The Role of a Brazilian Business Incubator in Catalyzing a Response to Economic Downturn by Executing Government Innovation and Entrepreneurship Supportive Programs

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Abstract

The severance of the last economic downturn has affected all countries regardless geography, and the recovering has been slowly and uneven. As a result the policy makers are facing huge challenges, since the decisions they make today will affect the social welfare not only tomorrow but also in the long run. In this scenario, innovation and entrepreneurship are seen as two of the most important drivers of an effective response to these challenges. The Brazilian government seems to have taken the right decision to improve the economy including the creation of programs to foster innovation and entrepreneurship. Drawing on the analysis of a supportive program to encourage the development of new ventures based on knowledge creation, called First Innovative Enterprise (PRIME, in Portuguese), sponsored by the Brazilian innovation agency – FINEP and conducted by a group of business incubators, this paper aims to explore the lessons learned from the program implementation by one incubator located Rio de Janeiro state – Genesis Institute from the Pontifical Catholic University.

Keywords

Innovation; entrepreneurship; triple helix; incubators; execution.

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I. Introduction

The severance of the last economic downturn has affected all countries regardless geography, and the recovering has been slowly and uneven. As a result the policy makers are facing huge challenges, since the decisions they make today will affect the social welfare not only tomorrow but also in the long run. In this scenario, innovation and entrepreneurship are seen as two of the most important drivers of an effective response to these challenges (OECD, 2009). The Brazilian government seems to have taken the right decision to improve the economy (DEUTSCHE BANK RESEARCH, 2009) including the creation of programs to foster innovation and entrepreneurship.

The crisis, which spread quickly around the world in view of the interconnectedness of global financial markets, has affected several countries with different intensities, slowing their economies and rapidly deteriorating their labor markets.

According to data released by the Brazilian Institute of Geography and Statistics – IBGE in 2009, the Brazilian economy had entered recession. The GDP had fallen by 0.8% in the first quarter of 2009 against the previous period, and 3.6% in the last quarter of 2008 compared to the preceding quarter. The industry and foreign trade were the sectors of the Brazilian economy that were most affected by the crisis. Investments in production dragged by the manufacturing industry fell 12.6% in the first quarter of 2009 versus the fourth quarter of 2008.

It is at this juncture that the Brazilian government in 2009 triggered a series of counter-cyclical measures that sought to reverse the downturn in which the economy was. Cutting interest rates, reduction of taxes levied on various products - automobiles, construction materials, motor cycles, capital goods and appliances, increasing of the loan portfolio of Brazil's national bank for social development (BNDES) and stimulus in the infrastructure area, with the housing package, just to name a few.

With regard to the stimulus in the area of innovation and entrepreneurship, focus of this article, the government through the funding agency for studies and projects - FINEP, linked to the Ministry of Science and Technology, put into operation the "PRIME - First Innovative Enterprise" Program in order to create favorable financial conditions for emerging companies with high added value could successfully consolidate the initial development of their enterprises. In this sense, the program seeks to sponsor three rounds of call for proposals between 2009-2011, comprising about five thousand companies and investments of R$ 650 million grant. The initiative aimed to provide a quantitative and qualitative step change in the agency's fostering programs. The first national round of call for proposals in 2009 should commit budget resources of R$ 216 million grant.

Contrary to the tradition in the implementation process of previous programs, FINEP opted to hire a number of operational personnel with proven experience in structuring and supporting the development of emerging entrepreneurs, who could effectively implement the program. Business incubators presented themselves as natural candidates. Thus, 17 incubators were selected around the country.

According to the call for papers to the program, each operational agent would have R$ 14.4 million grant to support up to 120 companies with up to two years of establishment, each one receiving R$ 120 thousand in the grant system – in other words, without need of reimbursement by the companies. According to data from FINEP, 3,154 enterprises applied for the program, distributed as shown in following table.

