values range from - 1.0 to + 1.0. Values near 0 indicate weak relationships, while values near + 1.0 indicate a positive relationship, and values near - 1.0 indicate a negative relationship (Hair, Babin, Money & Samouel, 2005).

For the Path Coefficient to be accepted, it is necessary to test the relationship between two constructs and perform significance tests. The SmartPLS 3.0 software calculated the t-value and the p-value. Regarding the t-value, values above 1.96 are considered significant at 5% or 0.05, this means that the constructs are related. Regarding the p-value, these should be below 0.05, there is the significance (Hair et al., 2014).

Except for the relationship between the Incubator-Teaching and Research Institution Link with the dependent variable, which presents a Path Coefficient value of - 0.175, all other correlations presented positive values (Table 3). It is noteworthy that only the relations between the dependent variable, Performance, and the independent variables, Ease of Access to Financial Resources and Funding and Managerial Support, presented p-values below 0.05 supporting hypotheses H5 and H1.

Table 3 - Path Coefficient, T-value and P-value

Variables	Path Coefficient	Value <i>t</i>	Value <i>p</i>
Management_Support ---> Performance	0.244	2.216	0.027*
Network_Enterprise ---> Performance	0.262	1.868	0.062
Infrastructure_physical ---> Performance	0.152	1.275	0.203
IEP Incubator Connection ---> Performance	-0.175	1.736	0.083
Facility_Financial_Resources ---> Performance	0.266	2.282	0.023*

Note: * Significant values at 95% level. Source: Survey results (2022).

5 DISCUSSION OF RESULTS

Confirming Aguiar, Kocourek, Oliveira, and Rodrigues (2019), the role of the University highlights the scientific and technological diffusion of the Teaching and Research Institutions, transferring technologies, and knowledge, and assisting in research. Like Omaira (2018), the University should contribute to the management of technological knowledge, as well as to the improvement of organizational processes, encompassing human interaction, the development of communication at both formal and informal levels, in addition to the creation and development of a network of contacts between people and organizations.

Another relevant fact concerns the degree of innovation of the products developed by the companies since more than 72% of the companies declared that they develop products with a high or very high degree of innovation. If the average degree of innovation is also taken into consideration, this percentage approaches 99% of the respondents. This demonstrates the advancement of technology and the ever-increasing creation of human needs, which drives companies to develop increasingly technological products.

Corroborating Araújo, Bonani, Ramalheiro, and Barboza (2017), changes in consumer behavior are constant and companies need to adapt to the most varied technologies that appear in the market. The life cycle of products has become shorter, making them obsolete faster than they were a few years ago. This fact can cause a drop in the company's profitability, as well as compromise the insertion of these products, and of the company itself, in the foreign market.

This situation, inclusive, may explain why most companies have not originated from a university research project, in which many people choose not to study undergraduate courses, and therefore can direct their efforts to the generation of technical and specific knowledge that can be used in the entrepreneurial field.

It is noteworthy that 70% of the responding companies are located in the state of Paraná. This situation may have occurred as a result of the fact that more than half of the requests to answer the questionnaire were sent via an instant messaging application to those responsible for the companies incubated in a technological park located in western Paraná. This direct and personal contact approach reaches the respondent in a faster way, making it easier for the questionnaire to be answered. The situation was not observed in the e-mails sent to the incubators affiliated with ANPROTEC, where only 4% responded informing that they would be forwarding it to the companies.

The proposed model was tested and proved to be robust to explain the financial performance of companies based on the five proposed constructs. As seen in Figure 2 and, after removing questions Q4, Q5, Q10, Q11, Q14, and Q22, in Figure 3, the model was able to explain 44.7% and then 46.8% of the companies' financial performance considering their managers' perception of performance.

As presented in the results section, it was possible to confirm hypothesis H1 - the managerial support offered by incubators positively influences performance. This can be interpreted by the growing need with which companies require specialized managerial advisory services, concentrating greater efforts by managers on technical issues of the business.

