



**UNIVERSIDADE TÉCNICA DE LISBOA
INSTITUTO SUPERIOR DE ECONOMIA E GESTÃO**

**MASTER'S IN
ECONOMICS AND MANAGEMENT OF SCIENCE,
TECHNOLOGY AND INNOVATION**

**MASTER'S FINAL WORK
THESIS**

**ENTREPRENEURSHIP IN NORTHEAST BRAZIL:
AN EVALUATION OF BUSINESS INCUBATORS
IN THE REGION**

AUTHOR: IDO ALON

SUPERVISION:

PROF. DR. MANUEL MIRA GODINHO

CO-SUPERVISION:

PROF. DR FRANCISCO JOSÉ PEIXOTO ROSÁRIO

ISEG/UTL, SEPTEMBER 2013

Acknowledgments

I would like to express my gratitude to the federal university of Alagoas for providing me the opportunity to conduct this research. Specially, I would like to thank all of those who oriented me in Alagoas, Professors Francisco Rosário and Josealdo Tonholo, I am sure it wouldn't be possible without their help. To Professor Silvia Uchoa for her help, guidance and her hospitality. Special thanks to Kelyane Silva who introduced me to UFAL and initiated the idea. To Carol Conde, Lucas Nutels from the incubator Incubal. To Edmilson Fialho and Max Luterman who inspired me with their ideas and experience.

I would also like to thank those who assisted me through phone interviews and visits in the incubators, Sheila Oliveira Pires from ANPROTEC, Tecia Carvalho, Ricardo Colares, Eiran Simis, Gláucio Brandão, Jair Ferreira de Souza, Paulo Santos, Gilson Ludmer, João Geraldo De Oliveira, Ana Karla, Jose Roberto Salomão, Geraldo Magela, Edson de Barros Carvalho and all other who dedicated their times for interviews.

Also, I would like to thank the participants in my survey, who have willingly shared their precious time with me and answered questionnaires.

I would like to express my sincere gratitude to those who open their doors and helped me study the Israeli narrative, Yossi Smoler, Shmuel Yerushalmi and Dan Kaufmann.

I must offer my thanks to Professors Vítor Escária and Fernando Gonçalves from Lisbon, for their great professional assistance.

I have to acknowledge all my colleagues and friends in Maceio and the northeast who gave me their advice and their friendship, those who made my stay in Brazil pleasant.

Last but not least, special thanks to my supervisor Professor Manuel Mira Godinho for his dedicated comments, remarks and engagement through the learning process of this master thesis.

Abstract:

This research has been conducted in the Brazil's Northeast region, economically the weakest region in the country. A total of 35 business incubators (97%) and 93 firms (29%) were surveyed by questionnaire and interviews were conducted in 14 incubators in order to map the region's incubators and to evaluate the practice and the possible impact of this economic development tool.

In our analysis we found evidence of structural and administrative failures, absence of adequate business development and financial instability due to a low level of public investment. Since there is no clear policy, each incubator is an independent initiative of either a public or private university, a technology park, a science department of local government or a non-profit organization.

The lack of adequate finance has as a consequence the prevalence of software firms on the expense of other innovative sectors and the abundance of part-time incubator and firm personnel and, more importantly, it also brings about part-time entrepreneurs.

Apart of a relatively small fraction of strong and effective incubators, the majority of the surveyed incubators performs an incorrect firm selection process, does not define a fixed period for firms graduating from the incubator and in general provides the firm with facilities but not with consistent consulting on most of the relevant areas of business development.

The dissertation concludes that this economic development tool can be put to greater advantage of the region, if given policy and managerial changes are introduced in the near future.

Key-Words: Northeast Brazil, Business Incubators, Entrepreneurship, Israel, Benchmarking, Evaluation

Resumo:

Esta pesquisa foi realizada no Nordeste do Brasil, a região mais pobre do país. 35 incubadoras de empresas (97%) e 93 empresas incubadas (29%) responderam questionários e foram realizadas entrevistas em 14 incubadoras, a fim de mapear as incubadoras da região e avaliar a prática e o possível impacto desse instrumento de desenvolvimento económico.

O nosso estudo é inspirado na política de incubadora tecnológica pública israelita. Um programa do governo com 22 anos de operação, que utiliza um modelo de incubadoras privadas com amplo investimento público. O caso de Israel fornece um ponto de referência que pode ajudar a comparar e compreender melhor o potencial da incubadora no nordeste do Brasil na sua forma actual.

Na nossa análise encontramos evidências de falhas estruturais e administrativas, ausência de comportamento empresarial e instabilidade financeira devido a um baixo nível de investimento público. Como não existe uma política clara na região, cada incubadora é uma iniciativa independente de um instituto de ensino público ou privado, um parque tecnológico, departamento de ciência do governo local ou outra organização sem fins lucrativos.

A falta de recursos financeiros traz a prevalência de empresas do sector informático em detrimento de outros sectores inovadores e a abundância de funcionários em tempo parcial nas incubadoras e nas firmas e o mais importante, o empreendedorismo a tempo parcial.

Além de uma parte relativamente pequena de incubadoras fortes e eficazes, a maioria realiza um processo incorrecto de selecção de empresa, não define período fixo para a incubação e em geral, fornece as empresas com instalações, mas falta uma consultoria consistente e intervenção pró-activa.

Palavras-chave: Nordeste do Brasil, Incubadoras de Empresas, Empreendedorismo, Israel, benchmarking, avaliação

<u>Table of Contents</u>	<u>PP</u>
1. Introduction	1-2
2. Framework	
2.1. Definition of Business Incubator	2-6
2.2. Incubator Model	6-8
2.3. The Israeli Model and the financing	9-11
3. Methodology	
3.1. Pre-study of Israel incubation program	11
3.2. Pre-studying of Incubation in Brazil and the Northeast	12-13
3.3. Data collection	13-15
3.4. Data analysis	15-17
4. Results	
4.1. Taxonomy/Typology	17-19
4.2. Goals and Impacts	20-22
4.3. Self-Sustainability and Budget	22-25
4.4. Sectors of Activity	25-26
4.5. Investment Volume	26-28
4.6. Entrepreneurs and Personnel	28-31
4.7. Incubators response to the firms' needs	31-35
4.8. Selection Process	35-38
4.9. Intervention in firm's management	38-40
4.10. Graduation	40-42
5. Conclusion	43-46
Bibliography	47-49
Appendices	i-xx

ACRONYMS

ANPROTEC	Associação Nacional de Entidades Promotoras de Empreendimentos Inovadores – National Association of Entities for the Promotion of Innovative Enterprises
CNPq	Conselho Nacional de Pesquisa - National Research Council
DFI	Development Finance Institution
FINEP	Financiadora de Estudos e Projetos - Financier of Studies and Projects
IP	Intellectual Property
OCS	Office of Chief Scientists
PTIP	Public Technological Incubator Program
PU	Public University
R&D	Research and Development
SEBRAE	Serviço Brasileiro de Apoio às Micro e Pequenas Empresas - Brazilian Support Service for Micro and Small Enterprises
TBC	Technology Business Incubator
VC	Venture Capital

1. Introduction

Business incubators in Brazil may have a great role in promoting innovative entrepreneurship, strengthening the link between academia and industry and reducing economic and cultural barriers. These barriers are being felt stronger in the northeast which is economically the most vulnerable region in the country. In Brazil in general and particularly in the northeast region, entrepreneurial culture is underdeveloped; some cultural characteristics are the acceptance of unequal social order, risk aversion, lack of competitiveness and assertiveness and the relative tendency towards collectivism (Monteiro da Silva, Gomes, & Correia, 2009).

Technological entrepreneurship in the region have difficulties to raise funds, entrepreneurs lack networking and are inexperienced. An incubator is a tool intended to overcome these shortcomings. By assisting the firm to approach financial resources and giving it a supportive environment, the incubator may increase the start-up's chances to survive the seed stage.

This study maps 35 technological, traditional and mixed incubators in the region, an extensive surveyed was conducted. By using a comprehensive database with information for all the existing incubators together with 29% of a total of 320 incubated firms and by conducting interviews with 14 incubator managers, we intend to describe how each function of the incubation process is being implemented.

This paper uses the Israeli technology incubator program ("the Israeli model") as a benchmark. This program has operated in Israel for the last 22 years in which it maintained constancy and stability thanks to uniform and solid science and technology policies by the different state governments. After about 10 years of operation the program transformed from a preliminary model of nonprofit organizations to a model which uses a powerful market mechanism by establishing partnerships between the incubators and the firms and therefore increases the motivation of the former to take an active part in the latter's management.

Through the use of statistical analysis and a comparison with the Israeli model when it is relevant, we will evaluate the characteristics and the difficulties of entrepreneurship in the northeastern incubators with the purpose to find out which changes should be made in order to better realize the potential of this instrument in the region.

2. Framework

2.1. Definition of Business Incubator

Hackett and Dilts (2004) define a business incubator as “a shared office space facility that seeks to provide firms with a strategic, value-adding intervention system of monitoring and business assistance.” (Hackett & Dilts, 2004a) However, it is not the incubator facility, but the incubation process itself which defines incubator’s impact (Vanderstraeten & Matthyssens, 2004).

A big share of incubation programs are related to Technology Based Companies (TBCs). Typically, new TBCs generate products, processes or services as a result of applied research. According to Martinez (2003) there are three main motives for high mortality among TBCs: 1. Difficulties in transforming a useful technology into a successful firm, 2. Lack of managerial knowledge and experience by the entrepreneurs and, 3. Lack of financial resources (Martinez, 2003). In addition, it is simply natural that innovative firms will have low survival rates since most of the ideas will not become viable and profitable eventually.

The transformation of a technology (an invention) into a product (innovation) requires capabilities which many entrepreneurs are unfamiliar with, such as, planning, designing, pricing, marketing, budget control and more. The cost, in time and resources, of inefficient management can be destructive for the new company. TBCs are characterized by high sunk costs as the R&D phase may take years of work and investment before seeing any revenues and even before the firm is capable to raise any private investments. Moreover, since technologies have shorter life cycle and the global

economy brings on a more competitive environment than ever before, every start-up initiative becomes more risky.

Some incubators may deal with more traditional firms, particularly in developing regions where these firms, despite possibly having less original and risky ideas, may encounter similar difficulties due to lack of entrepreneurship culture, networking and other barriers arising from the underdevelopment of the region.

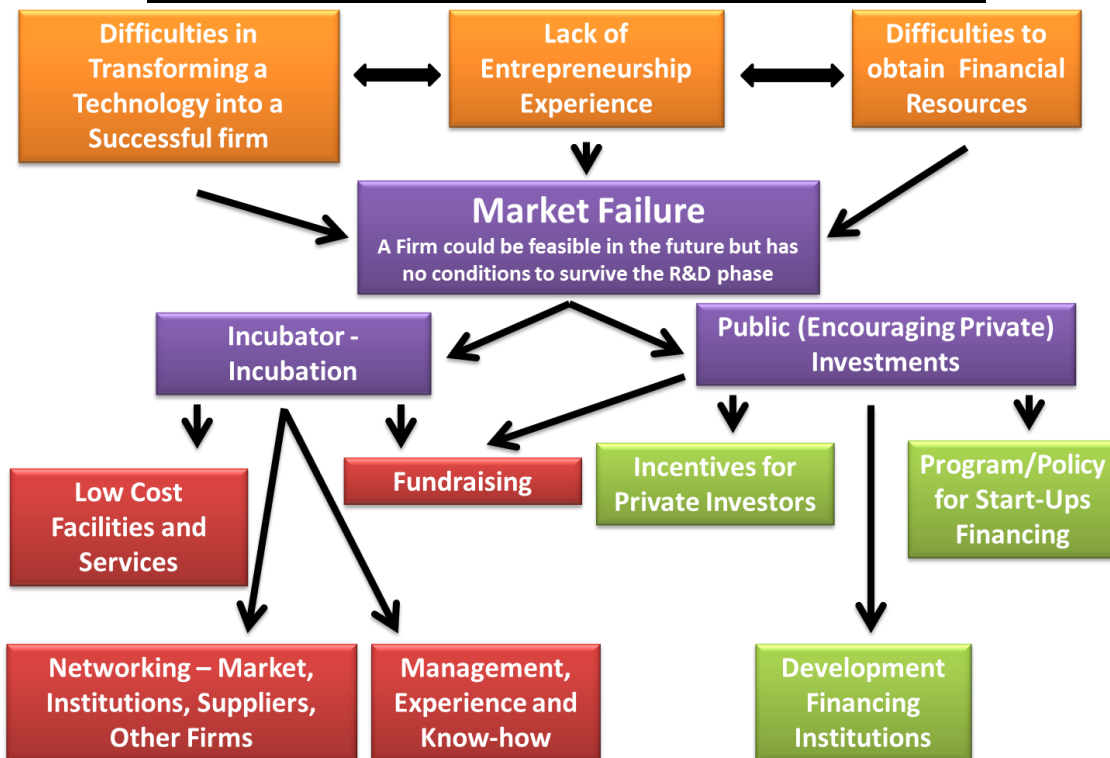
While large and medium-sized enterprises benefit from their structure, bargaining power, the flow of information between its different units and other factors related to economies of scale, small and micro enterprises struggle to survive on their own in a competitive and dynamic environment (Raupp & Beuren, 2007). For these smaller enterprises, a failure is a common scenario and when the firm is condemned to fail it should at least fail quickly, while manage to cut losses and leverage some of the added value it already managed to develop.

Most important, as a result of the barriers described here, innovative firms in their seed or pre-seed stages are failing to raise private investments in their local business environment (Khalil & Olafsen, 2009-2010). The uncertainty regarding innovation in products and services combining with the high sunk costs and long R&D phase scare away private investors which prefer more solid investments.

The difficulties in fundraising bring governments to conduct development promoting policies and to allocate resources for that purpose. Yet transferring public funds to private entrepreneurs requires supervision and control systems in order to verify that the implementation of these resources will be efficient and effective. In many cases, a business/technology incubator is an institution created for that purpose.

However, funding or providing incubation services should not aim at supporting the firm until it becomes profitable, the purpose is to help it go over the seed stage, prove feasibility until it is capable to raise private investment, namely, get the market approval.

Figure 1 –Business Incubator and the Market Failure of TBC



Source: Own elaboration, inspired on the ideas put forward in Serra, Serra, Ferreira, & Fiates, 2010.

Therefore, incubators' purpose is to help firms to overcome possible market failure.¹ Thanks to economy of scale, the incubator may provide **services** in reduced prices, such as: facilities, business consulting, legal services, accounting, maintenance, cleaning, etc.

A critical resource that the incubator provides is **managerial** experience, which new entrepreneurs usually do not have and therefore quicker solutions for problems. By holding an experienced team of managers and advisors, it reduces the learning cost by shortening of the learning curve (Smilor, 1987). Therefore the incubator reduces the initial risk and speeds up business development. It may also help the firm to fail quicker and with reduced losses. Incubators that perform this function are successful incubators, because quick and cheap failures provide opportunities for entrepreneurial learning, firm recovery, repositioning and optimal allocation of incubators' and firms' resources (Hackett & Dilts, 2004a). In addition, the incubator provides **Networking**, the importance of sharing learning practices and the exchange of information and ideas. First, Business

¹ A market failure may arise in the sense that potential social benefits are higher than the social costs.

incubators do not act in solitude; these entities develop partnerships with several other organizations, such as government, municipalities, for profit or non-profit entities, development and financial agencies (Vanderstraeten & Matthyssens, 2004), as well as access to suppliers, potential partners, investors, clients and more. Second, an incubator may stimulate networking among its incubated firms, while those who maintain contact with other incubators or make part of a regional or national group may benefit from spillovers and information, thus providing their incubated firms with tips and solutions to problems as well as potential partnerships across the region/country.

Regarding the difficulties in fundraising, there are national or regional incubation programs in which incubated firms receive significant **public funds** in order to develop the business up to the **point when market fundraising is possible**. In other cases the incubator may intermediate between the firms and Development Finance Institutions (DFIs) or private investors (angels or venture capitalists).

A business incubator may have a significant impact on entrepreneurial culture (Khalil & Olafsen, 2009-2010). By developing associative and shared actions, by creating success stories and spreading them among other firms and incubators, it provides potential entrepreneurs with the faith and the desire to succeed (Raupp & Beuren, 2007).

The universal goal of an incubator is to **increase the chances of a firm to survive its formative years**, and to provide ‘hands-on support’ but not ‘life support’, in other words, the incubator should aim to move the firm **to a point where it is no longer dependent on the incubator services or on public support** (Harman & Read, 2003).

However, incubators play various roles and have different goals according to the region where they are working and the interest of their shareholders. Hence, while for an academic incubator its main goals will be the commercialization of university innovations, for a traditional incubator established to develop the local economy its focus will be on creating jobs, promote peripheral development and social inclusion.

2.2. Incubator Model

The main distinguishing components of incubator models are **Selection, business support, mediation, graduation** and, probably the most important component, **financing**:

Selection – Begins in promoting the incubator activities in order to increase demand for the service. When such a demand exists, the decision concerning which ventures to accept for entry and which to reject should be made by experts and talents scouts in the specific field. A good selection will mark the quality of the incubation process.