Chart 1 – Operational Agents Overview

Region	Number of Operational Agents by city in each region	Enterprises	Percentage
Midwest	---	48	1,52%
Northeast	Manaus – AM (1 incubator)	389	12,33%
North	Campina Grande – PB (1 incubator) Recife – PE (1 incubator) Aracaju – SE (1 incubator)	121	3,84%
Southeast	Rio de Janeiro – RJ (3 incubators) São Paulo – SP (1 incubator) Ribeirão Preto – SP (1 incubator) São José dos Campos – SP (1 incubator) Belo Horizonte – MG (2 incubators) Sta. Rita do Sapucaí – MG (1 incubator)	1517	48,10%
South	Blumenau – SC (1 incubator) Florianópolis – SC (1 incubator) Porto Alegre – RS (2 incubators)	1079	34,21%

Source: www.portalinovacao.mct.gov.br/pi/prime/indicadores, Retrieved 2010.

Drawing on the analysis of one of the incubators – Genesis Institute from the Pontifical Catholic University (PUC), located in Rio de Janeiro state – selected as an operational agent, this paper aims to explore the lessons learned from the program implementation.

In this sense, the following research questions were established: Why a business incubator is an interesting agent to execute innovation and entrepreneurship supportive programs developed by the government? What kind of contributions can a business incubator give to catalyze the interactive system university-industry-government?

This paper reports on a revision of more than 160 business plans, a survey with 64 knowledge-based entrepreneurs, interviews with Brazilian innovation agency professionals, the interaction with area specialists – practitioners and academics -, as well as the program statistics and partial results. The case method (YIN, 1994) was largely used to direct different aspects of the research analysis, and the acquired learning has been used to develop new frameworks (EISENHARDT, 1989) that not only will serve as experience to practice recommendations but also to improve the theory in correlated areas.

II. Analytical Framework

This paper builds on the theoretical framework of Triple Helix (ETZKOWITZ, 2009), in which the relationship between university-industry-government generates an upward propeller of regional development that results from the knowledge flow between universities and businesses, stimulated by the government in the form of general incentives – public policies, legislation, scholarships, taxation - and funding, that promote the companies competitiveness by increasing the capacity to develop services and products based on knowledge. The Open Innovation concept (CHESBROUGH, 2003) enlarges and makes each dimension of Triple Helix framework even more important to the local development of regions.

Teece (1998) has argued that the essence of the firm is its ability to create, transfer, assemble, integrate and exploit knowledge assets. Knowledge assets underpin competences, and competences in turn support the firm's products and services offerings to the market. Competences derived from a unique combination of resources are the best way for new

companies to establish initial strategies and create value in the long run (SCHUMPETER, 1942).

The open innovation paradigm goes beyond the traditional vertical integration model where firm's R&D activities come just from inside the company (CHESBROUGH, 2006). Von Hippel (1988) identified four external sources of useful knowledge: (1) suppliers and customers; (2) university, government and private laboratories; (3) competitors; and (4) other nations. The contemporary scenario where knowledge can come from many different sources requires collaboration efforts to be part of the firm strategies, for the simple reason that it is almost impossible to follow up the technology evolution alone since it is expensive and ineffective.

In general, the success of innovative companies that explore knowledge assets and cross "the valley of death", building sustainable competitive advantages, will contribute to the economic growth of their regions generating wealth, jobs as well as social enhancing. Some of those companies have kept a close relation with universities' ecosystems.

Like some other regions around the world, such as the Silicon Valley, Boston area, Bangalore (India) and Linkoping (Sweden), where entrepreneurial universities have been responsible to anchor the innovation and entrepreneurial ecosystem (BRESNAHAN et al, 2001), in Brazil some universities have demonstrated potential to generate wealth from transferring knowledge created in their laboratories and education departments to the society. Public universities like Federal University of Minas Gerais, University of São Paulo and Federal University of Rio de Janeiro, along with a group of private institutions such as PUC-Rio and UNISINOS, just to name a few, are examples of this kind of university (ETZKOWITZ, 2009).

