

CENTEV/UFV Technology Incubator

BRAZIL CASE STUDY



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CENDEV/UFV TECHNOLOGY INCUBATOR, BRAZIL CASE STUDY

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SUMMARY

A professor at Brazil's prestigious Federal University of Viçosa saw a need on campus for an incubator to support technologically-oriented businesses, including agribusinesses. This resulted in the CENTEV Technology Incubator, which is partially funded by the university but which also receives state and private grants. Its function is to nurture entrepreneurs to develop viable technology based businesses by providing them with management assistance and augmenting their technical capabilities with expert academic advice. The incubator's 24 graduates are still in business, with average revenues of \$2.5 million a year.

1 BACKGROUND AND CONTEXT

The CENTEV/UFV Technology Incubator is located in the municipality of Viçosa, located 227km southeast of the state capital Belo Horizonte in the state of Minas Gerais (Figures 1 and 2)



Figure 1 - State of Minas Gerais

The state of Minas Gerais, the third largest in Brazil, has 20 million inhabitants and occupies an area of 587,000 km², representing 6.9% of Brazilian territory, which is equivalent to the areas of countries such as France, Germany, Japan, United Kingdom, Spain, South Korea, Italy, and Portugal. It contains 853 municipalities, with Vicosa having a population of 72,220 inhabitants (growing, on average, 2% per year) in an area of 229.42 km²



Figure 2 - Municipality of Viçosa, Minas Gerais

The majority of the population of Viçosa resides in the urban area, representing 93% of total inhabitants (IBGE, 2010) and it is interesting to observe that Viçosa possesses a young population, with only 11% being 60 years of age or older, as shown in Figure 3

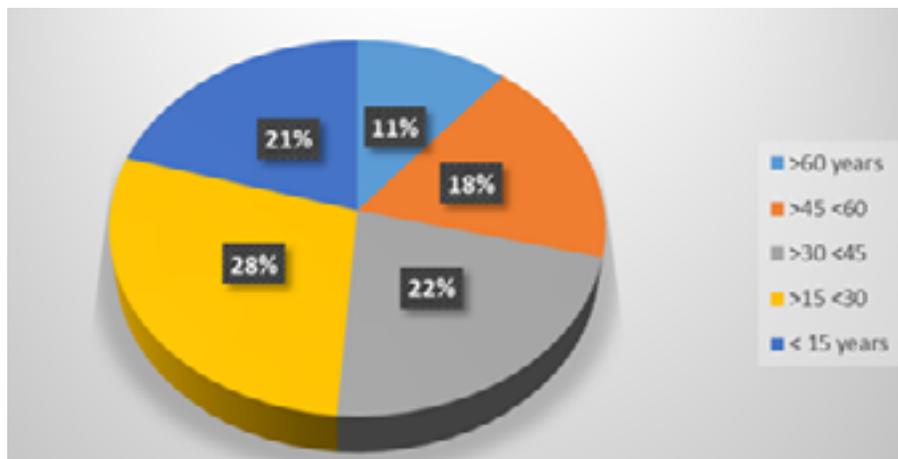


Figure 3 - Population of Viçosa by Age Group

Viçosa's economy was historically based primarily upon agricultural activities but this has shifted and in 2009, Viçosa's GDP of US\$300 million (IBGE, 2009) was primarily contributed by the service sector (84%) with industry (13%) and agriculture 3%.

The city's economy has strong ties to the operation the Federal University of Viçosa (UFV) which was founded in 1922, as it has 16,000 students and 1,200 teachers. The university is one of the most prestigious agricultural research universities in Brazil. In the 1920s, UFV adopted a U.S. agricultural research style campus and organizational structure. UFV has attracted world-class agricultural,

agribusiness, and engineering scientists and students, and over the years has developed a strong research capability with 1626 Masters students and 1228 of Doctoral students enrolled in the agricultural sciences. UFV has attracted researchers from every state of Brazil, as well as from other countries.

Since the 1990s, UFV has also led the way in creating an environment for innovation and entrepreneurship by developing partnerships that would help create an effective ecosystem where businesses can grow.