Hackett and Dilts (2004) suggest that, in order to accurately respond the market failure from an economic rationality perspective it is important to differentiate the types of applicants in the following criteria: (a) cannot be helped through business incubation (sometimes due to the incubator's inability to assist) (b) should be incubated due to the existence of some resources gaps and (c) may develop without incubation (Hackett & Dilts, 2004a).

Bergek and Norrman (2007) distinguish between two kinds of selection: selection focused primarily on the idea and selection focused primarily on the entrepreneur considering her seriousness and business culture. Other two basic approaches are strict or flexible selection. In the more rigid “picking-the-winners” approach, the incubator managers try to identify a few potentially successful ventures *ex ante*. In the “survival-of-the-fittest” approach incubator managers apply less rigid selection criteria, accept a larger number of firms into the incubation process and allow the strong ones to survive while the others will fade away. The decision of which approach to adopt stems primarily from the demand faces by the incubator, while a successful incubator, attracting many potential incubates, would naturally adopt a “picking-the-winners” approach. However it will also be sharply dependent on the incubator's budget and the risk its shareholders are willing to take.

Business Support – Bergek and Norrman (2007) distinguish between different types of support mainly based on the intervention level of the incubator: (1) Reactive and episodic counseling, which is entrepreneur-initiated – the entrepreneur requests help dealing with a crisis or problem according to its own will and its needs. (2) Proactive and episodic counseling, which is incubator-initiated – the incubator engages entrepreneurs in informal counseling periodically but not intensively. (3) Continual and proactive counseling, which is incubator-initiated – the venture is subjected to an ongoing review and “intense-aggressive” intervention by incubator managers (Bergek & Norrman, 2007). The characteristics of business support are normally related to the nature of the financial relationship between the incubator and the firms. If the firm receives funds (from a third party) through the incubator or, when the incubator itself invests in exchange of shares of the incubated firm, the intervention becomes more intense. In that sense the incubator may serve as an instrument for the optimization of public investments in private TBC. Hackett and Dilts (2004) claim that the more the incubator behaves as a venture capitalist and the more financial interest it has in its firms, the more intense its business support is and better incubator performance can be expected (Hackett & Dilts, 2004b).

Mediation – The incubator mediates between its incubated firms and creates networking with other incubators; therefore it may provide knowledge spill-overs in different scales, using different tools as intranet, journals, shared events etc. The incubated firms may also enjoy a better access to suppliers, potential clients, investors, partners and other agents or institutions which provide them with solutions (professors, experts, trainees, volunteers, research institutions, labs and more).

The incubators may also engage in institutional mediation, i.e. mediating the impacts of institutions on firms (Hackett and Dilts, 2004b). Through mediation, incubators may help

incubated firms to understand, interpret and perhaps even influence the institutional demands introduced by regulations, laws, traditions, values, norms and cognitive rules.

Graduation – The duration of the incubation period should be well defined by a program, a policy or an incubation plan but sometimes it remains flexible and changes according to the firm maturity and ability to graduate after being a given period in the incubator. In the absence of a specified duration, a situation of a constant negotiation is being created; the firm may not be ready to graduate or may prefer to stay incubated despite being ready, as it enjoys the incubator's shelter and its financial benefits (low cost services etc.). The incubator may as well prefer the stability resulting from keeping the incubated firms, however, in many cases, from an economic rationality perspective, it is necessary to clear space for the entrance of new incubates, as the purpose of the incubator is to allow the establishment of new firms. More important, from the firm's point of view, it is essential to define incubation time constraints in order to stimulate entrepreneurs' productivity and efficiency by making it clear that time is limited and the work must be done quickly enough. In addition, when a firm is mature it is necessary to make the decision to move out, against the short-term financial incentives, since "leaving the nest" will confront the firm with new challenges and as a result may increase its productivity in the medium-long run (Corinne , Adkins , Wolfe , & LaPan, 2010).

In many cases the incubator is strongly connected to a technological park (may be a part of it) and the graduation will be much more convenient, as well as, in accordance with the incubator interest of building and enhancing the technological park.

According to the National Business Incubation Association (NBIA), average incubation cycle times in the U.S are between two and three years (Hackett & Dilts, 2004a).

2.3. The Israeli Model and the financing of the incubator and its incubated firms

Apart of the incubator budget and its funding sources, it is important to define the degree to which incubators may assist incubates with financial matters (Hackett & Dilts, 2004b). Most incubators do not maintain their own investment fund, serving instead as a broker that introduces incubates to private or public sources of capital. The investment should be well defined as a part of a governmental program (as in Israel), otherwise funds could be scarcer, coming from different sources whenever it is possible to raise them (as in Brazil).

The Israeli public technological incubator program (PTIP) was established in 1991 in order to foster high-tech environment and provide opportunities for TBCs. At that time a large immigration from the Soviet Union had begun (more than one million people in ten years into a state populated by about 5 millions), many of the immigrants were scientists and engineers (Frenkel, Shefer, & Miller, 2005) who suffered language barriers and had an underdeveloped entrepreneurial culture, in the initial years of the PTIP, up to 50% of incubator' entrepreneurs were of soviet origin.

In the first few years 28 incubators were established in the country, all were nonprofit organizations (NPOs), each incubator received up to 175,000\$ a year for current expenses, additional funding resources were incomes from services provision and rent fees, in some cases royalties from graduated firms and donations.

The incubated firm would receive 85% of the budget required for the first two years (up to 300,000\$) while the entrepreneur had to raise the supplement (15%) independently. The firm's ownership was defined as follows: 20% belongs to the incubator, at least 50% to the entrepreneurs, 10% to the employees and up to 20% for a supplemental investor.

It is important to mention that at the same time a public program for venture capital (VC) (The Yozma Program) was launched in Israel and had a great impact in

establishing a VC market in Israel which eventually provided an important support to the PTIP.

At the beginning of the 2000s, a “privatization” process had begun and in few years all incubators in Israel (today 26) became private for-profit enterprises. The “Israeli model” of PTIP is unique and original and it is being studied by many. Today the average investment for an incubated project is 500,000\$ (2M\$ for biotechnology and pharmaceutical firms), 85% provided by the states while 15% is invested by the incubator who negotiates its share with the entrepreneurs (up to 50%).

Entrepreneurs may fully dedicate their time to their firms since they receive generous salaries (wage-caps regarding entrepreneurs and employees are well-defined by the law).

The selection process is extremely rigid, as demand is very high; it begins with the entrepreneur being approved by the incubator who submits the request to the Office of Chief Scientist (OCS) in the ministry of industry and trade. The OCS appoints an evaluator who recommends to a committee. Incubation is for two years and 90% of the projects manage to graduate as **the clear goal of the PTIP is to bring the project to the point where it manage to raise funds from private investors, angels and venture capital.**

The model’s superiority is evidenced by several aspects²: it solves the controversial problem of incubator’s sustainability (Khalil & Olafsen, 2009-2010); the large public investments together with a well-organized business plan ensure that the firm will be able to effort the rent and payments for services; the incubator is “playing on the same team” with the firm, since they are partners they have many shared goals, in addition the incubator does not directly receive public funds and it has to be business driven. However the main regulation is being done by the state, the same evaluator from the

² The two main critics of the privatization process are: 1. Primary selection by the incubator relies on a private profit interest; therefore very risky long-term projects may be left out. 2. For the same reason, the PTIP may lose its role as a peripheral development tool.

selection phase, constantly supervising the firms and conducts an intense-aggressive intervention in project's management while the incubator provides an administrative network.

Since all incubators are selected by a tender, each one of them is committed to the OCS' standards; national network for incubators is being managed by the OCS and its being used to promote cooperation, partnerships and spillovers. Lastly, a program evaluation is relatively easy to conduct, since the information is centralized and incubators and firms are committed to provide it.

In recent years the total annual budget for the program was around 100M\$. In accordance to OCS reports the ratio of private investment to public investment in the projects is approximately 1 to 6. The PTIP had a great impact on entrepreneurial culture, human capital development and in specific sectors as clean-technology and medical equipment it has an essential role in locating Israel as a central player in world's market (Kaufmann, 2009).

3. Methodology

This study was carried out in four stages:

3.1. Pre-study of Israeli incubation program, in order to prepare a process of benchmarking

This stage included four interviews, two with the Israeli program manager, another with an expert who carried out program evaluations and lastly, with a former incubator manager who took part in the first years of the program. Moreover, three evaluations were revised (Shefer and Frenkel 2002, Shefer, Frenkel and Miller 2005 and Kaufman 2009), part of these articles deals particularly with the privatization issue.

3.2. Pre-studying of incubation in Brazil and the northeast in particular, in order to form two appropriate questionnaires

This stage included visits to two incubators in the state of Alagoas and five interviews with: two incubator managers from the South and Southeast regions and three executives from incubators' networks of the state of Bahia, the Northeast (in Fortaleza), and ANPROTEC (the Brazilian Network in Brasilia).

After incorporating the information collected with several studies from a variety of countries, including the Israeli evaluations, we created two questionnaires, one for incubator managers and another for firm managers. The questionnaires aimed to cover all aspects of the process: financial, structural, cultural, personnel, as well as the main functions: selection, incubation, graduation and networking.

Several key points were at stake due to expected limitations:

First, there was no access to information regarding graduated firms, most incubators do not hold contacts and if they do so, they have no reliable information regarding sales, number of workers etc. There were several attempts to receive information about graduated firms which was collected by ANPROTEC in an extensive study from 2012, regarding Brazilian incubators. However it was claimed that due to a very poor cooperation by incubators and firms in the northeast region, they maintain a very modest database which eventually we could not receive.

Second, there was no place for intrusive questions (sales volume and revenues for instance), in order not to discourage the respondents and since firms had no obligation to respond.

Third, it was important to design some of the firms' questions so that we may verify and confront the incubator's answers from the firms' point of view (Hackett & Dilts, 2004b).

Fourth, since we had no access to any official information (Incubators/Firms account books) it was necessary to rely, in many cases, on qualitative questions.

Fifth, in some cases we had to repeat questions and ask them in different forms in order to verify the answers (it proved to be extremely important).

Lastly, the uncertainty regarding the expected volume and quality of the replies, led us to prefer a wider questionnaire which covered many issues and by that, made sure we find enough evidence to be able to draw strong conclusions.

After the questionnaires were ready, we applied them as a pilot, in the incubator “Incubal” in Alagoas and four incubated firms, asking for feedbacks. The final versions were uploaded to “Google Drive”, each form has about 30 questions. (Appendix 8 and 9).

3.3. Data collection by application of questionnaires and visits

The process of data collection was an enriching experience by itself; it was an important introduction to the phenomenon of business incubators in the region. A very incomplete list was received from ANPROTEC, who either do not hold full information and contacts regarding the incubators in the region or do not share it easily. The majority of phone numbers and emails were collected using the internet and by calling local agencies such as science departments or local networks.

The formation of an updated contact list was made simultaneously with the request from incubators to answer a questionnaire and provide us with a list of firms’ contacts. This research was not backed up by any official support, neither by the Federal University of Alagoas nor by any other institution.

While many incubators were motivated to assist and urged their firms to respond, others were more discrete and initially refused or lingered to provide us with the contacts. The author believes that all publicly financed incubators must have their firms’ contact-list available to the public in order to allow observation and to enable the access of potential investors, partners and clients. It is important to state here that since

incubator managers could often choose the respondents, and as many of them may fear criticism, we assume that our sample is not of a completely random nature.

During the contacts with incubators and firms, it was noticed that, regarding most institutions, the main player, the manager, is often away from the office, giving classes or carrying out different tasks as called for by specified duties. Very often it was not possible to find any person with authority to provide information. Apart of that, we could notice the lack of centralization and control, many incubators are not being monitored by the department of science (or any other authority), registrations such as manager's name, phone number and email address are hard to find.

However, eventually intensive methods were used, including numerous phone calls and mails, almost begging incubators to provide information. Visits were conducted in six incubators in Pernambuco, four in Alagoas and four in Ceara, a total of 14 out of 36 incubators in the region (39%). These visits were used in order to extent the research; confront managers with some of the preliminary conclusions and also to increase the number of participants.

Ultimately, 35 out of 36 incubators (a new incubator from Bahia state refused to participate) and 93 out of 320 firms replied to the questionnaires (in practice questionnaires were sent to about 220 firms), a very satisfying result. We believe that the fact that the contacts were made by a foreigner who presented the name of a Portuguese university, displaying the image of an international research, may have been relevant to encourage cooperation. That is due to the common belief that generally in Brazil and particularly in the northeastern region, there is a tendency to overstate the value and importance of foreign work.

Despite the lack of order and organization, it is very important to mention that the large number of answers was achieved due to a significant good will by the Brazilian agents. It is doubtful, that applying the same modest methods without the help of any

authority could have led to similar results in different regions with different cultures around the world.

3.4. Data analysis

Our database is divided into two groups, 35 incubators which represents the whole population (36 in the region) while 93 firms are a sample of 29% out of 320 firms in the region. The size of that sample is outstanding, it allows us to evaluate the region's incubation more accurately and since not all the information collected was used in this paper, it leaves an open door for future researches.

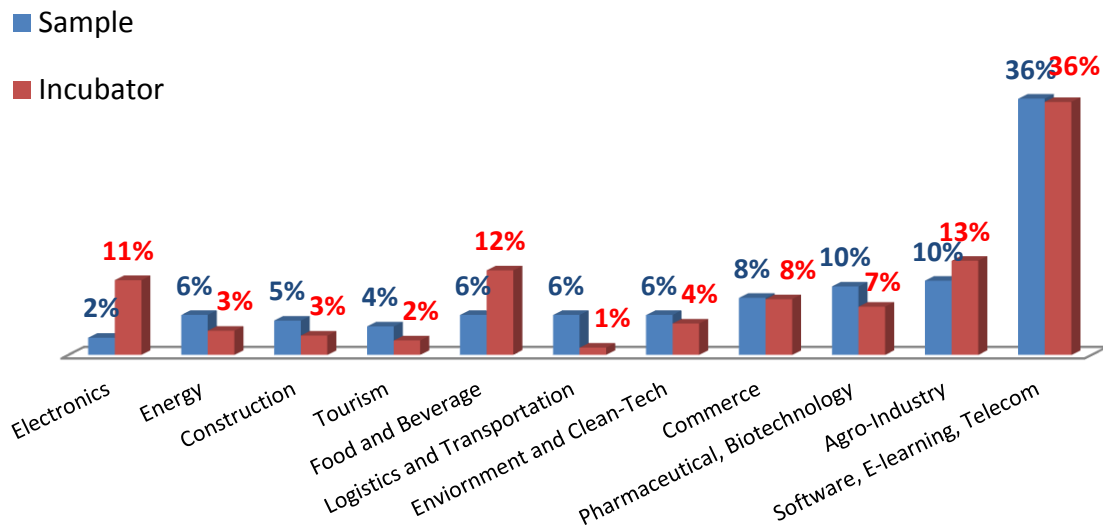
Distribution of our sample by states is presented in Table 1:

Table 1 – Distribution of firms by States

	Total	% of Total	Responds	% of Sample
Alagoas	60	18.8%	14	15.0%
Bahia	25	7.8%	10	10.8%
Ceara	81	25.3%	23	24.7%
Maranhão	6	1.9%	2	2.2%
Paraíba	18	5.6%	7	7.5%
Pernambuco	56	17.5%	19	20.4%
Rio Grande do Norte	58	18.1%	13	14.0%
Sergipe	16	5.0%	5	5.4%
Total	320	100.0%	93	100.0%

During the data collection an effort was made to compare the sample with the actual distribution of firms in the region. Some deficiencies are recorded in Alagoas and Rio Grande do Norte (3.7% and 4.2%) while Bahia, Pernambuco and Paraíba are in excess (3.0%, 2.9% and 1.9%).

Another important point is the distribution of our sample by sectors in comparison with the actual population according to incubator's reports. As seen in Graph 1, the sample mainly differs by including 3% more biotechnological-chemicals firms and 5% more logistics and transport firms at the expenses of 6% food and beverage and 9% electronics firms.

Graph 1 – Sample (n=93)

The 93 firms of our sample came from 27 incubators and do not distribute equally or proportionally with the actual number of firms in every incubator but were collected randomly, that distribution is available in appendix 1.

The guiding principle for our analysis was to keep the use of simple statistical tools (mainly descriptive). The reason is that the data is non-parametric, was not randomly collected and is not normally distributed. Apart of descriptive statistics, there is an extensive use of Spearman's correlation coefficient. We have applied various local tests for non-parametric statistics such as Mann–Whitney U test for two independent groups in order to compare between answers to the same question given by different agents and Friedman's two-way analysis of variance, a test used in order to compare n questions answered by related groups. Due to the modest size of our samples and the character of the answers we opted to consider a significance level of 0.10 as acceptable (all p-values are two-tailed). Tests Reports appear in the appendices.