Brazil has innovated on the concept of the business incubator, working as an environment for innovation and serving as a leitmotif for the junction of the triple helix, providing solutions and services that make difference to companies' growth and competitiveness (ETZKOWITZ, 2009). An incubator of excellence should be an "innovation habitat" which on one hand facilitates the industry access to university labs and talented people and on the other hand works for the university, helping to find problems and opportunities to apply the university knowledge in order to generate wealth and social welfare.

III. The case study

Genesis Institute Business Incubator Antecedents

With a strong tradition in teaching, research and scientific development, the Pontifical Catholic University of Rio de Janeiro (PUC-Rio) has invested in the development of an innovation and entrepreneurship ecosystem since the mid-90s, in order to allow a more effective knowledge transfer from the University to the society.

PUC-Rio's business incubator was born in July 1997 with the support of partners such as Citibank, Sebrae[1], FINEP and FAPERJ[2], ie since its opening it is inserted into a large network of partners consisting of entities from public and private spheres. At the same time, with the support of Softex[3] and DI[4] it began the pre-incubation process of enterprises in informatics

[1] Brazilian Agency for the support of Small and Micro Enterprises.

[2] Research foundation of the state of Rio de Janeiro.

[3] Brazilian society for the promotion of software exportation.

[4] Informatics department of PUC-Rio.

area, as well as the training process, with three entrepreneurship subjects. Currently the program has 20 courses and registers about 1,000 students per year. Subsequently, the set of initiatives above became the Genesis Institute, a complimentary unit of the Academic Vice-Rectory, which now coordinates not only the pre-incubation and incubation processes, but the entire Entrepreneur Training Program at PUC-Rio.

With already consolidated actions in the technology area, Genesis has sought since 2002 a new work area of enduring importance to the country's economy: the Cultural Industry. From the detected need to develop enterprises in the cultural area, the Genesis Institute has launched the first Latin American Cultural Incubator, creating another mechanism for transferring knowledge to society and extending its expertise in generating and managing of innovative businesses also to the culture.

In 2004, based on the Institute's identification of needs and social demands, the Social Incubator of Communities was founded with the aim to locally strengthen communities of low socio-economic development, through the training of entrepreneurs and the generation of enterprises using social technologies. Thus the mission of the Genesis Institute was consolidated in transferring university knowledge to society, generating social, economic and human development.

Throughout its twelve years of existence the Genesis entered into several networks, consortia and associations in Brazil – Redetec[5], ReInc[6], Anprotec[7] – and in Latin America – RedLAC[8], Emprendesur[9], RELAPI[10] –, which promoted the development of partnerships and exchanges of experiences, not only accelerating the volume of knowledge about the incubation and technology transfer process, but also providing to the incubated enterprises a range of possibilities for accessing new markets. FINEP has sought to encourage the improvement of Brazilian incubators through actions such as the National Program for Incubators – PNI, in which an incubator already consolidated "adopts" one or more starter incubators to transfer knowledge and experience.

As a result of this effort, the Genesis maintains a enterprise survival rate of over 80%, having supported the structuring and development of around 71 enterprises, which together generated over R$ 280 million[11] in income and around 1,000 jobs, with in 2009.

The First Innovative Company Program - PRIME

According to the program rules, the resources available - R$ 120 thousand - should be applied as follows: (1) up to R$ 40 thousand to pay for up to two entrepreneurs (partners) or a specialist to perform tasks of technological nature, (2) up to R$ 40 thousand to hire a business manager

[5] Technology network of Rio de Janeiro.