One important contributor in strengthening UFV's capacity for innovation is the FUNARBE Foundation (Fundacao de Arthur Bernardes), with its goal of facilitating partnerships between the university and public and private entities in order to diffuse the technology generated on campus. With FUNARBE's support, UFV secured financing from state and federal R&D institutions and development agencies, as well as access to potential private-sector partners. Researchers have gained greater reach and flexibility, obtaining research contracts more easily and working with private-sector clients. FUNARBE's support has also made it easier for students and professors to handle intellectual property and form companies. Many former students are now employed at new, technology-based companies.

2 CENTEV/UFV – INSTITUTIONAL FRAMEWORK

The UFV established the CENTEV/UFV development center as a separate division in the UFV responsible directly to the office of the Chancellor. It was established in collaboration between FUNARBE, the foundation component of the university, and Professor Claudio Furtado's entrepreneurial efforts within the university's research department.

The aim was to enable faculty, researchers and students of this university to engage train and/or improve their skills in entrepreneurship and technological innovation, as well as promoting social, economic and environmental activities in the Viçosa region.

CENTEV/UFV is made up of a number of units as shown in Figure 4:

1. The Technology Incubator supports the emergence and growth of viable technology businesses.
2. The Technology Park provides a home for growth enterprises that have either graduated from the technology incubator or are strong, stand-alone technology enterprises.
3. The Center for Junior Businesses encourages students to provide services to the incubated companies, and also to create their own businesses.
4. The Social & Educational Development Center aims to spread entrepreneurship in the community, as a means of social inclusion.

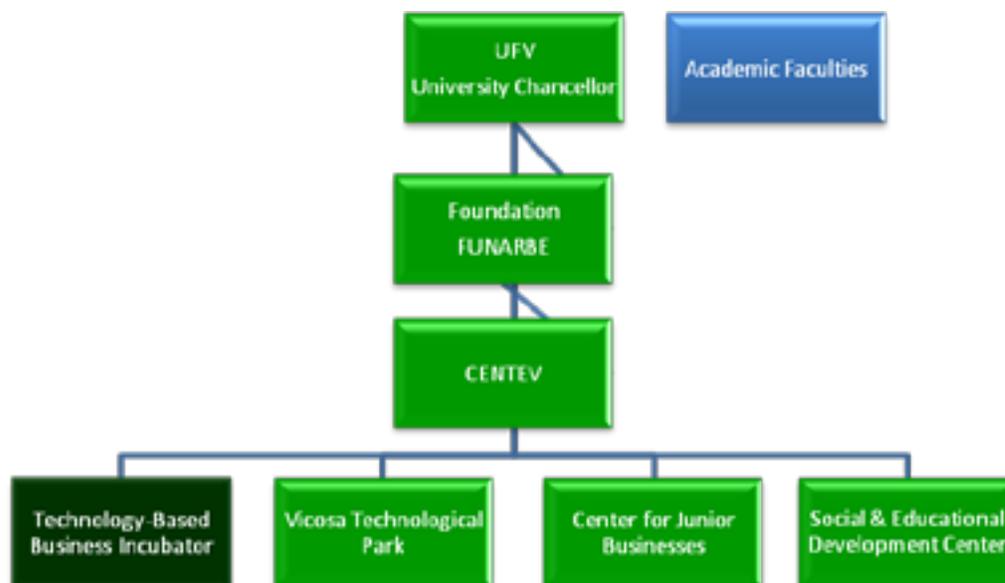


Figure 4 – Organisational structure of CENTEV/UFV

CENTEV/UFV is governed by a board comprised of government, university and private sector stakeholders:

- A representative from each UFV science center (four in total);
- A representative from the Chamber of Commerce - CDL;
- A representative from the Bureau of Science and Technology;
- A representative from the State Department of Science and Technology;
- A representative from the incubated companies;
- A representative from SEBRAE;
- A representative from the Commercial Association of Viçosa;
- President of FUNARBE.

This ensures that different points of view will be taken into account in the decision-making process and one of the other important roles of the board is to maintain harmony between the actions of each of the component institutions.

CENTEV/UFV's CEO is a professor who implements the goals of the University Rector. The position changes with shifts in the Rector's composition, as can CENTEV/UFV's mandate. The CENTEV/UFV organizational chart is set out below and demonstrates its relationship with the university and other initiatives that contribute to its mission.

The CENTEV/UFV Technology Incubator is a subsidiary body of CENTEV/UFV and is subject to the university's regents. The board defines the strategies that the incubator should follow to provide

quality services to the incubated, in order to ensure the success of new ventures, and while it has the final say on which companies will be supported by the incubator, it does not interact directly with the incubatees.