Many questions were qualitative and in order to compare distributions and conduct location tests we had to transform nominal variables into ordinal by using common sense. In many cases this transformation was problematic and had to be performed intuitively since variables were ordinal by nature but not cardinal. An example is the

adjustment of variables describing the employment of different professionals in the incubator (Full-time, Part-time, Outsourcing and None) into an ordinal variable which represents ranks (3, 2, 1 and 0 points respectively) assuming that, for our purpose, part-time for example would be worth twice as outsourcing but two thirds of full-time. Most cases are explained in detail during the result analysis.

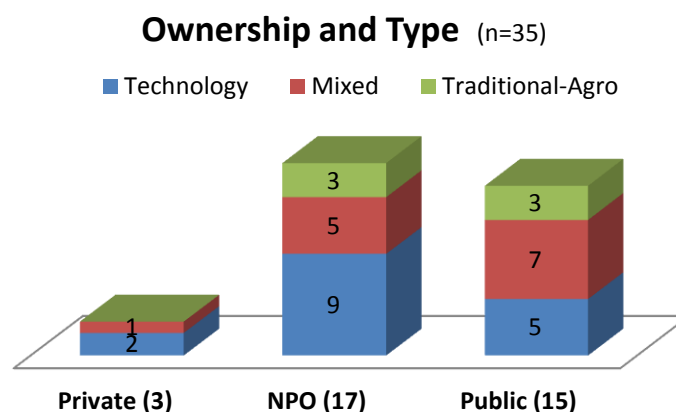
The results are divided into ten groups: Taxonomy/Typology, Goals and Impacts, Self-Sustainability and Budget, Sectors of Activity, Investment Volume, Entrepreneurs and Personnel, Incubators response to the firms' needs, Selection Process, Intervention level and last but not least, Graduation. In many cases answers by both incubators and firms are presented simultaneously in order to show the different perceptions and the discrepancies between the different agents.

4. Results

4.1. Taxonomy/Typology

35 Business incubators participated in the study, only three of them were private, of which none seems to have a strong impact. One private incubator has no firms at the moment and is searching for a new model since the last one has failed. The other two are for-profit incubators which belong to private universities, yet they are recent (less than 10 years) and have very few firms.

Graph 2 – Incubators Ownership and Type (n=35)



We will mainly focus on the differences between incubators of Non-Profit Organizations (NPOs) and Public-Universities (PUS) (Federal and State-owned) as well as the distinction between Technology, Mixed and Agro-Traditional Incubators.

17 incubators of NPOs are often located next to universities (public or private), they may be part of a university, technology parks or other technology institution. In few cases these incubators are cooperatives or departments in a Development Finance Institution (DFI³). We may observe in graph 2 that NPOs are slightly more focused on technology.⁴ The other 15 incubators are in practice, departments of PUs, most of them lack financial autonomy and usually suffer some limitations, due to the university's character. PUs in the region tend to be distant from cities centers, settled in rural areas and in many cases are characterized by a lack of entrepreneurship-oriented culture. As we will see in the next sections, firms in public incubators enjoy higher investments and better access to laboratories and these incubators have personnel of higher education level. However incubators from NPOs have better management they are more business driven and are more sustainable, most important, they present better results. The 6 incubators with the highest number of graduated firms in the last 5 years are all NPOs.

Graph 3 - Type of Incubator by State (n=36)

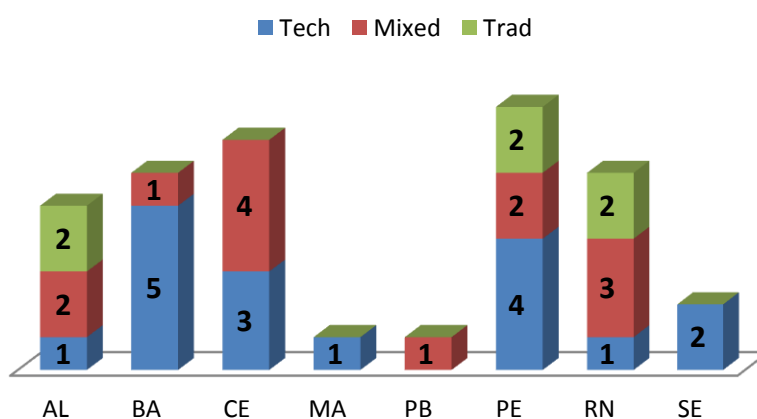


Table 2 - Population¹

	Millions
Bahia	14.2
Pernambuco	8.9
Ceara	8.6
Maranhão	6.7
Paraíba	3.8
Rio Grande do Norte	3.2
Alagoas	3.2
Piauí	3.2
Sergipe	2.1
Total	53.9

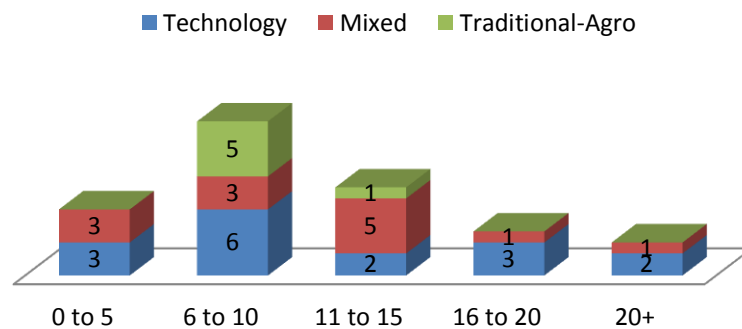
Source: Brazilian Institution for Geography and Statistics (IBGE)

³ SEBRAE, FINEP, FAPS, CNPq.

⁴ Technology-based business incubators engaged in the development of firms related to technologies such as software and hardware, biotech, chemicals, clean-tech and new materials. (Vanderstraeten J. and Matthyssens P., 2012).

Graph 3 shows the distribution of incubators by states, we may observe that although the Bahia has the biggest population in the region, Pernambuco and Ceara are leading in incubation activity (also in terms of firms). They are followed by Rio Grande do Norte and Alagoas. Maranhão has one business incubator (two firms only), the same as Paraíba which has one of the strongest incubators in the region (as a part of technology park Campina Grande).

Graph 4 – Type of Incubators by Age (n=35)



In Graph 4 we may observe that 20 out of 35 incubators were set up in the last 10 years, all three private institutions, 10 PUs initiatives and seven NPOs. All six traditional-agro incubators were established between 2002 and 2005. That tendency may be explained by the green book (Brasilia, 2000) and the white book (Brasilia, 2002) of the ministry of science and technology which preceded the important law of innovation (Dec, 2004).

27 incubators provide the incubated firms with facilities, six (one of technology, three mixed and two traditional) provide facilities only to part of the firms while outsourcing the rest. Two traditional-agro incubators do not provide facilities at all. We may state that traditional incubators focus more on consulting and networking without physical incubation and in many cases traditional or mixed incubators receive firms which already operate in the market, in order to improve them or escort them with new projects.

4.2. Goals and Impacts

Incubators managers were asked to rate on a Likert scale of 1 to 5, five different goals which appear on table 5 and their estimations for Impact (impacts) in accordance with the first four goals, the scores are presented in the table:

Table 5 – Evaluation of Goals and Estimated Impacts

	Goal	Impact
1. Job creation, promotion of development and social inclusion	4.46	3.43
2. Commercialization of university's knowledge	4.18	2.89
3. Promotion of human capital	4.34	3.51
4. Development of entrepreneurial culture	4.83	3.83
5. Generate profit for the incubator	2.77	

Using a Friedman test, no significant differences were found between the first three goals. However, *Goal-Culture* was significantly higher ($p=0.039$) while *Goal-Profit* was much lower ($p=0.000$). Regarding the impacts, managers' estimations showed that commercialization of university's knowledge (*Impact-Knowledge*) is significantly lower ($p\text{-value}=0.079$) while development of entrepreneurial culture (*Impact-Culture*) is significantly higher. ($p\text{-value}=0.05$) We may draw some conclusions:

First, the focus of incubator managers on development of entrepreneurial culture indicates that in their vision, that kind of culture in the region is weak and need to be reinforced. Our interviews draw a character of an entrepreneur who sees investment as a cost, prefers not to work with external investors and is opposed to partnerships. Seems that many entrepreneurs lack ambition, trust in others and faith in their business.

However the development of such a culture is hard to measure, particularly in comparison with the first two goals; it is much less concrete and is a long-term goal, we believe that defining it as the main goal and impact is somehow a compromise with the abstract results of the region's incubators. Moreover, referring to the Israeli experience a development of strong entrepreneurial culture may be performed, not only but mainly by producing success stories and role model firms, and that is what incubators should focus on doing.

It is interesting to find that there is a strong negative and exclusive correlation between *Goal-Culture* and *Investment average* (during the first two years) per project as estimated by each incubator (investment is not correlated with any other goal or impact), ($r_s = -0.555$, $p = 0.014$). Although only 19 incubators gave their estimation for investment average, this strong correlation may imply that when an incubator is inhabited mainly by poor projects, naturally, its goals become less ambitious and less focused and vice-versa, when goals are abstract the investments are low.

Second, there is an obvious lack of market mechanism in incubators behavior. Only eight incubators ranked 4 or 5 (four of each) regarding profit making as a goal (only one belong to a PU). The fact that incubators in the region have no orientation towards profitability may affect their ability to develop such an orientation among entrepreneurs and as we will see in the next sections, it is one of the main points where transformation of the entrepreneurial-culture is required.

Lastly, although most incubators are either a department of an institution for higher education or strongly subjected to one, commercialization of university's knowledge seems to be a less important goal and much less of an impact, however the reason for that may be the prevalence of traditional business activity among incubators in the region, this kind of activity is less related to academic knowledge. It is important to note that an obstacle in the regional academic culture is apparent in the form of a negative perception regarding the flow of professors from the academy to the business world. This perception is originated in the conflict between the academy and the military dictatorship, a conflict which has created a strong Marxist orientation in Brazilian academy. It is therefore not naturally accepted when a professor transforms his academic research into his own private profit outside the university walls.

Two more interesting correlations were identified. *Type* is positively correlated with *Goal-Jobs* and negatively correlated with *Impact-Knowledge*, ($r_s = 0.485$, $p = 0.003$ and $r_s = -0.467$, $p = 0.005$, respectively). These correlations are quite intuitive; we may say

that as much as an incubator aims to a more traditional and less technological sector, it is more focused on job creation and social exclusion and less productive regarding the commercializing of academic knowledge.

4.3. Self-Sustainability and Budget

Managers were asked to report in what level the incubator is *self-sustainable*, as well as the characteristics of *budget* management, both according to predefined scales. It is important to note here, that since the majority of incubators are, in fact, departments of universities, technology parks and other related institutions, most of them do not aspire for financial independence. The answers are distributed here:

Table 3: Self-Sustainability, (Total, Ownership and Age)

	1. Less Than 50%	2. More Than 50%	3. Almost Balanced	4. Balanced	5. Surplus (Profitable)
All Incubators	25	2	6	2	0
%	71.4%	5.7%	17.1%	5.7%	0%
Non-Profit (17)	9	2	5	1	0
%	52.9%	11.8%	29.4%	5.9%	0%
Public Universities (15)	13	0	1	1	0
%	86.7%	0%	6.7%	6.7%	0%
Less Than 10 Years of Age (17)	15	0	2	0	0
%	88.2%	0%	11.8%	0%	0%
10 Years of Age or More (18)	10	2	4	2	0
%	55.6%	11.1%	22.2%	11.1%	0%

While all incubators in Israel are self-sustainable and business driven, only two incubators in the region reported to have a balanced account. A Mann-Whitney test showed (by transforming the variable sustainability to an interval of 1 to 5) that distributions of NPOs and PUs are different ($p=0.072$).

Using the same method, a more significant difference was observed between young and old incubators ($p=0.038$). In addition, a significant positive correlation was found between *Age* and *Sustainability* ($rs=0.305$, $p=0.075$). This finding is natural; with more years of operation and experience an incubator may gain more impact, deliver more services, perform better and therefore, manage to be more sustainable.

Incubator *Type* (1 – Technology, 2 – Mixed and 3 – Traditional-Agro) is not correlated with *Sustainability*, however, the last seems to be negatively correlated ($rs=$ -

0.389, $p=0.031$) with *Technology Share*⁵, a variable which was calculated by the ratio of software, biotech, chemicals, pharmaceuticals, biotechnology and clean-technology firms to the total number of incubated firms. Therefore it can be drawn that incubators with higher share of technology firm tend to be less self-sustainable. One explanation could be found among government policies which may give priority to technological entrepreneurship, as a result, traditional incubators may enjoy less public funds and therefore have a greater need to be business driven. Moreover, traditional incubators may provide, in some cases, services to mature and profitable firms which were not established inside the incubator, it is therefore much viable to charge them for the given services.

Table 4: Budget, (Total, ownership and Age) :

	No Budget	Short-term	Exceeds Constantly*	Exceeds Occasionally*	Strictly Maintained*
Total of Incubators	17	5	7	1	5
%	48,57%	14,29%	20,00%	2,86%	14,29%
Non-Profit (17)	5	3	4	1	4
%	29,4%	17,6%	23,5%	5,9%	23,5%
Public Universities (15)	11	1	3	0	0
%	73,3%	6,7%	20%	0%	0%
Less Than 10 Years of Age (17)	8	4	3	0	2
%	47,1%	23,5%	17,6%	0%	11,8%
10 Years of Age or More (18)	9	1	4	1	3
%	50%	5,6%	22,2%	5,6%	16,7%

* The incubator has an annual or semi-annual budget

More than half the incubators do not plan their budget at all, only six reported to have a reasonable budget management, none of them belong to a PU.

Using a Mann–Whitney test for the variable *Budget*, we found that distributions of the groups NPOs and PUs slightly differed ($P=0.10$). Moreover, *Ownership* (1-Private, 2-NPO and 3-PU) and *Budget* are negatively correlated. ($r_s = -0.417$, $p=0.013$). We may conclude that the higher is the private share of an incubator, it is more likely that it will manage and keep an independent budget.

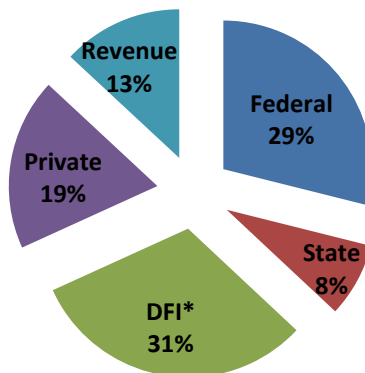
The differences between old and young incubators regarding budget management are insignificant. On one hand older incubators tend to approach profitability and therefore

⁵ *Technology Share* is also strongly and negatively correlated with *Type* ($r_s = -0.569$, $p=0.001$ two-tailed), what indicates a good classification of incubators type (for small values higher is the ratio).

are more sustainable which is an encouraging sign, but on the other hand it is alarming that even veteran incubators do not plan and keep their own budget.

As we have seen, most of incubation activity is far from being self-financed. Graph 5 shows how incubators are financed, (with no reference to direct investments in incubated firms).

Graph 5 - Distribution of Financing Sources (n=33)



*Development Finance Institutions (SEBRAE, FINEP, CNPq and others)

There are many different patterns of incubators funding in the region. While their infrastructures are usually belong to the institution who maintains the incubator (public/private university, technology park etc.), some public incubators receive funds for operating activities from DFIs and directly from the state, apart from university budget which is usually more permanent. On the other hand, NPO incubators are funded mainly by DFIs, private universities and by technological parks, but at least six of them receive federal and state funds as well.

The most common general patterns for financing variable costs are grants and scholarships. These are given by DFIs as SEBRAE, FINEP, CNPq (mostly federal funds) and in recent years a notable support is provided by the different FAPS (Research Support Foundations), particularly in Alagoas, Bahia and Ceará. These grants are not fixed and as a result an incubator which may have received funding from a certain institution during few years may suddenly lose that source due to changes in policies. An example is the Northeastern Bank (Banco do Nordeste) which was used to

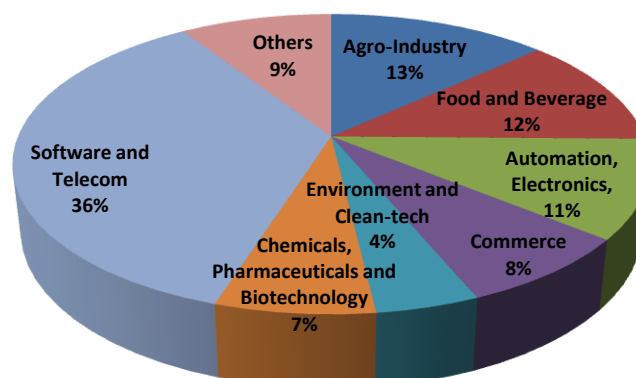
support incubators in the region until 2012; many incubators are now struggling to fill that void.