This is confirmed by Blank (2020), who concludes that the support in administrative management and the mentoring offered help startups overcome the initial responsibility of starting a company, increasing the chances of survival. He also describes that the incubator is an ideal place for startups to develop and expand their business, given all the support offered. In addition, the knowledge and experience of the founders and other actors in the incubation process help sustain the competitive advantage that these institutions offer (Bobsin, Petrini, & Pozzebon, 2019).

It was also possible to confirm hypothesis H5 - the ease of access to financial and financing resources provided by incubators positively influences company performance. Due to the speed with which technologies become obsolete, it is fundamental that the company has resources for investments. Be it in the development and improvement of new products or services, training, and development of personnel, or even acquisition and expansion of materials and equipment.

Considering that the incubated companies are at the beginning of their activities, it is natural that resources, especially financial ones, are limited. Thus, being eligible for financing with reduced rates and less bureaucratization can become a competitive differential, leveraging the business and increasing the chances of success of the venture (Cohen, Bingham & Hallen, 2019).

Guerrero, Ayup, Granados & Coll (2020), state that financing for the creation and development of products, services, or start-ups is relevant for the company to stay in business. However, it is not the number of financial institutions associated with incubators that makes the difference, but rather the availability and easy access to these resources.

On the other hand, hypothesis H2 - entrepreneurial networking offered by incubators positively influences company performance - could not be confirmed. As incubators are a

mostly shared workspace, the advent of covid-19 after February 2020, made it necessary for people to remain in a situation of distance and isolation, working remotely. This situation lasted for approximately two years, a period that coincided with the data collection for this research. As a result of the decrease in face-to-face meetings between those responsible for the companies within the incubator, the entrepreneurial network may have been harmed.

However, the authors suggest different results about this theme. The incubator can be a great ally for companies by efficiently promoting the approach of entrepreneurs, and improving the network of contacts according to the companies' characteristics and lines of business (Wei, Zang & Chen, 2021). The advantage of incubators is related to the gain of scale in the actions of formation, coordination, and governance of the group, promoting contacts between entrepreneurs and helping each other in times of crisis (Antunes, Castro, & Mineiro, 2021).

The hypothesis H3 - the physical infrastructure offered by incubators positively influences the performance of companies - also could not be confirmed. This may have occurred because most of the companies questioned develop products with a relevant degree of innovation and often only need a computer and software to develop their products. Again, this issue may be related to the advent of the Pandemic. Remote work has become a reality and many people are developing their work activities at a distance, which may cause the physical spaces offered by incubators to lose relevance in the evaluation of the companies representatives.

In counterpoint, Escobar, De-Pablos-Heredero, Montes-Botella, Jiménez & García (2022), concluded that the different tools and services offered by incubators during the isolation period were fundamental for the survival of the entrepreneurial ecosystem, promoting the advancement of the productive chain. Similarly, Verma, Verma & Kumari (2022), highlight that the pandemic brought great threats, but also opportunities for growth and the application of action plans to assist in maintaining the livelihood of startups, becoming fundamental during the pandemic.

It was also not possible to confirm hypothesis H4 - the link between an incubator and an educational and research institution provided by incubators positively influences the performance of companies. In contrast to the result obtained in the characterization of the respondents who affirmed that 87% of the incubators were linked to an education and research institution, perhaps more effective actions to aid entrepreneurial growth are lacking. With the advance in technology and the fact that information and knowledge are increasingly

accessible in virtual media, companies may be progressively becoming more independent from the knowledge transmitted by these institutions.

Contrasting the results, Redondo, Camarero & Van Der Side (2021), concluded that teaching and research institutions complement the transfer of fundamental resources for the exchange of knowledge, as well as for the development of entrepreneurial spirit and the generation of innovation. Education and research institutions are key players in entrepreneurial development, assisting business incubators in the innovation process (Lian, De-Pablos-Heredero, & Montes-Botella, 2021).

6 CONCLUSION

The objective of this study was to identify critical performance factors during the incubation period of companies as of the perspective of incubated companies. The fact that over 87% of incubated companies are linked to teaching and research institutions, demonstrates the importance that the University has in regional and entrepreneurial development, acting as facilitators of innovation agents, promoting and disseminating technical and practical knowledge, which can be transformed into innovative ideas.