[6] Rede de Incubadoras, Polos e Parques Tecnológicos do Rio de Janeiro;

[7] Associação Nacional de Entidades Promotoras de Empreendimentos Inovadores;

[8] Red Latinoamericana y Caribeña de Incubadoras de Empresas;

[9] Red Emprendedorismo y Innovación en América Latina;

[10] Red Latinoamericana de Asociaciones Nacionales de Parques y Polos Tecnológicos e Incubadoras de Empresas;

[11] Only 65% of the enterprises reported their results;

(employee) in order to take care of administrative-financial issues in project, (3) up to R$ 30 thousand for hiring a market consultancy and (4) up to R$ 30 thousand to hire up to three management consultancies. The resources should be released in two installments of R$ 60 thousand dollars, being the first in the signature of the contract and the second six months later, conditioned to the execution of implementation timeframe and the results achieved. The project should be implemented in 12 months.

The selection process was divided into three phases, the first being a presentation of a simplified proposal (executive summary) by the enterprises. In this step, each of the simplified proposals was evaluated by two pairs of ad hoc consultants, hired by the Genesis Institute, experts in their fields, from two fundamental perspectives: the degree of innovation and market potential of the project.

The second stage, mandatory for all candidates selected in the previous stage, consisted of training for entrepreneurs aiming to improve the detailed proposal (business plan) to be presented at the third step.

The third and final stage, focused on economic and financial feasibility of the proposal, accounts on the participation of a selection committee composed by the Genesis Institute and a number of partners, as well as Sebrae and FINEP (the sponsor of the program) itself.

Across the country 1,380 companies were contracted, and the South and Southeast regions showed the best results – with 44% and 35% respectively. The state of Rio de Janeiro, with three operational agents, hired 167 of those selected companies.

The operational agents selected in the state of Rio de Janeiro have received strong support from the regional Sebrae for the program implementation, not only in the form of financial resources – which totaled up to those received by FINEP –, but also in payment for the program and personnel, who helped in the selection of candidates.

The resources supplied by Sebrae were used primarily in the formation of an internal team of the incubator exclusively dedicated to the monitoring of selected companies. This allowed, for example, a rigorous audit in the selected companies focusing mainly on the history of entrepreneurs, since the program did not require the enterprises to submit business history in the form of financial statements, developed products and customers' portfolio. Resources were also invested in lectures, training sessions and business roundtables as a way of promoting the development of enterprises.

Partial results of the Implementation of PRIME by Genesis

PUC-Rio's incubator failed to achieve the goal of 120 supported enterprises, reaching 53% of what was planned, i.e. 64 companies. It was employed resources of R$ 7.6 million and so far 90% of the supported enterprises achieve the implementation schedule presented and, thus, received the 2nd installment of the resource. In November 2010 it is expected to be launched a new call for proposals in order to select other 56 companies.

It were accounted 128 due-diligences on selected companies, each of them receiving two visits; one before the release of the first installment and another before the release of 2nd installment. Of all the enterprises selected, only 17 (26.6%) were incubated. Most of the selected companies are based in the city of Rio de Janeiro (59.4%), while the state of Rio counted (81%). Companies in other states - São Paulo (3 companies), Mato Grosso (1 company), Espírito Santo (6 companies), Bahia (1 company) and Minas Gerais (1 company) - were also selected since the program had no restrictions in the receiving of proposals from other states. This is an aspect that should be corrected in the next call.

IV. Results and Discussion

The following chart presents a group of antecedents that qualifies Genesis as a good partner to innovation agencies in order to execute supportive programs. Besides Genesis' experience in three different areas (technology, culture and social community), the issues listed bellow identify some distinct aspects of the Institute and the impact generated in incubation process. It seems to be clear that unless you are close to the problems and demands, it is difficult to identify and understand cause and effect relations of the incubation process – and quickly act in the correction of problems that might occur. This is the main reason why the incubator is a proper actor to the program execution.