The impression is that, although fixed costs (infrastructure and permanent personnel) are usually granted; most incubators are constantly thirsty for financial resources. Since there are neither clear government policy, nor fixed full and defined financial plan, incubators managers often have to search for financial solutions and change their plans and strategies according to frequently changing nominations and decisions made by policy makers and university deans/presidents. Beyond the unnecessary preoccupation with politics, forced on the incubator, every financial shock affects the management and leads to instability and uncertainty, two negative factors which their prevention is, paradoxically, a major part of incubators essence.

4.4. Sectors of Activity

Graph 6 presents the distribution by sectors of 320 incubator firms in northeast Brazil, the data is based on 31 out of 35 incubators reports. As we observe here, incubation in the region is highly focused on software and telecommunications, in fact, the majority of the firms (36%) are software producers. However, R&D intensive sectors, which require high investments and certain types of networks (Frenkel & Shefer, 2008), such as chemicals, pharmaceuticals, biotechnology and clean-technology (Kaufmann, 2009), comprise only 11% of total incubator firms.

Graph 6 - Sectors of Activity (n=31)



The prevalence of traditional sectors as agriculture, food and others is reasonable for a developing region where there is a need to improve firm's organizational capabilities. (Etzkowitz, Carvalho de Mello, & Almeida, 2005) However, the prevalence of software and telecommunication firms on the expense of other technological sectors seems to be excessive, particularly compared to Israel, where at the beginning of the 1990's the equivalent share was only 12% out of total incubator firms (only 4% software) (Kaufmann, 2009).

The explanation for that may be found by software firms' tendency to require much less initial investments in comparison with life sciences and other technologies, in contrast with the low availability of funds for investments. As will be shown in the next section, investment in incubated firms in the region is quite poor, and unstable.

4.5. Investment Volume

Firm owners were asked to report the total investment in the first two years of the project (for comparison purpose with our benchmark) while incubators managers were asked to estimate the average of such an investment in their incubated firms.

However, it is important to note here that answers to this question may be misleading; first, estimation of firm's initial investment by incubators may be difficult since it varies drastically between the firms. Second, due to bureaucracy or uncertainty regarding the product or service to develop, a firm could go few years from its establishment until it starts, in fact, to receive investments. Lastly, it seemed that for some firms, accounting management is incomplete and expenditures were not orderly registered or the report was simply not accurate.

Only 19 of 35 incubators gave their estimation along with 82 firms. As expected this data is characterized by a particularly high dispersion, yet, we may be able to draw some conclusions, some of them are quite intuitive.

Table 6 - Investment (values in BRL)

	Mean	N	Std. Deviation	Median
As Reported by Incubators*	278,947.37	19	383,117.98	120,000
As Reported by Firms	204,462.51	85	522,013.77	50,000
NPOs	194,765.47	51	598,046.54	30,000
Public Universities	204,508.56	32	380,039.09	69,000
No Public Funds	74,804.54	55	193,851.30	20,000
Public Funds	473,037.96	28	812,874.86	175,000
Technology Firm	443,273.91	23	911,465.95	70,000
Software Firm	152,737.23	40	262,332.64	60,000
Non-Technology Firm	85,848.87	23	522,013.77	5,500

Source: data collected from firms (except *)

Location parameters of *Investment* differ significantly between incubators and firms reports according to a Mann-Whitney test ($p=0.011$). Either incubator managers are overestimating, giving a greater weight to high investment firms or entrepreneurs tend to underreport, being modest or discreet regarding their resources. We may accept as well, that estimates tend to err and conclude, by using the median (since data is dispersed and skewed), that investment for the first two years of incubation in the region is between 50,000 to 120,000 reals. As we have seen in previous sections it is about 10% the Israeli investment in incubator firms (not include Israeli biotech firms who receive much more).

According to firms' answers, firms in NPOs have lower investments (a median of 30,000 reals) compared to these in PUs incubators (a median of 69,000 reals). A Mann-Whitney test confirmed a significant difference ($p=0.093$). However no significant correlation was found between *Investment* and *Incubator Ownership* and differences between these two groups of incubators were recorded only by firms' reports while means and medians reported by 19 incubators were quite similar.

The extent to which initial *Investment* is dependent on *Public Funds* can be learned by using another Mann Whitney test, which shows a significant difference between 28 firms who received grants and 55 of firms who have other sources for funding.

($p=0.000$). In addition, *Investment* is strongly correlated with *Grants*, a variable which represents the share of public grants as a percentage of total investment ($r_s=0.552$, $p=0.000$). *Investment* is also significantly correlated with the share of *R&D* in total investment and with *IP*, a dummy variable which indicates, rather or not, the firm owns intellectual property. ($r_s=0.459$, $p=0.000$ and $r_s=0.323$, $p=0.003$, respectively), lastly, *R&D* is significantly correlated with *Grants* ($r_s=0.431$, $p=0.000$ two-tailed).

We may conclude that in our sample, the 28 firms who enjoyed public grants have much more financial resources of which they invest much more in R&D and intellectual property registration. It is important to mention that these relationships work both ways, as DFI policies favor firms who plan to invest in R&D and IP. However, it is also clear that the majority of incubator firms, who did not receive grants, remain financially vulnerable.

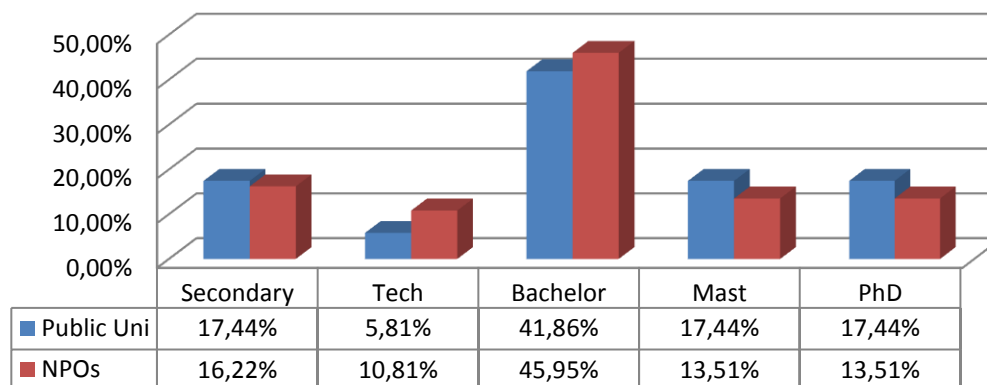
The differences between investment in *Software* and other *Technology* firms to those of traditional sectors are straightforward, however, according to a Mann-Whitney test ($p=0.457$), we may conclude that although sectors as pharmaceuticals, biotechnology and clean-technology usually require longer-term, complex and expensive research in comparison with software and telecommunications, in the region, they do not receive higher investments.

4.6. Incubator's Personnel, Entrepreneurs and firm's personnel:

The incubators of PU have on average one PhD graduate and one Master graduate in its staff while in NPO's the average is only 0.65 and 0.59 respectively. The first group also has, in average, one more scholarship fellow compared to NPOs.

Table 7 - Employment and education level in Incubators

	Full-Time	Part-Time	Scholarships	Secondary	Technician	Bachelor	Master	Ph.D.
Public Universities	2.00	3.13	1.60	1.00	0,33	2.40	1.00	1.00
Non Profit Org	2.18	2.29	0.59	0.71	0.47	2.00	0.65	0.59

Graph 7 - Education level among Incubator Employees

However, in the 15 incubators belonging to Pus a strong correlation is found between *PhD* and *Part-Time* employees ($rs=0.747$, $p=0.001$), the same correlation is not significant regarding the 17 NPOs ($rs=0.367$, $p=0.148$).

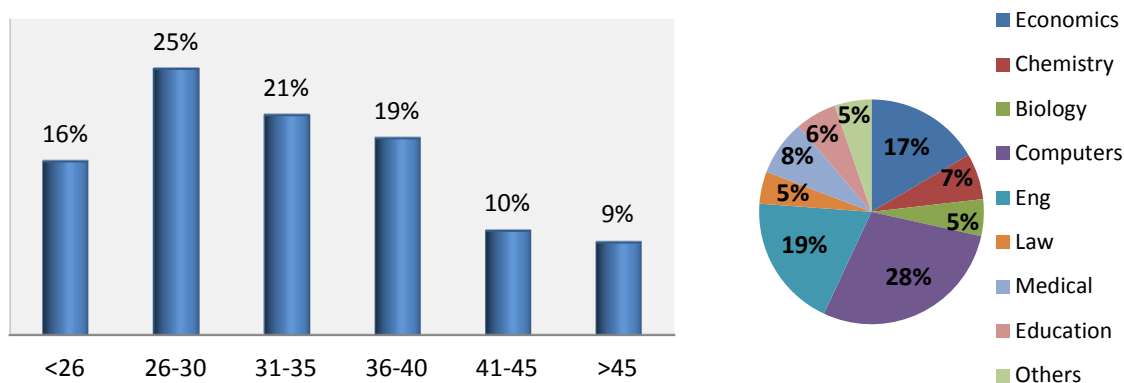
Table 8 – Firm Owners and Employees

	SUM	Women	Age	Bach	Mast	PhD	
Firm Owners	2.72	0.45	34.4	1.37	0.49	0.56	
% Owners		17%		50.2%	18.1%	20.7%	
Software	2.87	8.5%	32.1	61.2%	14.7%	10.9%	
Other Tech	2.75	24.2%	38.1	24.2%	24.2%	42.4%	
Non Tech	2.47	25.5%	35	51%	19.1%	17%	
	SUM	Full-T	Part-T	Scholarship	Bach	Mast	PhD
Employees	4.16	1,66	1,59	0,91	1,62	0,52	0,23
% Employees		39.9%	38.2%	22%	45%	15%	7%
Software	4.78	42.3%	35.6%	21.9%	40%	9.3%	2.8%
Other Tech	4.79	40.9%	31.3%	27.8%	27.8%	22%	11.6%
Non Tech	2.32	27.1%	65.5%	7.3%	52.7%	4.8%	7.6%

Table 8 provides us with characterization of firm owners and employees; we tested for correlations before drawing conclusions. The dummy variable for *Software* firms is negatively correlated with *Owner's Age*, *Women*, *Owner's PhD* and *Employee's PhD* ($rs= - 0.250$, $p\text{-value}=0.017$, $rs= - 0.302$, $p\text{-value}=0.004$, $rs= - 0.336$, $p\text{-value}=0.001$, $rs= - 0.292$, $p\text{-value}=0.015$). It is positively correlated with *Owner's Bachelor Degree* ($rs=0.325$, $p\text{-value}=0.002$). The second dummy, *Technology* (for biotechnology, pharmaceuticals, clean-technology, energy and medical equipment) is positively

correlated with *Owner's Age*, *Owner's* and *Employee's PhD* and *Employee's Master's Degree* ($r_s = 0.279$, $p\text{-value} = 0.07$, $r_s = 0.424$, $p\text{-value} = 0.000$, $r_s = 0.307$, $p\text{-value} = 0.010$, $r_s = 0.406$, $p\text{-value} = 0.000$). It is negatively correlated with *Owner's Bachelor Degree* ($r_s = -0.372$, $p\text{-value} = 0.000$).

Graphs 8, 9 - Firm Owners by Age and Education Field



It is therefore evident that software firms tend to have younger owners, less women entrepreneurs and in general more bachelors on the expense of PhDs, both regarding firm owners and employees. On the other hand, other technology firms are usually founded by older entrepreneurs with higher level of education, among them many more women; these firms also tend to employ more Masters and PhDs.

In general, the share of women entrepreneurs in the region is poor. In our sample, 64% of the firms had no women at all among their owners, while no firm was found to have no male ownership. However, since the variable *Women* is also positively correlated with *Entrepreneur's Age* and *PhD* ($r_s = 0.342$, $p\text{-value} = 0.001$, $r_s = 0.246$, $p\text{-value} = 0.022$, respectively), we may conclude here that women tend to take part in business incubation mainly when they are older, and often with Master's or PhDs (mostly in life sciences or engineering). Women between the ages of 20 to 30 are almost completely absent from our sample.

Interesting correlations are also found between *Owner's PhD* and the dummy variable *IP* ($r_s = 0.356$, $p\text{-value} = 0.001$), and between *Investments* and *Full-Time employees* ($r_s = 0.548$, $p\text{-value} = 0.000$). It is quite intuitive that PhDs tend to file for more

intellectual property and that firms with higher investments tend to hire more full-time employees.

The most important point to be noted in this section is the appearance of two main groups of entrepreneurs, young bachelors and older PhDs (or masters). The young bachelor is usually between 25 to 35 years old; he has normally no financial independence, faces difficulties to raise investments and in many cases is criticized by family and society regarding his entrepreneurial adventure (Khalil & Olafsen, 2009-2010). In order to support himself, he has to hold for another job apart of managing his own firm. Even grants given by DFIs can't change that situation since they do not allow salary payments for the entrepreneur (unlike in Israel, as presented earlier). On the other hand, the "Academic" entrepreneur is usually older, between 30 to 50 years of age, either he is a PhD graduate (or Master graduate) or doing his PhD, he often divides his time between the firm and other tasks as teaching and conducting academic researches.

Owning a firm is much more than a **full-time** job, it is a task of full dedication, particularly when dealing with an innovative and unconventional business-idea. Combine these characterizations of the entrepreneurs with the high correlation between *PhD* workers and *Part-Time* jobs in public incubators and with the high share of part-time and scholarships among firms' employees, we may confirm the impression described in the methodology that what we witness here is a phenomenon we may call, a part-time entrepreneurship.

4.7. Incubators response to the firms' needs

This section explores the personnel hired by business incubators and the services they provide to their incubated firms compared to the needs raised by corporate managers.

Firm managers were asked to rate on a Likert scale of 1 to 5, 13 factors that may have hindered their work. We divided them into three groups according to the results of

a Friedman test which showed a significant disparity between the answers (p -value=0.000, results are reported in appendix 5):

Table 9 – Barriers to Development

High Level	Medium Level	Low Level
Lack of financial resources for marketing, market studies and other administrative functions.	Lack of partners in the region. Lack of qualified human resources. The region is underdeveloped.	Lack of Legal experience. Lack of managerial experience. Lack of market experience.
Lack of Financial resources for R&D.	Lack of consulting. Lack of partners outside the region.	Lack of experience with IP. Lack of technical experience.
Weak networking with government agencies, big firms and DFIs.		

We may clearly say that entrepreneurs attribute great importance to the lack of financial resources and networking, while they underestimated their own inexperience, although only 23.7% claimed to have any former experience in business development and management.

Incubators on the other hand were asked to report regarding eight different expertise, whether they hire professionals on a full-time or part-time basis or whether they hire their services through outsourcing. We ranked the answers by 3, 2 and 1 accordingly and 0 for none.

In order to verify and double-check, we presented the incubators 15 different services and asked if they provide them directly, by outsourcing or not at all (either due to lack of demand, or despite the demand). The answers were adjusted to a scale of 2, 1 and 0 accordingly; lastly, the same list of services was given to firms in order to rate on a scale of 0 to 5 the incubators contribution (0 – the service is not provided, 5 – provided with high quality).

Regarding the incubators answers, variables for personnel with expertise in *Legal*, *Consulting* and *Accounting* issues were not correlated with the variables of the corresponding services, (Legal: $r_s=0.073$, $p=0.676$, Consulting: $r_s=0.217$, $p=0.211$ and Account: $r_s=0.060$, $p=0.732$). However significant correlation was found regarding

intellectual property ($r_s=0.709$, $p=0.000$). Despite that, *sum of personnel* was found to be correlated with *sum of services*. ($r_s=0.464$, $p=0.005$). These sums are both positively correlated with incubator's *full time* workers and only *sum of personnel* is correlated with *number of incubated firms*. ($r_s=0.408$, $p=0.015$), naturally incubators with fewer incubated firms (12 out of 35 have five firms or less) hire less personnel.

The results regarding legal, consulting and accounting services are somewhat confusing; the reasons for a gap between the two different reports could be many. We conclude here that incubators may have the personnel, even if mainly by outsourcing, but in practice many services are not being used by the firms.

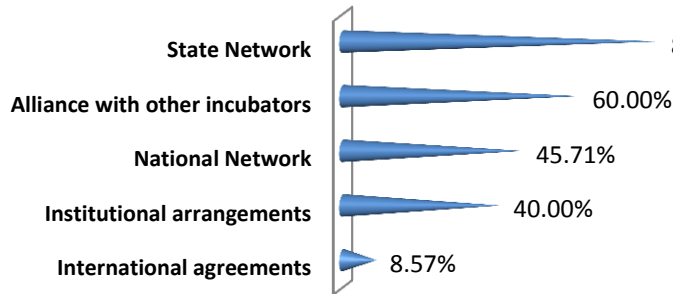
While incubators reports showed high incidence of personnel specified in legal, accounting and consulting, through the analysis of both incubators and firms' answers we found that the corresponding services were weak (the results of three Friedman' tests are reported in Appendix 5). It may be explained by the firm's tendency to hire their own lawyer and accountant (if they may afford) in order not to reveal too much to the incubator, as a result of mistrust. This assumption is supported by a negative correlation which was found between investment and both legal and accounting services ($r_s= -0.256$, $p=0.026$, $r_s= -0.208$, $p=0.077$) suggesting that since firms with high investment may afford to pay more for these services, they either miss value the quality of the services given by the incubator or prefer not to use them and in order to keep their secrecy.