The present study showed that the managerial support offered by incubators and the ease of access to financial resources and financing to incubated companies influence their financial performance. On the other hand, it was not possible to confirm that the entrepreneurial network and the physical infrastructure offered by incubators, as well as the link between incubators and teaching and research institutions influence the financial performance of the companies.

Considering theoretical contributions, the results of this research aided in the enrichment of literature concerning the theme, considering the scarcity of publications from the perspective of entrepreneurs. In the same sense, from a practical standpoint, the results may subsidize actions in a more assertive manner on the part of incubator managers, considering what entrepreneurs listed as the most and least important factors in the financial performance of companies.

Considering that the research was all carried out during the pandemic period of COVID 19, one of the biggest limitations emerged during data collection. Due to the social isolation, it was not possible to do it personally, which required greater efforts in convincing the entrepreneurs to answer the questions electronically.

It is suggested for future works, more in-depth research about the critical success factors that influence the performance of incubated companies. If possible, an analysis with more available time, in order to establish a face-to-face contact with entrepreneurs, aiming at establishing greater trust and a wider access to the company's financial data.

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A – APPLIED SURVEY QUESTIONNAIRE

INITIAL QUESTIONS	
1. What is the name of your company?	
2. Is the incubator you are in linked to an educational and research institution?	YES () NO ()
3. Regarding innovation, your company develops products that can be classified as:	I DON'T KNOW () LOW () MEDIUM () HIGH () HIGHEST ()
4. Did the company originate from a university research project?	YES () NO ()
5. What is the company's location (city and state)?	

CONSTRUCTO	QUESTIONS	SCALE	LEGENDS
Management Support	6. The incubator offers its incubates a good support service in the areas of business management.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	7. The company makes use of the support services offered by the incubator in the management and commercial areas.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	8. The company makes use of the consulting services provided by the incubator in the management and commercial areas.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	9. The company seeks support in the management and commercial areas from Universities and/or Teaching and Research Institutions close to the incubator.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	10. I believe that the support in the management and commercial areas can improve the results of an incubated company.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
Enterprise Network	11. The incubator promotes a relevant number of contacts between incubatees of the same incubator or from other incubators.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	12. The company interacts with other companies in the incubator when developing products or approaching markets.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	13. The company maintains relationships with companies located in incubators in other regions.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	14. The company maintains relationship with companies located in the geographic surroundings of our incubator.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
Incubator/education and research institution link	15. The company receives support in the process of product development from the Education and Research Institution linked to the incubator	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	16. Cooperation (product development, product commercialization, fundraising, articulation, among others) occurs (or has occurred) between the company and any Teaching and Research Institution close to or linked to the incubator.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	17. What percentage of the company's employees come from Education and Research Institutions near the incubator.	0-20% - 21-40% - 41-60% - 61-80% - 81-100%	IN %
	18. What is the percentage of the company's collaborators that also work as professors or researchers at the Teaching and Research Institutions close to the incubator.	0-20% - 21-40% - 41-60% - 61-80% - 81-100%	IN %
	19. What percentage of products or services offered by the company derives from research that has been developed at a Teaching and Research Institution close to the incubator.	0-20% - 21-40% - 41-60% - 61-80% - 81-100%	IN %
Physical Infrastructure	20. The specialized services (cleaning, security, secretarial services, internet, telephony, among others) offered by the incubator are relevant to the company's performance.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	21. The physical facilities (parking, auditorium, meeting room, cafeteria, laboratories, among others) offered by the incubator are relevant to the company's performance.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
Easy access to financial resources and funding	22. The fact of being in an incubator has facilitated the access to external financial resources from public organs or promotion/development agencies	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	23. The fact of being in an incubator has facilitated the access to external financial resources from private institutions.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree

PERFORMANCE			
Financial	24. Actions and goals are established to achieve the financial objectives.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	25. Indicators are defined for analysis and financial control.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	26. Financial projections consider the short, medium, and long term.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	27. The financial projections consider the possibilities of using own resources or those of third parties.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	28. The company reached the established goal for total revenue.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	29. The company reached its profitability target.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree
	30. The company reached the target set for gross contribution margin.	1 - 2 - 3 - 4 - 5	1 = strongly disagree 5 = strongly agree