Chart 2 – Genesis Experience and Qualifications

Area	Actions	Impacts
People	The incubator keeps a staff with graduation degree and experience in the support to the structuring and development of enterprises, based on knowledge assets; A incubadora mantém uma equipe de consultores residentes com experiência empresarial, contatos de mercado e longo relacionamento com a incubadora;	Diminish fail rates; Adequate solutions for startup companies;
Methodology and Information Systems	The incubator developed a proprietary methodology to select and support incubated companies that has been tested and adapted for more than a decade; Information systems that permit incubator staff, consultants and entrepreneurs to understand the company evolution, problems and necessities by comparison with a data base;	Companies selected by clear criteria with focus in market, innovation and viability; Systems permits both the incubator and the entrepreneur have updated information about company evolution; System permits fast identification and correction of disturbances;
Networking	Internal connections with university departments, labs, junior enterprise and technology transfer office; External relationship with alumni; business angels, investors, innovation agencies and other incubators in Brazil and Latin America; Strong relationship with former incubated companies;	Market access; Investors access; Labs access; Access to talented people;
Experience with implementation of Government and Multilateral Agencies supportive programs	The incubator has executed many programs for the govern with high success rates: National Incubators Program, Development of technical and economic feasibility studies (EVTEs), Productive chains surveys, to name a few; The incubator has implemented social projects for BID with focus in low income communities;	Increase other incubators success rate by the transfer of experience and technology; Reduced risk and problems during the programs and projects implementation;
Entrepreneurship education program and training	The university has a minor in entrepreneurship with 20 subjects and almost 1000 students enrolled every year; Genesis organizes workshops, boot camps, presentations and forum like FOG – Genesis Opportunities Forum;	Promote innovation and entrepreneurship culture; Train students, researchers and entrepreneurs; Find talented people; Inspire PUC community to start a company;

The following charts list the main positive and negative aspects as perceived by entrepreneurs, and their ramifications in the supported companies.

Chart 3 – Most Important Positive Perceptions of the Entrepreneurs

Facts	Impact
According to the report of several entrepreneurs, the PRIME was of fundamental importance so that they could devote themselves to their businesses;	The determination of entrepreneurs and employees is crucial for business growth;
The possibility of hiring a technical specialist has allowed non-technical entrepreneurs also make feasible the structuring of its business;	Teaming with complementary skills increase the chances of successful business startups;
The consultancy in market and management, although of great importance in the perception of the vast majority of entrepreneurs, would hardly be hired due to costs;	Having access to outside consultants is an excellent way to gain knowledge of best business practices; Updated market information are essential to good marketing planning; Funding support is essential;
Access to information related to area of innovation, funding programs, grants for hiring researchers and related topics has generated great interest;	The knowledge of the innovation system and funding available in the country for innovative enterprises allow access to benefits that support the development of competitive advantages;
Lectures, training and business roundtables placed at the disposal of entrepreneurs had a high rate of membership;	Lectures and training help in the process of capacitating and motivation of the team; Roundtable business generate business opportunities and revenue;
The entrepreneurs feel part of a group and feel free to collaborate, develop agreements and business partnerships;	Developing partnerships can facilitate access to resources, minimize costs and facilitate business;
The process of developing the business plan was laborious, but extremely valuable to the business knowledge;	The understanding of the business, market, customers and the risks involved improves the planning process and increase the chances of success;
Entrepreneurs realize the importance of R&D effort as a way to develop products and services that will increase their competitiveness;	The capacity to keep innovating is the key to competitiveness;

Chart 4 – Most Negative Perceptions of the Entrepreneurs

Facts	Impact
Concern about the survival of the enterprise after the end of the program, since they still are not ready to generate revenue;	Long periods without generating revenue bring the need to capture additional financial resources, still expensive in the Brazilian market, which can lead to weakness or failure of the company;
No access to other services provided by the incubator, such as support in preparing proposals;	Some services offered by the incubator are directly linked to the possibility of access to subsidized resources, vital for the survival of startups;
Bureaucratic accountability consuming excessive time	Bureaucracy consumes precious time that could be better explored in other activities such as acquiring customers;
The need to run the program in just 12 months, leaving little room for contingencies;	The rigid-term program can result in, for example, the devolution of resources in case the implementation schedule originally proposed cannot be adjusted;
Restrictions on use of resources, leaving little scope for redirection of lines;	Business in startups need greater flexibility to suit mistakes in planning or market fluctuations, which turns the inability to redirect resources a disadvantage;