Overall, the most common services to be offered were incubation, workshops and business plan. Firms were unhappy with financial support and market study, services which usually neither the incubators claimed to provide. Detection of potential partnerships out of the region was the service with the lowest score; it may teach us regarding the weak networking of incubators in the region.

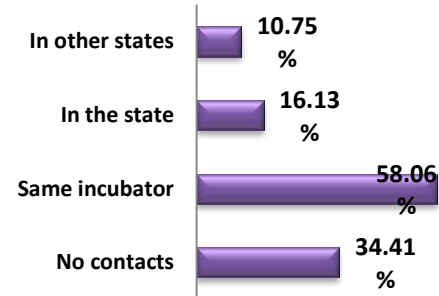
Graph 10 shows that 53% of the incubators do not use the national network ANPROTEC and international networking hardly exists, networking with firms happens

mainly inside the incubator (Graph 11), and even so, in fact, only 18% reported to have real partnerships with incubated neighbors.

Graph 10 - Incubator’s Networking

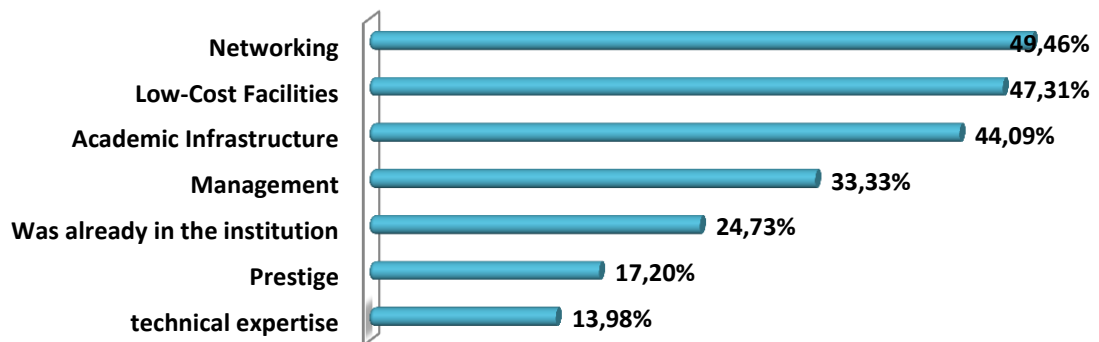


Graph 11 – Firm’s Networking



Apart of good relationships with DFIs, a fact that assists incubated firms to gain grants, all other aspects of networking, such as the access to potential clients or investors, are very weak and it comes in contrast with graph 12 which shows that networking is the main reason entrepreneurs choose to establish their firm in an incubator. Entrepreneurs in the region suffer heavy financial and cultural barriers regarding their contacts with the south of the country such as high cost of travel and feelings of inferiority (many entrepreneurs believe that potential investors and partners from the south underestimate the northeast region and its agents), it is therefore of utmost importance to reform the existing network.

Graph 12 - Reasons to Approach an Incubator



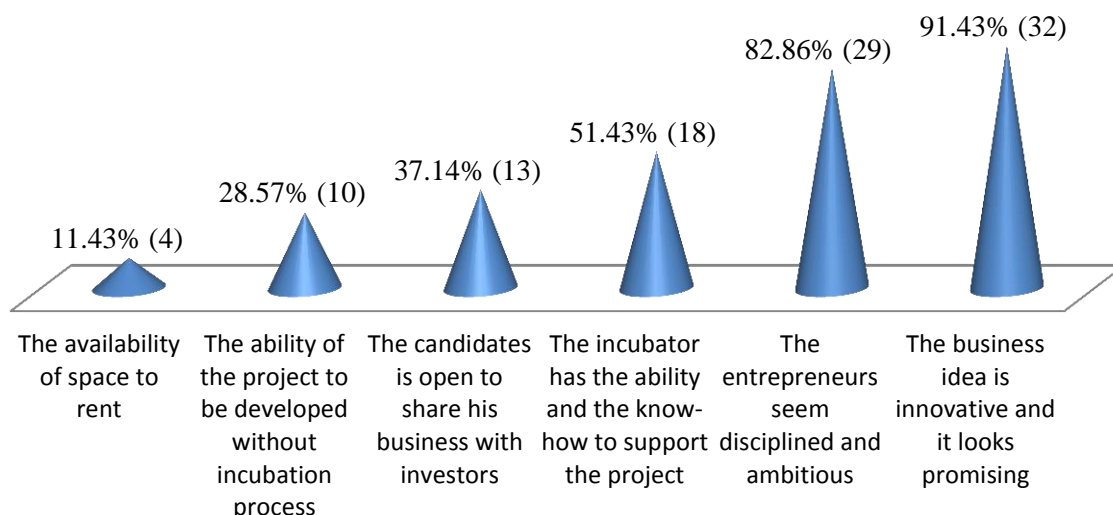
Lastly, an emphasis should be given to the lack of permanent expert in entrepreneurship (3 full-time, 6 part-time, 21 outsourced and 5 empty spot), a category which was found correlated with many services and which we believe to be the core of

every successful business incubator (Buys & Mbewana, 2006), moreover, in our vision the incubator's manager should be such an expert. The formation of such an expertise may be a result of work experience, entrepreneurship or some managerial role; on the other hand, it could be fostered inside the incubator but requires a permanency in that position since it is a matter of years until such a manager is fit. However, such a permanency doesn't seem to be the tendency in most of the region's incubators.

4.8. Selection Process

Each incubator had to choose three out of six most important criteria regarding firm selection; the results indicate that 91% of the incubators give importance to the quality of the idea and 83% focus on the seriousness of the entrepreneurs. However, in our interviews managers claimed that in many cases the idea changes during the process of pre-incubation, the entrepreneurs enter the incubator while the idea is yet immature and undefined and only after passing a learning process in the incubator, the final outcome may eventually be produced.

Graph 13 – Criteria for Project Selection or Exclusion (n=31)

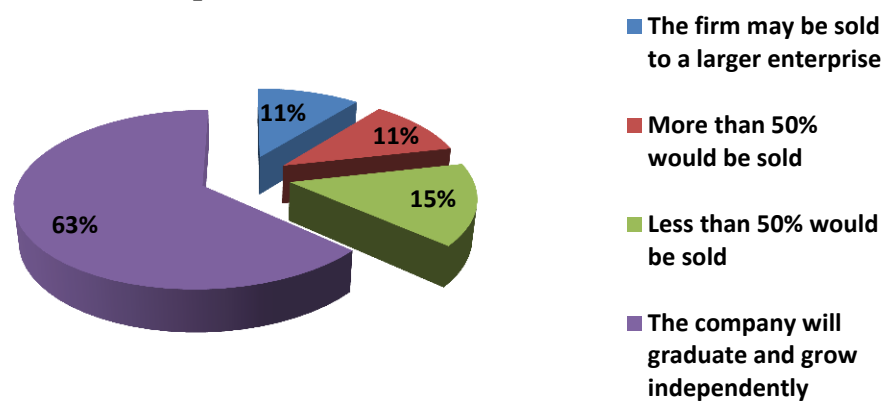


Moreover, only 51% consider the incubator's ability to support the project and relatively low attention (37%) is given to the entrepreneur's business culture and her openness for partnerships. Checking for correlations, we found that incubators with high

share of technology (include software) firms tend to underestimate the culture criterion even more (negatively correlated with the *culture*-criteria), while share of *software* firms is positively correlated with the importance (criterion) given to the *discipline and ambition* ($r_s = -0.499, p=0.004, r_s=0.363, p=0.045$).

Many managers agreed in our interviews that the selection process is incorrect or incomplete and that more attention must be given to the entrepreneur's culture. The importance of that criterion is well seen by the following analysis. Entrepreneurs were asked what is their perception regarding success, according to four scenarios, as seen in graph 14, I. Sell the firm, II. Sell the majority but stay as a partner-manager, III. Sell a minority and keep the control on the firm, IV. Graduate and grow independently with no partnerships.

Graph 14 – Vision of Success



We may conclude that the majority of entrepreneurs do not enter the incubator in order to produce a start-up and sell it. Although it does not mean that when the day come and a buyer knocks on their door they wouldn't sell, but it indicates a misperception of the incubated process and of start-up business. Taking Israel as an example, the start-up spirit is all about the "Exit" (selling the majority of the firm to a large enterprise), entrepreneurs dream about selling since the beginning, they are fully oriented for that purpose, many success stories provide them with "role models" which help to create that vision of success. Lastly, even from the incubation program point of

view, the success is evaluated by how many private Dollars are invested in incubated and graduated firms per every public Dollars invested by the program.

As only 6.5% of entrepreneurs in our sample, stated that they established the firm due to a financial need, we expected to find more business spirit, however the answers may indicate that the entrepreneur, in his vision, becomes a manager of a small firm rather than a businessman and in that spot he sees himself staying.

Incubator managers provided us with several possible explanations. The first may be the lack of roll models and aspiration in the region, with low level of self-confidence produces low ambition among entrepreneurs. A second explanation is the lack of trust, many firm owners confessed their fears regarding having a partner, they believe that a partner may try to explore their firm for his purposes, steal their idea and sabotage their business activity in order to protect his other firms from competition.

Another aspect may be the lack of experience and recognition of modern business world, entrepreneurs may believe that their firms can grow-up to be national or international enterprises without raising external investment. Fortunately, as some incubator managers suggested, the younger generation is already showing sparks of modern entrepreneurial culture. We checked the distribution of answers between different age groups of entrepreneurs and though the differences are not extreme, there is a significant correlation between *entrepreneur's Age* and *Vision* of success (transformed to an interval of 1 to 4) ($r_s=0.256$, $p=0.014$). It seems that younger entrepreneurs are becoming more open for partnerships and more exit-oriented.

Surprisingly, answers regarding the amount of empty spaces in the incubator were not correlated ($r_s=0.044$, $p=0.802$) with the level in which it has to promote the service in order to attract new firms (both on a Likert scale of 1 to 5), it is therefore hard to say rather incubators adapt a survival of the fittest or a picking the winner method (Bergek & Norrman, 2007).

However, Correlation was found between *Type* (Tech/Mixed/Traditional) and the level in which an incubator has to *promote*. ($r_s=0.371$, $p\text{-value}=0.028$)

According to a Mann-Whitney test, differences between traditional incubators and the other two types are statistically significant (Tech and Traditional: $p=0,005$, Mixed and Traditional: $p=0,011$). It seems that agro-traditional incubators have more need to promote the service and convince firms to participate.

The explanation lies within the hypothesis that traditional entrepreneurs in the region, with an emphasis on agriculturalists and local food or beverage producers, are more conservative in their view of incubators. Part of the essence of traditional incubator is to incubate small family firms in order to pass them through a process of standardization and certification, as well as increasing productivity by adapting modern methods, these firms may work on a small scale and many times without any registration and therefore, fear the transformation generated by the incubator.

4.9. Intervention in firm's management

This section explores the level in which an incubator is involved in firm's management and interferes in decision making. One of the Israeli PTIP strongest points is the high level of intervention (although more by the OCS than by the incubator itself), strong and effective intervention by experts may eventually justify a broad public investments in these high-risk projects.

Table 10 – Intervention Scale

1 - Mild Intervention – The incubator provides consulting services and management support only when the firm shows initiative and need (entrepreneur's initiative).	3 - Moderate Intervention - The incubator monitors the firm's operations and periodically applies management control system, (joint initiative).	5 - Intense Intervention – The incubator interferes constantly and intensively in the firm's management and applies a strict management control system, (incubator's initiative).
---	--	---

Incubators and firms were both asked to rank *Intervention* on a scale of 1 to 5 according to the values above. In addition, incubators were asked to mark, on a Likert scale of 1 to 5, the level in which intervention in firm's management increases due to

public investments. Lastly, the 28 firms in our sample, those who received *grants* from DFIs, were asked to rank (on a Likert scale of 1 to 5) the level of *intervention* by the DFI (SEBRAE or FINEP in most cases), 25 answered.

Table 11 – Intervention according to 35 Incubators

	Intervention	Change In Intervention due to public investments
Mean	2.5429	3.3429
Std. Deviation	0.98048	1,32716
Median	3.0000	3.0000
Weighted AVG	2.40	3.44

Table 12 – Intervention according to Firms

	Intervention	Intervention by DFI
Mean	1.76	1.92
Std. Deviation	0.949	1.411
Median	1.00	1.0000
N	93	25

Firms evaluated the level of intervention (mean=1.76), much lower than Incubators did (mean=2.54), furthermore the medians indicate a greater discrepancy, 3 against 1.

The results of a Mann Whitney test suggest that there is a statistically significant difference between the level of intervention described by incubators and the level as described by firms (p-value=0.000). It can be further concluded that incubated firms' perception of incubator's intervention statistically significant lower than it is perceived by the incubators themselves.

Since the firms' sample does not equally represent all incubators we calculated two weighted means (and medians), by multiplying the Intervention levels as answered by each incubator in the number of firms (from that incubator) which participated in our sample. The weighted means (medians) were: 2.4 (2) for Intervention and 3.5 (4) for change in intervention due to public investment. A Mann-Whitney test suggested again that the weighted average of intervention level as described by incubators differs significantly from the level marked by the firms (p-value =0.000).

However, the question addressed to firms regarding the change in intervention due to public investments referred to intervention by public entity (SEBRAE, FINEP and others) and not by the incubator. Therefore two more means were calculated in order to strengthen the conclusion regarding how intervention level is associated with public investment.

We compared between intervention level as described by firms with *Public Funds* (28) and firms who declared not to have any (61), as we see in the report; there is no difference between the two groups neither regarding Means nor Medians.

Table 13 – Intervention for public and private funding

Public Funds	Mean	N	Std. Deviation	Median
Not received	1.77	61	,956	1,00
Received	1.71	28	,937	1,00

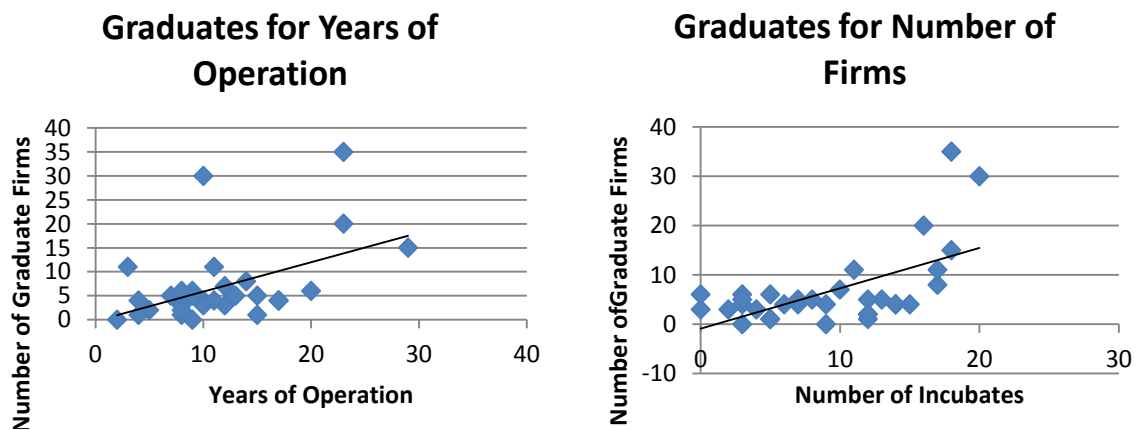
We may clearly state that incubators in the region do not serve significantly as instruments for regulating the passage of public funds into private firms.

An interesting paradox was found while testing for correlations between investments and intervention, using both incubator answers and firm answers. Incubators *Intervention* level was strongly correlated with *Investment Average* ($r_s=0.536$, $p=0.018$) while on the firms point of view, the variables were negatively correlated ($r_s= - 0.224$, $p=0.040$). We conclude that while incubators believe to perform their role better when it comes to firms with higher investment volume and therefore with higher potential, wealthier firms actually feel more isolated and independent or on the other hand it might be their wish to be autonomous and not interfered.

4.10. Graduation

A total number of 224 firms graduated from incubators **in the last five years**, an average of 6.8 per incubator with a standard deviation equal to 7.7 and a median of 4 firms. An incubator of NPO has in average 9.5 (median of 5) graduated firms in the last five years while a PU incubator has only 3.8 (median of 4), statistical tests regarding this matter are showing no significant difference, however, six incubators indicated more than 10 graduated firms each and they are responsible for 54% of all graduation in the region. Incubatep (PE) with 35, CENTEC (CE) with 30, PADETEC (CE) with 20 graduates, ITCG (PB) 15, Incubanectar (PE) and Porto Digital (PE) with 11 for each, all six incubators are belonging to NPOs.

Graph 15, 16 – Firm Graduation



Spearman's coefficient suggests a correlation between the incubator's age and the number of graduated firms, Porto Digital in Recife is the only incubator to show good results in spite of having only few years of operation. *Number of Graduate* seems to correlate with *Number of Firms* as well. Both results are intuitive, as larger and the more experienced the incubator is, the better it performs (Number of Graduate with: Age, $r_s=0.422$, $p=0.014$, and with Number of Firm, $r_s=0.461$, $p=0.007$).