3 THE CENTEV/UFV TECHNOLOGY INCUBATOR (CENTEV/UFV-TI)

The CENTEV/UFV-TI was established with an initial investment of around US\$8 million, largely from the government of the state of Minas Gerais, which invested US\$6 million to construct the incubator's space, a 1000m² building that is especially designed for business incubation activities.

In addition to individual rooms for the companies, this space includes a meeting room, an office area, a library, a cafeteria, an auditorium, a telephone network, and areas for physical and social activities, enabling ongoing interaction between the companies and the administration of the incubator. In total, the incubator has the capacity to support 20 companies in areas of 15 m² to 50 m², depending on the specific needs of each company. This flexible space allows the organization to meet the needs of companies in various stages of development. Some images of the physical space of the incubator can be seen in Figure 5.



Figure 5 – CENTEV/UFV-TI Infrastructure

The CENTEV/UFV-TI's vision is to establish a national reputation as a promoter of technology-based businesses and entrepreneurial culture within the academic setting.

Its mission is to facilitate the creation and development of new, technology-based businesses and promote the diffusion of entrepreneurial culture and innovative technologies created within the academic community, contributing to local development.¹

With this mission guiding its activities, the CENTEV/UFV-TI provides free services that include management and technical training, market research, business plan development, technological innovation, business development software, and a strong institutional network to help UFV professors and scientists, students, and other entrepreneurs to convert their ideas into viable businesses. Frequent idea-sharing between researchers and the CENTEV/UFV-TI provides the physical setting for this innovative socialization to occur.

The incubator has invested significantly in developing systems for the management of technology and incubator staff constantly update technology management and transfer processes and the CENTEV/UFV-TI implements a quality-management system that fulfills ISO standards. It has also developed online software to monitor incubatee selection and business-development processes.

In 2013, the CENTEV/UFV-TI had 16 incubated businesses, 27 graduates, and 5 pre-incubated businesses. Among the incubated businesses were biotechnology and information technology companies as well as those with a focus on engineering and architecture. The Technology-Based Business Incubator and Viçosa Technological Park have a strong interaction, since the natural pathway for graduating companies from the incubator is to enter the technology park.

The incubator has a multidisciplinary team, which ensures quality services for the incubated companies. This team of 18 people is organized in the organizational structure shown in Figure 6.

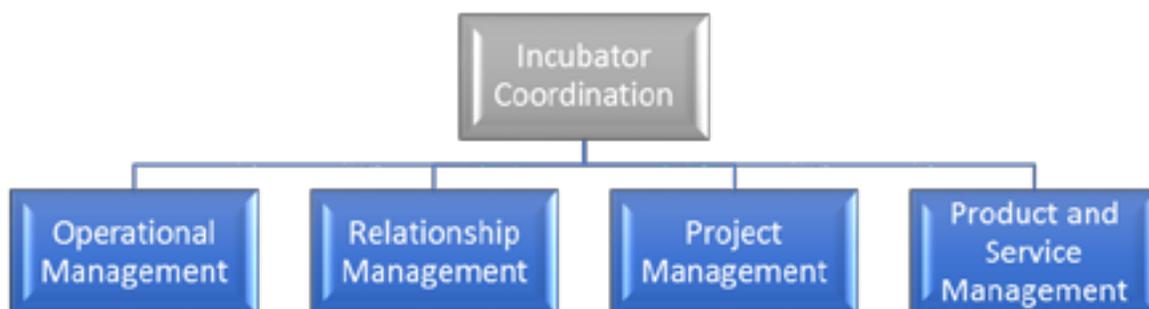


Figure 6 - Organizational Structure of the Incubator

¹ CENTEV/UFV powerpoint presentation, "Transformando Ideias Em Negócios E Pesquisadores Em Empreendedores" slide 2

- Incubator Coordination: Has the role of integrating the work of the four managers in order to maintain an excellent level of the services provided to the incubated, graduated, and associated companies;
- Operational Management: Responsible for maintaining the physical and technological structure of the incubator and incubated companies;
- Relationship Manager: Has the role of promoting the interaction of graduated and incubated companies with the university;
- Project Management: Is responsible for managing CENTEV/UFV projects with public and private institutions, in addition to elaborate projects to acquire resources together with public and private institutions;
- Product and Services Management: Develops and provides products and services related to the process of incubation.