In the business environment, technological innovations relate to the solutions acceptable by the market; this way, it is the market that validates the effectiveness of the

innovation process. To oxygenate its research and development and therefore its technological innovation, businesses get close to the academy to share expertise, conduct applied research, exchange experiences and expand their intellectual capital.

The academic environment, by definition, favors the development of innovative technologies and differentiated business ideas. Universities with a vocation for research, such as the PUC-Rio, play a key role in this scenario, since they act as important sources of assets for the society, contributing to the generation of new knowledge. As observed, almost 60% of the selected companies were not incubated, so it is a huge opportunity to bring them inside PUC-Rio's ecosystem.

The government acts as a public entrepreneur, helping with the generation of public policies and structured programs of incentives for innovation, besides its traditional regulatory role in setting rules.

From the University standpoint, the primary objective is to improve the integration between scientific and technological development and the creation of technology-based enterprises that feed back the research effort, reduce technological dependence and generate national externalities and economic synergies. From this perspective, there is no direct economic risk to the University, but only an indirect risk or opportunity cost, due to the institutional effort and use of human, laboratory and physical resources.

V. Concluding Remarks

This paper provides evidences that some incubators can play a central actor role in the building of knowledge based economy, supporting the creation and growth of new ventures that will help the country to have more dynamic enterprises, stronger in R&D competencies and with better chances to succeed.

Bringing a bunch of new companies to the public funding and innovation system and, last but not least, to the university ecosystem will drive to the the building of innovative companies based on knowledge assets, with capacity to compete globally. It is an outstanding opportunity to university, government and also these newcomers to better know each other, cooperate and improve the triple helix effect.

The future responses to crisis and economic growth probably will be easier if the government believes that initiatives like PRIME payoff and continues to invest in this kind of programs, companies and, also, in incubators.

It is difficult to specify how many and which companies will be crossing the "valley of death" and reaching their goals and also FINEP's, but its entrepreneurs certainly will be marked by this experience.

References

Chesbrough, H. (2003). Open Innovation: The New Imperative for Creating and Profiting from Technology. Harvard Business School Press.

Chesbrough, H. (2006) "Open Innovation: A New Paradigm for Understanding Industrial innovation," in Henry Chesbrough, Wim Vanhaverbeke, and Joel West, eds., Open Innovation: Researching a New Paradigm. Oxford: Oxford University Press, pp. 1-12.

Deutsche Bank Research. (2009). Brazil 2020: Economic Political Scenarios – Update.

Eisenhardt K. M. (1989). Building Blocks from Case Study Research. Academy of Management Review, v.14. n.4, p. 532-550.

Etzkowitz, H. (2009). Hélice Triplice: universidade-indústria-governo: inovação em ação. Porto Alegre: EDIPUCRS.

Etzkowitz, H. and Klofsten, M. (2005). The Innovating Region: toward a theory of knowledge-based regional development. R&D Management, 35 (3), 243-255.

IBGE. Instituto Brasileiro de Geografia e Estatística. Indicadores conjunturais. Rio de Janeiro: IBGE, junho 2009. Retrieved 2009, from: http://www.ibge.com.br.

Organization for Economic Co-Operation and Development. (2009). OECD Science, Technology and Industry Scoreboard. Retrieved 10 January 2010, from http://www.oecd.org.

Schumpeter, J. A. (1942). Capitalism, Socialism and Democracy. New York: Harper and Row.

Von Hippel, (1988). The Sources of Innovation. New York: Oxford University Press.