Incubators were asked to mark the level of contact they keep with graduates on a scale of 1 to 5. The values are displayed in table 14.

Table 14 – Levels of Contact with Graduate Firms

	N	
1 - The incubator has no contact with graduates	5	14.3%
2	4	11.4%
3 - The incubator keeps regular contact but does not contain data about graduates activities, their sales, number of employee etc.	19	54.3%
4	3	8.6%
5 - The incubator keeps a strong contact and runs a database of graduates' business activity with the purpose of evaluating the incubation process	4	11.4%

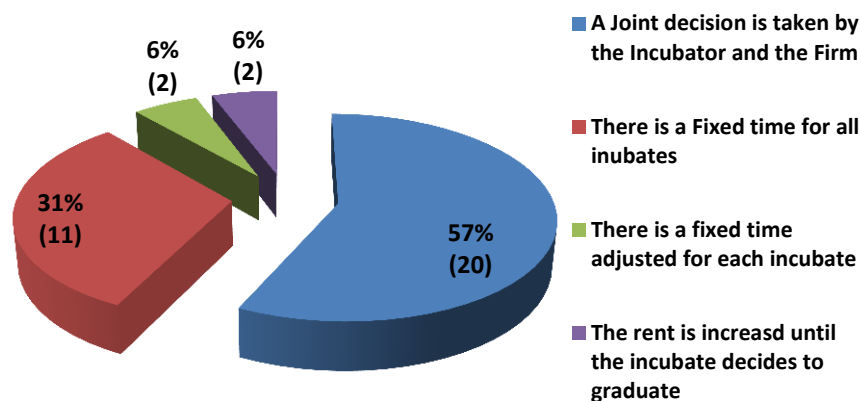
Although at least 26 may maintain contacts, only seven incubators in the region claim to perform some kind of monitoring system which may allow them to evaluate the incubation process based on the performance of graduate firms. This finding is supported by interviews and visits in almost half the incubators in the region, as well as by the incapacity of this research to obtain any concrete information about graduate

firms and their performance. It seems that there is no organized registration of sales, number of workers, survival rate etc.

The complexity, at best, or the inability, at worst, to evaluate the results of a mainly public funded process is wrong and may raise questions regarding the efficacy of incubation in the region.

Finally, incubators were asked to mark how graduation is taking part. As seen in graph 17, 57% of the incubators have no fixed policy and the decision is taken by assessment of the firm's condition and a joint decision, 31% of the incubators are fixing a time period for incubation while only two incubators define the period in advance for each firm individually. Lastly, two incubators are using financial incentives (increasing service fee) to stimulate firms to leave.

Graph 17 – Graduation Method



The conclusion seems straightforward. An incubation process which has no defined deadline has no defined goals and it will naturally struggle to deliver impacts. In-fact, many firms in the region stay incubated for many years and although in some cases, graduation seems to be challenging due to lack of supporting infrastructure outside the university's walls, staying under the protective wings of the incubator with its low-cost services may prevent the firm from becoming competitive and mature (Corinne , Adkins , Wolfe , & LaPan, 2010).

5. Conclusion:

An entrepreneurial culture marked by lack of trust, vision and experience, plus the lack of capital and networking and a weak link between the university and the industry, these elements of the Brazilian northeast reality constitute an obstacle to innovative entrepreneurship and therefore, may justify the investment in business incubators.

The region's incubators provide opportunities for academic professionals to engage in entrepreneurship and some incubators produced a significant number of graduated firms in the last five years. However, as we have seen, goals are not clearly defined, neither the incubation framework, most incubators are not business driven, they lack financial and administrative independence, their staff is not exclusively focused on the incubator management and they suffer from financial instability which then trickles downward to the incubated projects. Most important, performance is hard to measure, since graduated firms are not being monitored.

Conclusion 1 – There is a need for a directing hand, meaning a policy as well as a federal law that would arrange, confederate and increase the public investments in incubated firms in the region. This policy should define, broadly and as clearly as possible, the objectives of these investments; it should plan how incubators may conduct financially and with stability and make some order in the chaos which prevails in that field today. Any firm who receives public investment must commit to accept the incubator's authority and act in transparency regarding its performance in order to allow monitoring and evaluation.

Incubators, on their part, have to adopt a selection method which emphasizes the search for competent partnership-oriented entrepreneurs. As we have seen, the majority of entrepreneurs do not understand the concept of start-up firm as it being perceived in developed markets. Apart from giving it the weight during the selection process, an

incubator should advocate its new entrepreneurs to search for partnerships and external investors in exchange for shares.

Moreover, the incubator should get involved regularly in overseeing projects' management and must set a fix incubation period in order to eliminate the current situation in which firms may stay incubated for many years and avoid graduation.

Conclusion 2 – Current public investment per project is insufficient and it casts doubt regarding the ability of the project to succeed; in addition, since grants may not be used to pay entrepreneurs' salaries, there is a paradoxical situation in which an insufficient public investment supports an entrepreneur who may dedicate only a small part of his time to the project. Furthermore, about 70% of the incubated firms do not receive public grants and due to the absence of private investments, most of them are struggling to survive.

Conclusion 3 – There is a need to promote the existing incubators, one step toward financial autonomy. As we have seen, seniority and experience are crucial for incubators' performance, it is better to take advantage of what was done so far and not to build exclusively on new institutions. The PU incubators should operate as an administratively separate unit by getting their own annual budget and if not physically disengage from the institution, at the least, disconnect at the financial and managerial level in order to create a proactive business attitude inside a context dominated by bureaucracy and hierarchy.

An incubator of a NPO should be unchained from the different institutions authority and perhaps even be oriented for profitability or at least, self-sustainability. The best ones should enter a pilot program which may possibly be inspired by the Israeli model. In such a model they will act as business accelerators and form partnerships with the incubated projects. Clearly, for that to be implemented, federal legislation should be passed to allow public entities (namely, universities) to form for-profit organizations since today in-order to benefit from public grants an institution must be defined as a

NPO. It seems that such a law would be a real political innovation in light of the current aversion which exists in Brazil, regarding “mixing” between the public and the private.

The use of market mechanisms in that system is an effective way to introduce business approach and create entrepreneurial ambitions which are absent today at northeastern incubators.

Conclusion 4 –Most of the entrepreneurs are aware of the importance of networking and expect in vain for the incubator to provide it. We must acknowledge that the questionnaires which were used, not fully hit the target on this matter, therefore this study struggles to analyze why networking fails in the region. With their different age and level of experience the incubators face different stages in their learning cycle; it seems that new or weak incubators could largely benefit from the interaction with the older and more successful ones. Our suggestion for further researches is to examine how networking occurs in the southern regions and how cultural differences affect the performance of this function.

Conclusion 5 - The last point for discussion is the prevalence of incubated software firms. That phenomenon may result from the inability to raise funds for investment in more expensive sectors or simply from a current fad for building software and websites. However, we recommend to delve into the question of whether these firms benefit from the physical proximity to the university at the expense of the distance from city center or industry areas. Policy makers should consider the establishment of clusters (such as Porto Digital, Recife) where firms could enjoy services such as business brokerage and marketing services which will connect them with the south of the country.

There is a great potential in innovative entrepreneurship in the region, but as we found, the number of biotechnology and clean-technology firms is low. Brazil has perhaps the world’s greatest natural treasures and it holds a rich and unique knowledge of thousands years old, regarding its flora and fauna with its special virtues. On the other hand, the lack of adequate policies and inefficiency in resource allocation (López-

Claros & Mata, 2010-2011), floods the region with enormous environmental problems. Developing these sectors by using business incubators with the appropriate management and with a broader public investment, may be a real engine for the regional growth.

Limitations:

The lack of data regarding graduated firms prevents us from being able to point at the incubator's true social and economic impact in the region. Thanks to some failures we revile in this paper, we may estimate that the impact is weak and that there is a big potential for improvement.

Some parts of our questionnaires could have been improved, examples are the networking chapter in which we did not manage to obtain very interesting results and in general the use of Likert scale seems to be too abstract and subjected to subjectivity.

Lastly, the geographical distance between the different states and the high cost of travel, limited the research and prevent us from visiting in more incubators, particularly in the traditional ones and their firms since they are usually located on the periphery.

Bibliografia

1. (2000). *Sociedade Da Informação no Brasil, Livro Verde*. Brasília: Ministério da Ciência e Tecnologia.
2. (2002). *Benchmarking of Business Incubators*. UK: Center for Strategy and Evaluation Services.
3. (2002). *Livro Branco, Ciência, Tecnologia e Inovação*. Brasília: Ministério da Ciência e Tecnologia.
4. (2010). *Conhecimento e Cidadania 7, Incubação de Cooperativas Populares e de Empreendimentos Econômicos Solidários*. São Paulo, Brasil: Instituto de tecnologia social .
5. Bergek, A., & Norrman, C. (2007). Incubator best practice: A framework. *Technovation*, 28, 1-2, p. 20-28.
6. Beuren, I. M., & Raupp, F. M. (2010). KNOWLEDGE MANAGEMENT AT BRAZILIAN INCUBATORS. *FUTURE STUDIES PROGRAM*, v. 2, n. 2, art. 22, 179-202.
7. Buarque de Holanda, S. (1936). *Raízes do Brasil*. São Paulo: Companhia das Letras.
8. Bulgacov, S., Bulgacov, Y. L., & Canhada, D. I. (2009, abr./jun). Indicadores Qualitativos de Gestão para Incubadora e Empresas Empreendedoras Incubadas: Um Estudo Longitudinal. *FACES R. Adm. Belo Horizonte*, pp. v. 8 · n. 2 · p. 55-74.
9. Buys, J. A., & Mbewana, N. (2006). *The key success factors for business incubation in south africa, the Godisa case study*. Mbewana, South Africa: University of Pretoria etd.
10. Corinne , C., Adkins , D., Wolfe , C., & LaPan, K. (2010). Best Practices in Action: Guidelines for Implementing First-Class Business Incubation Programs. *NBIA Publications*, p. 130.
11. Etzkowitz, H., Carvalho de Mello, J., & Almeida, M. (2005). Towards “meta-innovation” in Brazil: The evolution of the incubator and the emergence of a triple helix. *Elsevier, Research Policy*, 34, p. 411–424.
12. Frenkel, A., & Shefer, D. (2008). Regional innovation and incubation, The technological incubators program for entrepreneurship and innovation. *Handbook of Regional Innovation and Growth* (pp. 514-525). UK: Edward Elgar, 2011.
13. Frenkel, A., Shefer, D., & Miller, M. (2005). *The Technological Incubators in Israel: Technological Policy in an Era of Privatization*. Haifa, Israel: Technion.
14. Greco, S. M. (2012). *Empreendedorismo na região nordeste do Brasil*. Brazil: Global Entrepreneurship Monitor.
15. Guennif, S., & Ramani, S. V. (2008). Catching up in the pharmaceutical sector: Lessons from case studies of India, Thailand and Brazil. In: *Malerba, F. and Nelson, R. R., Economic development as a learning process* (pp. 157-193). UK: Edward Elgar Publishing.
16. Gunasekara, C. (2006). Reframing the Role of Universities in the Development of Regional Innovation Systems . *The Journal of Technology Transfer*, 31(1), p. 101-113.
17. Hackett, S. M., & Dilts, D. M. (2004a). A Real Options-Driven Theory of Business Incubation. *Journal of Technology Transfer*, 29, p. 41–54.
18. Hackett, S. M., & Dilts, D. M. (2004b). A Systematic Review of Business Incubation Research. *Journal of Technology Transfer*, 29, 55-82,.
19. Hackett, S. M., & Dilts, D. M. (2008). Inside the black box of business incubation: Study B—scale assessment, model refinement, and incubation outcomes. *Journal of Technology Transfer*, 33: p. 439–471.
20. Harman, P., & Read, L. (2003). *Supporting incubation in the UK through the development of benchmarks*. Northern Ireland: International Council for Small Business, 48th World Conference.

21. Hofstede, G. (1991). *Cultures and Organizations, Software of the Mind*. UK: McGraw-Hill International.
22. Kaufmann, D. (2009). *Evaluation of the Israeli incubator program*. Jerusalem, Israel: The Jerusalem Institute for Israel Studies.
23. Khalil, M. A., & Olafsen, E. (2009-2010). Enabling innovative entrepreneurship thorough business incubation. In A. López-Claros, *The innovation for Development Report* (pp. 69-84). UK: Palgrave Macmillan .
24. Lahorgue, M. A., Guimarães, G., Aranha, J. S., Fátima de Faria, R., & Pires, S. O. (2012). *Estudo, Análise e Proposições sobre as Incubadoras de Empresas no Brasil*. Brasília: ANPROTEC.
25. Lee, K., Mani, S., & MU, Q. (2009). Explaining Divergent Stories of Catch-up in the Telecommunication Equipment Industry in Brazil, China, India, and Korea. In: *Malerba, F. and Nelson, R. R., Economic development as a learning process* (pp. 21-71). UK: Edward Elgar Publishing.
26. López-Claros, A., & Mata, Y. N. (2010-2011). Policies and Institutions Underpinning Country Innovation: Results from the Innovation Capacity Index. In A. López-Claros, *The innovation for Development Report* (pp. 3-50). UK: Palgrave Macmillan.
27. Martinez, J. (2003). *El proceso de creación de EIBTs: Ciclo vital e apoyos al desarrollo y crecimiento*. Madrid: Creara Fundacion San Telmo, ANCES.
28. Marvel, M. R. (2013). Human Capital and Search-Based Discovery: A study of high-tech entrepreneurship. *Entrepreneurship Theory and Practice*, V. 37, I. 2, p. 403–419.
29. Mendes de Paula, G., & Oliveira Filho, J. B. (2006). Incubadoras de Empresas e a busca de um modelo auto-sustentável: o caso do Triângulo Mineiro e Alto Paranaíba. *Revista Gestão & Tecnologia*, v. 6, n. 1.
30. Miller, M., Shefer, D., & Amnon Frenkel. (2005). *Public vs. Private Technological Incubator Programs: Privatizing the technological incubators in Israel*. Haifa, Israel: Technion.
31. Monteiro da Silva, M. O., Gomes, L. F., & Correia, M. F. (2009, Jan./Mar). Cultura e Orientação Empreendedora: uma Pesquisa Comparativa entre Empreendedores em Incubadoras no Brasil e em Portugal. *RAC, Curitiba*, pp. v. 13, n. 1, art. 4, p. 57-71.
32. Oliveira, H. R., Souza, K. L., & Lima, L. D. (2013). *Nordeste do Brasil, Sinopse Estatística*. Fortaleza, Brasil: Banco do Nordeste.
33. Pinho, M., Cortês, M. R., & Fernandes, A. C. (2002). A fragilidade das empresas de base tecnológica em economias periféricas: uma interpretação baseada na experiência brasileira. *Ensaio FEE*, v. 23, n. 1, p. 135-162, 2002.
34. Raupp, F. M., & Beuren, I. M. (2007). Compartilhamento do Conhecimento Em Incubadoras Brasileiras Associadas a ANPROTEC. *Revista de Administração Mecnzie*, Volume 8, n. 2, p. 38-58.
35. Ribeiro, D. (1995). *O Povo Brasileiro, A formação e o sentido do Brasil*. São Paulo: Companhia das Letras.
36. Rothaermel, F. T., & Thursby, M. (2005). Incubator firm failure or graduation? The role of university linkages. *Elsevier, Research Policy*.
37. Rothaermel, F. T., & Thursby, M. (2005). University–incubator firm knowledge flows: assessing their impact on incubator firm performance. *Elsevier, Research Policy*, 34, p. 305–320.
38. Serra, B. C., Serra, F. A., Ferreira, M. P., & Fiates, G. G. (2010). *Fatores fundamentais para o desempenho das incubadoras*. Leiria: Instituto Politécnico de Leiria.

39. Shefer, D., & Frenkel, A. (2002). *Technological incubator program and its projects*. Haifa, Israel: Technion.
40. Sipos, Z., & Szabo, A. (2006). *Benchmarking of Business Incubators in CEE and CIS Transition Economies*. Budapest, Hungary: Erenet-Sintef.
41. Smilor, W. R. (1987). *Managing the Incubator System: Critical Success Factors to Accelerate New Company Development*. . V. 34, N.4, p. 146–156.: IEEE Transactions on Engineering Management, .
42. Vanderstraeten, J., & Matthyssens, P. (2004). *Measuring the performance of business incubators, A critical analysis of effectiveness approaches and performance measurement systems*. Antwerp, Belgium: University of Antwerp, Faculty of Applied Economics, (number 2012012).

Appendix 1 – List of Incubators

Name	State	Institution	Type	Firms	Answers	%
NIEP - Pindorama	ALAGOAS	Non-Profit Organization	Traditional, Agro	14	0	0%
INCUBAL	ALAGOAS	Public University	Technology	17	8	47%
UNISCAL, UNITEC	ALAGOAS	Public University	Mixed	4	3	75%
INCLA - SENAI	ALAGOAS	Non-Profit Organization	Traditional, Agro	15	0	0%
IET - CESMAC	ALAGOAS	Non-Profit Organization	Mixed	10	3	30%
INETI, CEPEDI, Iلهus	BAHIA	Non-Profit Organization	Technology	3	2	66%
INCUBATEC	BAHIA	Public University	Mixed	5	2	40%
UNIFCAS	BAHIA	Private	Technology	6	2	33%
INOVAPOLI	BAHIA	Public University	Technology	3	2	66%
CENA	BAHIA	Non-Profit Organization	Technology	8	2	25%
INCUBAUECE	CEARA	Public University	Mixed	9	2	22%
PADETEC	CEARA	Non-Profit Organization	Technology	16	4	25%
INCUBTIC, ITIC	CEARA	Non-Profit Organization	Technology	7	2	29%
INTECE - CENTEC	CEARA	Non-Profit Organization	Mixed	20	3	15%
EDETEC	CEARA	Non-Profit Organization	Technology	12	7	58%
NUTECH - PARTECH	CEARA	Public University	Mixed	5	2	40%
IFCE	CEARA	Public University	Mixed	12	3	25%
INCUBEM	MARANHAO	Public University	Technology	6	2	33%
ITCG Campina Gr	PARAIBA	Non-Profit Organization	Mixed	18	7	39%
INCUBATEP - ITEP	PERNAMBUCO	Non-Profit Organization	Technology	18	6	33%
Sugere	PERNAMBUCO	Private	Mixed	0	0	0%
INCUBANECHTAR	PERNAMBUCO	Non-Profit Organization	Mixed	11	2	18%
CESAR	PERNAMBUCO	Non-Profit Organization	Technology	3	1	33%
Incubatec Rural	PERNAMBUCO	Public University	Traditional, Agro	5	3	60%
INCUBADORA DO CABO	PERNAMBUCO	Non-Profit Organization	Traditional, Agro	2	0	0%
Porto Digital	PERNAMBUCO	Non-Profit Organization	Technology	17	5	
POSITIVA UFPE	PERNAMBUCO	Public University	Technology	0	2	*
INCOPE	RN	Non-Profit Organization	Mixed	4	6	*
NATA - UFRN	RN	Public University	Technology	12	5	42%
IFRN	RN	Public University	Mixed	7	2	29%
IAGRAM	RN	Public University	Traditional, Agro	14	0	0%
INEAGRO	RN	Public University	Traditional, Agro	12	0	0%
CITECS	RN	Public University	Mixed	9	0	0%
CISE	SERGIPE	Non-Profit Organization	Technology	13	5	38%
I-TEC	SERGIPE	Private	Technology	3	0	0%
				320	93	29%

- Answers received from two recently graduated firms

Appendix 2 – 4.2. Sustainability and Budget - Statistical tests

Mann-Whitney Test – Sustainability by Ownership

Ranks				
	Ownership	N	Mean Rank	Sum of Ranks
Sustainability	2	17	18,79	319,50
	3	15	13,90	208,50
	Total	32		

Test Statistics ^a	
	Sustainability
Mann-Whitney U	88,500
Wilcoxon W	208,500
Z	-1,801
Asymp. Sig. (2-tailed)	,072
Exact Sig. [2*(1-tailed Sig.)]	,142 ^b

a. Grouping Variable: Ownership

b. Not corrected for ties.

Mann-Whitney Test – Sustainability by Groups of Incubator's Age

Ranks				
	YoungOldFirm	N	Mean Rank	Sum of Ranks
Sustainability	,00	17	15,06	256,00
	1,00	18	20,78	374,00
	Total	35		

Test Statistics ^a	
	Sustainability
Mann-Whitney U	103,000
Wilcoxon W	256,000
Z	-2,078
Asymp. Sig. (2-tailed)	,038
Exact Sig. [2*(1-tailed Sig.)]	,103 ^b

a. Grouping Variable: YoungOldFirm

b. Not corrected for ties.

Mann-Whitney Test – Budget by Ownership

Ranks				
	Ownership	N	Mean Rank	Sum of Ranks
Budget	2	17	20,24	344,00
	3	15	12,27	184,00
	Total	32		

Test Statistics ^a	
	Budget
Mann-Whitney U	64,000
Wilcoxon W	184,000
Z	-2,584
Asymp. Sig. (2-tailed)	,010
Exact Sig. [2*(1-tailed Sig.)]	,016 ^b

a. Grouping Variable: Ownership

b. Not corrected for ties.

Appendix 3 – 4.3. Goals and Impacts - Statistical tests

Friedman Test - Goals

Ranks	
	Mean Rank
Goal_Jobs	2,50
Goal_Knowledge	2,34
Goal_Human	2,28
Goal_Culture	2,88

Test Statistics ^a	
N	34
Chi-Square	8,377
df	3
Asymp. Sig.	,039

a. Friedman Test

Friedman Test - Goals

Ranks	
	Mean Rank
Goal_Jobs	2,94
Goal_Knowledge	2,79
Goal_Human	2,82
Goal_Profit	1,44

Test Statistics ^a	
N	34
Chi-Square	39,442
df	3
Asymp. Sig.	,000

a. Friedman Test

Friedman Test - Impacts

Ranks	
	Mean Rank
Impact_Jobs	2,07
Impact_Knowledge	1,76
Impact_Human	2,17

Test Statistics ^a	
N	35
Chi-Square	5,089
df	2
Asymp. Sig.	,079

a. Friedman Test

Friedman Test - Impacts

Ranks	
	Mean Rank
Impact_Jobs	1,81
Impact_Human	1,94
Impact_Culture	2,24

Test Statistics ^a	
N	35
Chi-Square	6,000
df	2
Asymp. Sig.	,050

a. Friedman Test

Appendix 4 – 4.5. Investment Volume - Statistical tests

Mann-Whitney Test – Investment by incubators and firms

Ranks

	IncOrFirm	N	Mean Rank	Sum of Ranks
	1,00	19	68,42	1300,00
Investment	2,00	85	48,94	4160,00
	Total	104		

Test Statistics^a

	Investment
Mann-Whitney U	505,000
Wilcoxon W	4160,000
Z	-2,546
Asymp. Sig. (2-tailed)	,011

a. Grouping Variable: IncOrFirm

Mann-Whitney Test – Investment by ownerships**Ranks**

	Ownership	N	Mean Rank	Sum of Ranks
	2	51	38,48	1962,50
Investment	3	32	47,61	1523,50
	Total	83		

Test Statistics^a

	Investment
Mann-Whitney U	636,500
Wilcoxon W	1962,500
Z	-1,681
Asymp. Sig. (2-tailed)	,093

a. Grouping Variable: Ownership

Mann-Whitney Test – Investment by public funds**Ranks**

	Public_Funds	N	Mean Rank	Sum of Ranks
	0	55	32,44	1784,00
Investment	1	28	60,79	1702,00
	Total	83		

Test Statistics^a

	Investment
Mann-Whitney U	244,000
Wilcoxon W	1784,000
Z	-5,070
Asymp. Sig. (2-tailed)	,000

a. Grouping Variable: Public_Funds

Mann-Whitney Test - Investment by technology or other software firm**Ranks**

	Technology_Firm_Not_Software	N	Mean Rank	Sum of Ranks
	,00	39	30,19	1177,50
Investment	1,00	23	33,72	775,50
	Total	62		

Test Statistics^a

	Investment
Mann-Whitney U	397,500
Wilcoxon W	1177,500
Z	-,744
Asymp. Sig. (2-tailed)	,457

a. Grouping Variable:
Technology_Firm_Not_Software**Appendix 5 – 4.7. Incubators response - Statistical tests****Friedman Test - Barriers to Development****Ranks**

	Mean Rank

Funds_PandD	8,45
Funds_Marketing	9,09
Technical_Experience	4,40
Managarial_Experience	6,25
Legal_Experience	6,23
IP_Experience	5,07
Market_Experience	5,96
Qualified_HR	7,33
Partners_In_Region	7,96
Partners_Out_region	7,19
Underdevelopment_region	7,73
Consulting	6,94
Networking	8,40

Test Statistics^a

N	81
Chi-Square	141,883
df	12
Asymp. Sig.	,000

a. Friedman Test

Friedman Test – Personnel in Incubators**Ranks**

	Mean Rank
Pr_Prof_Acad	4,06
Pr_Acad_rese	3,11
Pr_Enterpren	4,96
Pr_Applied_Res	2,84
Pr_Manag_account	5,73
Pr_Legal	5,17
Pr_Consult	5,47
Pr_Ind_Prop	4,66

Test Statistics^a

N	35
Chi-Square	68,259
df	7
Asymp. Sig.	,000

a. Friedman Test

Friedman Test – Services according to incubators**Ranks**

	Mean Rank
Se_Legal	7,41
Se_Finan_Sup	4,04
Se_Strat_Part	9,31
Se_Ident_Finan	7,23
Se_Consult	9,41
Se_Mark	9,43
Se_Account	7,41
Se_Market_St	6,57
Se_Ind_Prop	8,49
Se_Bus_Plan	10,16
Se_Incubation	11,04
Se_Workshop	10,51
Se_Normaliza	5,21
Se_Lab	7,09
Se_Prof_Form	6,67

Test Statistics^a

N	35
Chi-Square	129,661
df	14
Asymp. Sig.	,000

a. Friedman Test

Friedman Test – Services according to firms**Ranks**

	Mean Rank
Ser_Partners_out_Region	5,88
Ser_Lergal	7,97
Ser_Financial_Sup	6,30
Ser_Fund_Soiurces	7,96
Ser_Clients	7,58
Ser_Stratg_Partners	8,65
Ser_Consulting	8,64
Ser_Marketing	6,97
Ser_MarketStudy	6,61
Ser_IP	7,65
Ser_Bus_Plan	10,51
Ser_Seminars	10,27
Ser_Formation	8,66
Ser_Accounting	6,79
Ser_Lab	9,56

Test Statistics^a

N	59
Chi-Square	113,442
df	14
Asymp. Sig.	,000

a. Friedman Test

Appendix 6 – 4.8. Selection Process - Statistical tests

Mann-Whitney Test – Promotion by Techonlogy and Traditional incubators

Ranks				
	Type	N	Mean Rank	Sum of Ranks
	1	16	9,22	147,50
Sel_Promotion	3	6	17,58	105,50
	Total	22		

Test Statistics ^a	
	Sel_Promotion
Mann-Whitney U	11,500
Wilcoxon W	147,500
Z	-2,840
Asymp. Sig. (2-tailed)	,005
Exact Sig. [2*(1-tailed Sig.)]	,005 ^b

a. Grouping Variable: Type

b. Not corrected for ties.

Mann-Whitney Test – Promotion by Mixed and Traditional incubators

Ranks				
	Type	N	Mean Rank	Sum of Ranks
	2	13	7,85	102,00
Sel_Promotion	3	6	14,67	88,00
	Total	19		

Test Statistics ^a	
	Sel_Promotion
Mann-Whitney U	11,000
Wilcoxon W	102,000
Z	-2,547
Asymp. Sig. (2-tailed)	,011
Exact Sig. [2*(1-tailed Sig.)]	,012 ^b

a. Grouping Variable: Type

b. Not corrected for ties.

Appendix 7 – 4.9. Intervention - Statistical tests

Mann-Whitney Test – Intervention by incubators and firms

Ranks				
	IncOrFirm	N	Mean Rank	Sum of Ranks
	1,00	35	84,20	2947,00
Intervention	2,00	93	57,09	5309,00
	Total	128		

Test Statistics^a

	Intervention
Mann-Whitney U	938,000
Wilcoxon W	5309,000
Z	-3,943
Asymp. Sig. (2-tailed)	,000

a. Grouping Variable: IncOrFirm

Mann-Whitney Test - Intervention by firms and a weighted average of incubators

Ranks				
	IncOrFirm	N	Mean Rank	Sum of Ranks
	1,00	93	110,86	10310,00
Intervention	2,00	93	76,14	7081,00
	Total	186		

Test Statistics^a

	Intervention
Mann-Whitney U	2710,000
Wilcoxon W	7081,000
Z	-4,648
Asymp. Sig. (2-tailed)	,000

a. Grouping Variable: IncOrFirm

Appendix 8 – Questionnaire for Incubator⁶

1. Nome da entidade: 2. Mantenedora:
 3. Localidade (Cidade, Estado):
 4. Ano de criação:

(Se não for indicado o contrário, sempre pode marcar mais de uma resposta)

I – Constituição e financiamento

5. Qual é o tipo da incubadora?		
Tecnológica	Abriga produtos, processos e serviços que resultam da pesquisa científica.	<input type="checkbox"/>
Tradicional	Abriga empreendimentos ligados aos sectores da economia que detém tecnologias difundidas e que querem agregar valor aos seus produtos, processos e serviços.	<input type="checkbox"/>
Mista	Abriga empresas de base tecnológica tradicionais.	<input type="checkbox"/>
Agro-industrial		<input type="checkbox"/>
Privada		<input type="checkbox"/>
Cooperativa		<input type="checkbox"/>

6. Constituição da incubadora:	
Universidade / instituto de ensino federal	<input type="checkbox"/>
Universidade / instituto de ensino estadual	<input type="checkbox"/>
Universidade / instituto de ensino privado	<input type="checkbox"/>
Empresa privada	<input type="checkbox"/>
Instituto de fomento ao desenvolvimento	<input type="checkbox"/>
Outros _____	<input type="checkbox"/>

7. Financiamento da operação da incubadora:	0%	1%-25%	26%-50%	51%-75%	76%-100%
Subvenção Federal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Subvenção Estadual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instituição de fomento ao desenvolvimento	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instituto privado de ensino	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industria – empresa pública	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industria – empresa privada	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rendimento da prestação de serviço	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Auto Sustentabilidade da incubadora (Marque apenas uma opção):

⁶ https://docs.google.com/forms/d/1QkGmkx9VUlelbyVM9MZZ_C3QzCmp4ZwkHKSs2HBKoA/viewform

A incubadora tem saldo positivo	<input type="checkbox"/>
A Incubadora é sustentável (ponto de equilíbrio)	<input type="checkbox"/>
A Incubadora é quase sustentável e está no caminho a se tornar.	<input type="checkbox"/>
A incubadora consegue financiar mais de 50% dos seus gastos.	<input type="checkbox"/>
A incubadora consegue financiar menos de 50% dos seus gastos	<input type="checkbox"/>

9. Orçamento (Marque apenas uma opção):	
A incubadora tem um orçamento anual/semianual e está mantendo-o rigorosamente.	<input type="checkbox"/>
Tem orçamento anual/semianual mas normalmente excede-o e tem que buscar fundos para manter a sua atividade	<input type="checkbox"/>
Tem orçamento anual/semianual mas está insuficiente e está constantemente à procura de capital adicional para realizar as suas atividades	<input type="checkbox"/>
Tem orçamento de curto prazo e está constantemente a procura de capital para realizar as suas atividades.	<input type="checkbox"/>
Não existe orçamento, a incubadora está constantemente à procura de capital para realizar as atividades	<input type="checkbox"/>
Outro: _____	

II – Objetivos e Tipologia

10. Dos seguintes objetivos, classifique a importância de cada um para a incubadora?					
Em uma escala de 1 (Pouco importante) a 5 (Muito importante)	1	2	3	4	5
Criar empregos, promover o desenvolvimento e inclusão social	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comercialização de inovações e conhecimento da universidade/instituto de ensino superior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoção de capital humano	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Desenvolvimento da cultura empreendedora	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gerar lucro para a incubadora	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

III - Pessoal

11. Indique o número de colaboradores de tempo da incubadora de tempo: Integral: _____, parcial: _____, bolsistas: _____
12. Quantos colaboradores possuem nível académico?
Colaboradores com Ensino médio – _____
Colaboradores com Graduação – _____
Colaboradores com nível técnico -- _____
Colaboradores com Mestrado – _____
Colaboradores com Doutorado – _____

Biotecnologia										
Software, E-learning, Telecomunicações	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turismo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VI – Processo de seleção

20. Em relação ao processo de seleção de novos projetos, qual a relevância dos seguintes aspectos?:					
Em uma escala de 1 (Pouco relevante) A 5 (Muito relevante)	1	2	3	4	5
A incubadora tem que promover o serviço para aumentar a demanda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A incubadora tem normalmente poucas vagas abertas para novos empreendedores entrarem no processo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Existe um método rigoroso de seleção de projetos, incluindo a participação de especialistas no específico área de negócios.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Os avaliadores que participam na seleção do projeto mantêm contato com o projeto durante o tempo de incubação.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. Marque os três fatores mais importantes em relação ao processo de seleção de projetos:	
A ideia do negócio é inovadora (tem concorrência reduzida) e parece promissora	<input type="checkbox"/>
Os perfis dos empreendedores - Os empreendedores parecem disciplinados e ambiciosos	<input type="checkbox"/>
A Incubadora considera a capacidade ou a incapacidade do projeto ser desenvolvido sem processo de incubação	<input type="checkbox"/>
A necessidade da incubadora alugar espaço livre ou, por outro lado, a indisponibilidade do espaço	<input type="checkbox"/>
A cultura de negócios dos empreendedores é favorável para poder trabalhar em parceria com investidores.	<input type="checkbox"/>
A incubadora (junto com o seu instituto supervisor) possui a capacidade e o conhecimento técnico para apoiar o projeto. (a existência de know-how)	<input type="checkbox"/>

VII – Apoio às empresas e controle de metas

22. Em relação aos seguintes serviços:				
	A incubadora oferece esses serviços	Oferece parcialmente ou por meio de parceiros	Existe demanda mas sem resposta da incubadora	Não existe demanda
Apoio à constituição legal de empresas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoios financeiros à criação de empresas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canal para a criação de relacionamentos com parceiros estratégicos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identificação e ligação a fundos financeiros	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultoria Estratégica	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoio ao Marketing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoio a Contabilidade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Realização de Estudos de mercado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoio ao registro de Propriedade industrial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoio na elaboração do Plano de Negócios	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disponibilização de instalações (incubação)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organização de Workshops/Seminários	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Normalização/Certificação	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Infra-estrutura laboratorial (interior ou exterior a incubadora) para pesquisa aplicada	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formação Profissional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. Indique o nível da intervenção da incubadora na gestão da empresa em acordo com esses valores

1 – Intervenção leve - A incubadora presta serviço de consultoria e apoio às funções de gestão só quando a empresa mostra iniciativa e necessidade. (iniciativa do empreendedor)

3 – Intervenção moderada - A incubadora acompanha as ações da empresa, implicando um sistema de controle de metas periodicamente. (iniciativa conjunta)

5 – Intervenção intensa - A incubadora atua com uma intervenção constante e intensiva na gestão da empresa com um sistema rigoroso de controle de metas. (iniciativa da incubadora)

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. O nível de intervenção (os valores da última resposta), aumenta quando a empresa incubada recebe capital das instituições de apoio ao desenvolvimento (fundos públicos):

Em uma escala de 1 (Não concordo) a 5 (Concordo totalmente)	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VIII – Graduação

25. Qual é o parâmetro tomado como decisão para uma empresa incubada graduar?		
Elabora-se uma análise da situação da empresa e toma-se uma decisão em conjunto com a empresa	<input type="checkbox"/>	
Existe um tempo fixo igual para todas as empresas que termina o plano da incubação	<input type="checkbox"/>	
Existe um tempo fixo individual para cada empresa que termina o plano da incubação	<input type="checkbox"/>	
A incubadora aumenta os custos de aluguel e/ou serviços oferecidos até que a empresa toma a decisão de graduar (incentivos para graduar)	<input type="checkbox"/>	

26. Nível de contato com empresas graduadas:				
Em uma escala de 1 a 5 quando:				
1 - A incubadora não está em contato com as empresas graduadas				
3 - A incubadora mantém contato periodicamente mas não contém dados sobre as atividades das empresas graduadas				
5 - A incubadora mantém contato constante e gerência base de dados das empresas graduadas com o fim de avaliar o processo de incubação				
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

27. Quantas empresas graduavam nos últimos 5 anos? _____

IX – Networking e mediação

28. O que faz a incubadora para promover networking e spill-over de conhecimento entre as empresas incubadas?			
Intranet	<input type="checkbox"/>	Palestras	<input type="checkbox"/>
Eventos de socialização	<input type="checkbox"/>	Seminários	<input type="checkbox"/>
Jornais	<input type="checkbox"/>	Revistas	<input type="checkbox"/>
Competições	<input type="checkbox"/>	Encoraja parcerias entre empresas	<input type="checkbox"/>
29. O que faz a incubadora para promover networking com outras incubadoras/entidades			
Faz parte de rede estadual	<input type="checkbox"/>	Faz parte de rede nacional	<input type="checkbox"/>
Mantém aliança com outra/s incubadora/s	<input type="checkbox"/>	Mantém acordos institucionais	<input type="checkbox"/>
Acordos internacionais	<input type="checkbox"/>		

30. Que serviço(s) geralmente procura quando contata uma Rede incubadoras?	
Oportunidades de Negócio	<input type="checkbox"/>
Parceiros Estratégicos de Negócio	<input type="checkbox"/>
Novos Contatos Institucionais de Apoio à Internacionalização	<input type="checkbox"/>
Informação de Mercados de outros estados	<input type="checkbox"/>
Divulgação dos Produtos/Serviços	<input type="checkbox"/>
Legislação e Informação sobre o funcionamento do Mercado	<input type="checkbox"/>
Informação de Projetos e Programas de Financiamento	<input type="checkbox"/>

Appendix 9 – Questionnaire for Firms⁷

1. Nome da empresa:
2. Localidade (incubadora):
3. Ano de criação:

(Se não for indicado o contrário, sempre pode marcar mais de uma resposta)

I – Financiamento e auto-sustentabilidade

4. Qual foi o investimento (inicial + despesas operacionais) do projeto nos primeiros dois anos (no caso da empresa existir há menos de dois anos, responder até a presente data)? _____					
5. Origem do financiamento do investimento (Capital inicial + despesas operacionais) nos primeiros dois anos (%):	0%	1%-25%	26%-50%	51%-75%	76%-100%
Capital próprio (pessoal)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emprestado de Instituição de fomento ao desenvolvimento	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Editais de Instituição de fomento ao desenvolvimento	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bancos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Empresa Privada (spin-out)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investimento privado – Anjos ou empresas de capital de risco	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faturamento com vendas e prestação de serviços	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Que percentagem do financiamento da empresa é pago em salários a pesquisadores, na manutenção de laboratórios e no desenvolvimento de prototipos e testes de mercado? (% investimento em Pesquisa e Desenvolvimento - estimativa) _____					
7. A empresa tem algum registro de propriedade intelectual?					
Patentes	Contrato de transferência de tecnologia	Modelo de Utilidade	Logos	Design	Marcas
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. No caso de haver financiamento externo (além do capital próprio), até que nível o credor/investidor toma parte e interfere na gestão da sua empresa?					
Em uma escala de 1 (não interfere) a 5 (interfere intensivamente)	1	2	3	4	5
Empréstimos de Instituição de fomento ao desenvolvimento	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Editais de Instituição de fomento ao	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

⁷ https://docs.google.com/forms/d/1gzdr9M7TzkJWOCVgO0xJxyKc2tl_Hi2i2_72_A7UH3Y/viewform

desenvolvimento					
Bancos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Empresa Privada (spin-out)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investimento privado – Anjos ou empresas de capital de risco	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. No ultimo ano de atividade (2012):		Sim	Não
A empresa é auto-sustentável ou lucrativa		<input type="checkbox"/>	<input type="checkbox"/>
A empresa tem faturamento		<input type="checkbox"/>	<input type="checkbox"/>
A empresa esta crescendo		<input type="checkbox"/>	<input type="checkbox"/>
10. Caso a empresa venda produtos/serviços, o faturamento esta feito em nome (CNPJ) da:		Incubadora	Empresa
		<input type="checkbox"/>	<input type="checkbox"/>

11. Em que fase está a empresa atualmente?				
i. Desenvolvimento básico do produto	<input type="checkbox"/>			
ii. O(s) produto(s) está(o) em fase final antes de comercialização	<input type="checkbox"/>			
iii. O produto está começando a ser comercializado	<input type="checkbox"/>			
iv. O produto está comercializado, mas a empresa ainda investe significativamente em desenvolvimento do produto	<input type="checkbox"/>			
v. O(s) produto(s) está pronto, a empresa investe principalmente em marketing	<input type="checkbox"/>			
12. Referente à última pergunta, marque em que nível a falta de recursos financeiros impede que a empresa avance à próxima fase:				
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

II – Área de negocio e origem da ideia

13. Indique o Setor de Atividade da empresa:	
Serviços	<input type="checkbox"/> Construção <input type="checkbox"/>
Software, E-learning, Telecomunicações	<input type="checkbox"/> Química, Farmacêutica e Biotecnologia <input type="checkbox"/>
Comércio	<input type="checkbox"/> Comunicação <input type="checkbox"/>
Alimentos e Bebidas	<input type="checkbox"/> Agronegócio <input type="checkbox"/>
Turismo	<input type="checkbox"/> Meio-ambiente e Clean-tech <input type="checkbox"/>
Energia	<input type="checkbox"/> Logística e Transportes <input type="checkbox"/>

14. Em relação à origem da ideia do negócio e à motivação que teve o empreendedor na formação da empresa:		Sim	Não
O desejo de iniciar um negócio já existia antes de ter a ideia		<input type="checkbox"/>	<input type="checkbox"/>
A ideia tem origem na experiência acadêmica do empreendedor como estudante ou pesquisador		<input type="checkbox"/>	<input type="checkbox"/>
A ideia é resultado de uma pesquisa científica		<input type="checkbox"/>	<input type="checkbox"/>

A ideia tem origem na experiência profissional dos empreendedores	<input type="checkbox"/>	<input type="checkbox"/>
A ideia surgiu a partir de uma necessidade do mercado	<input type="checkbox"/>	<input type="checkbox"/>
A ideia foi iniciativa de uma empresa produtora ou prestadora de serviços que fez parceria com os empreendedores para produzir soluções (spin-out)	<input type="checkbox"/>	<input type="checkbox"/>
O empreendedor formou a empresa e desenvolveu a ideia por necessidade financeira (não conseguiu obter um emprego e salário desejável)	<input type="checkbox"/>	<input type="checkbox"/>
Alguns dos empreendedores já tiveram experiência anterior em empreendedorismo?	<input type="checkbox"/>	<input type="checkbox"/>

15. Leia atentamente e escolha quais foram as duas razões principais para estabelecer a empresa dentro de uma incubadora?

Os empreendedores vêm do mesmo instituto de ensino onde esta localizada a incubadora	<input type="checkbox"/>
O empreendedor teve falta de conhecimento técnico e o instituto ao qual a incubadora pertence tem este conhecimento	<input type="checkbox"/>
A incubadora oferece proximidade de infra-estrutura acadêmica (laboratórios, bibliotecas, recursos humano etc.)	<input type="checkbox"/>
A incubadora pode fornecer experiência de gestão empresarial que os empreendedores não têm	<input type="checkbox"/>
Existe uma vantagem na rede de conhecimentos que a incubadora fornece (investidores, organizações de fomento, clientes, outras empresas e mais...)	<input type="checkbox"/>
Testemunhos e histórias de sucesso de empresas que estão ou que foram incubadas	<input type="checkbox"/>
A Infra-estrutura e os serviços prestados por baixo custo	<input type="checkbox"/>

III - Pessoal

16. Indique o número de empreendedores (sócios) que formam a empresa:	
17. Entre os empreendedores indique o numero de mulheres:	
18. Qual é a idade média dos empreendedores na sua empresa:	
19. Quantos empreendedores possuem nível acadêmico?	Nº de empreendedores com Ensino médio: _____
	Nº de empreendedores técnicos _____
	Nº de empreendedores com Graduação _____
	Nº de empreendedores com Mestrado _____
	Nº de empreendedores com Doutorado _____

20. Qual é a área acadêmica dos empreendedores?					
Economia e administração	<input type="checkbox"/>	Química	<input type="checkbox"/>	Física	<input type="checkbox"/>
Biologia	<input type="checkbox"/>	Sociologia, ciência política, filosofia	<input type="checkbox"/>	Informática	<input type="checkbox"/>
Engenharia	<input type="checkbox"/>	Direito	<input type="checkbox"/>	Medicina, Farmácia (Saúde)	<input type="checkbox"/>
Arquitetura	<input type="checkbox"/>	Educação	<input type="checkbox"/>	Outro: _____	<input type="checkbox"/>

21-23. Indique o número de colaboradores (alem dos empreendedores) da empresa:	
Tempo inteiro: _____, Tempo parcial: _____, Bolsistas: _____	
24. Quantos colaboradores possuem nível acadêmico?	Nº de colaboradores com Ensino médio: _____
	Nº de colaboradores técnicos _____
	Nº de colaboradores com Graduação _____
	Nº de colaboradores com Mestrado _____
	Nº de colaboradores com Doutorado _____

IV – Objectivo, visão dos empreendedores

25. Como o empreendedor PERCEBE o sucesso da empresa?					
A empresa poderá ser vendida a uma empresa maior					<input type="checkbox"/>
A empresa poderá ser vendida a uma empresa maior, que terá o domínio (mais de 50%) mas os empreendedores ficarão com a opção de continuar trabalhando na empresa como gerentes/consultores...					<input type="checkbox"/>
Parte da empresa será vendida para aumentar o capital e devolver o investimento, mas o controle da empresa permanecerá com os empreendedores (mais de 50%)					<input type="checkbox"/>
A empresa vai graduar e crescer independentemente					<input type="checkbox"/>
26. Considerando a sua própria experiência como empreendedor na incubadora, classifique o peso dos seguintes fatores no que diz respeito às dificuldades enfrentadas pela sua empresa:					
Em uma escala de 1 (Pouco relevante) a 5 (Muito relevante)	1	2	3	4	5
Falta de recursos financeiros para P&D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de recursos financeiros para Marketing, estudo de mercado e outras funções de gestão	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de conhecimento e experiência técnica dos empreendedores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de conhecimento e experiência administrativa dos empreendedores	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de conhecimento e experiência jurídicos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de conhecimento e experiência referente ao registro de propriedade intelectual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de experiência e conhecimento de mercado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de recursos humanos qualificados	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de parceiros estratégicos dentro da região	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de parceiros estratégicos fora da região	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baixo nível de desenvolvimento econômico local e regional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de consultoria profissional de alta qualidade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Falta de acesso ao governo/estado, instituições de fomento, e a grandes empresas (networking)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

V – Apoio técnico e administrativo

27. Indique o nível da qualidade dos serviços oferecido pela incubadora ou pela instituição que ela pertence:							
Em uma escala de 0 (Não existe) a 5 (Excelente)	A sua empresa não utiliza	0	1	2	3	4	5
Identificação e ligação de parceiros fora do estado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoio à constituição legal de empresas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoios financeiros à criação de empresas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Identificação e ligação a potenciais clientes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Canal para a criação de relacionamentos com parceiros estratégicos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultoria Estratégica	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoio ao Marketing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Realização de Estudos de mercado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Consultoria Estratégica	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assistência no registro de propriedade intelectual	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoio na elaboração do Plano de Negócios	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organização de Workshops/Seminários	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formação Profissional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Apoio à Contabilidade	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Infra-estrutura laboratorial para pesquisa aplicada (mesmo fornecida fora da incubadora)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Existem serviços em que você acha o preço cobrado pela incubadora superior ao mercado? quais?							

29. Indique o nível de intervenção da incubadora na gestão da empresa em acordo com esses valores:				
1 - Intervenção leve - A incubadora presta serviço de consultoria e apoio às funções de gestão só quando a empresa mostra iniciativa e necessidade. (iniciativa do empreendedor)				
3 – Intervenção moderada - A incubadora acompanha as ações da empresa, implicando um sistema de controle de metas periodicamente. (iniciativa conjunta)				
5 – Intervenção intensa - A incubadora atua com uma intervenção constante e intensiva na gestão da empresa com um sistema rigoroso de controle de metas. (iniciativa da incubadora)				
1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VI – Networking

30. De que formas a empresa (através de seus funcionários da empresa) interage com outras empresas incubadas (com os funcionários de outras empresas)?			
Tempo livre no local da incubadora	<input type="checkbox"/>	Parcerias, projetos em conjunto	<input type="checkbox"/>
Intranet	<input type="checkbox"/>	Palestras	<input type="checkbox"/>
Reuniões	<input type="checkbox"/>	Seminários	<input type="checkbox"/>
Eventos de socialização - “café tecnológico”	<input type="checkbox"/>	Adquirindo serviços de outra empresa	<input type="checkbox"/>
Eventos de premiação (ex. melhor empresa)	<input type="checkbox"/>	Outras: _____	<input type="checkbox"/>
31. Interação com outras empresas: A empresa obtém contatos com: (Pode marcar varias opções)			
Quase não obtém contatos com outras empresas incubadas	<input type="checkbox"/>	Empresas da mesma incubadora	<input type="checkbox"/>
Empresas em outras incubadoras do estado	<input type="checkbox"/>	Empresas incubadas de outros estados	<input type="checkbox"/>

32. Qual é a motivação da empresa e de seus funcionários de interagir com outras empresas incubadas?					
Em uma escala de 1 (Pouco relevante) a 5 (Muito relevante)	1	2	3	4	5
Parcerias já existentes com outras empresas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Possibilidade de formar futuras parcerias	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trocar conhecimento e experiências técnicas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trocar conhecimento de mercado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trocar conhecimento de gestão	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Acesso à variedade de recursos humanos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Manter boas relações de vizinhança	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Em que nível a incubadora estimula interação entre as empresas incubadas?					
Em uma escala de 1 (não estimula) a 5 (estimula muito)	1	2	3	4	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>