The incubator has a set of partners that complement the support provided by UFV, since the incubator itself can generate revenues equivalent to approximately 40% of its annual cost, which is USD \$1.5 million.

Of the total costs, the resources provided by CENTEV/UFV and generated by the incubator represent 58% of the costs. The partners, who are SEBRAE, the state government, and the city hall, contribute 42%, as shown in Figure 7.

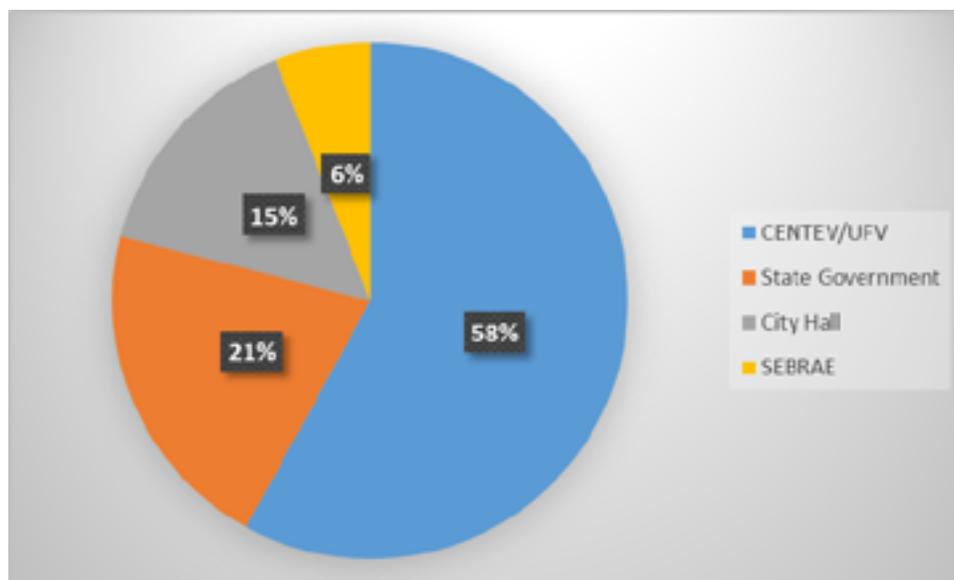


Figure 7 - Partner Contribution

In general, CENTEV/UFV-TI is responsible for maintaining physical infrastructure, technology, and people. Other partners help facilitate the services offered to incubated businesses (consulting, training, and participation in fairs and events).

Currently, the incubator's main source of revenue comes from the incubator's own royalties that are charged to the graduated companies. There is a fee equivalent to 0.5% of the monthly earnings of the companies. As the incubator is part of the regional development strategy of the local and state governments as well as the UFV and companies, financial self-sustainability is not a major issue.

4 APPROACH TO INCUBATION

The CENTEV/UFV-TI works with an incubation process that is divided in three phases: pre-incubation, incubation, and post-incubation. This structuring permits the ventures to go successfully from concept to independent implementation in the market.

The pre-incubation phase is geared toward entrepreneurs who have an idea for an innovative product or service but need support and guidance to turn it into a business. During this phase, the CENTEV/UFV-TI also offers a type of virtual incubation, allowing a larger set of entrepreneurs to be guided through the process of preparing a business plan and developing prototypes of the solution to be marketed.

The incubation phase is aimed at the strengthening of new businesses with an emphasis on business structuring and entrepreneurial training. It is important to note that these companies do not necessarily need to pass through the pre-incubation phase. The maximum time a company may remain in the incubation period is three years. During this period, the incubator provides conditions requiring the entrepreneur to update the areas of management and marketing, increasing the potential for business success.

Post-incubation involves monitoring the graduated company, assessing their problems and opportunities. Additionally, the incubator provides services and support to these companies so that they can gain access to UFV courses, events, consultants, and laboratories.

In specific terms, the CENTEV/UFV-TI incubation process follows the proposal of processes and practices of the Model Reference Center for New Venture Support – CERNE, developed by the National Association of Entities Promoting Innovative Enterprises – ANPROTEC, with the support of SEBRAE. Along with this, the CENTEV/UFV incubator has implemented the processes shown in Figure 8.

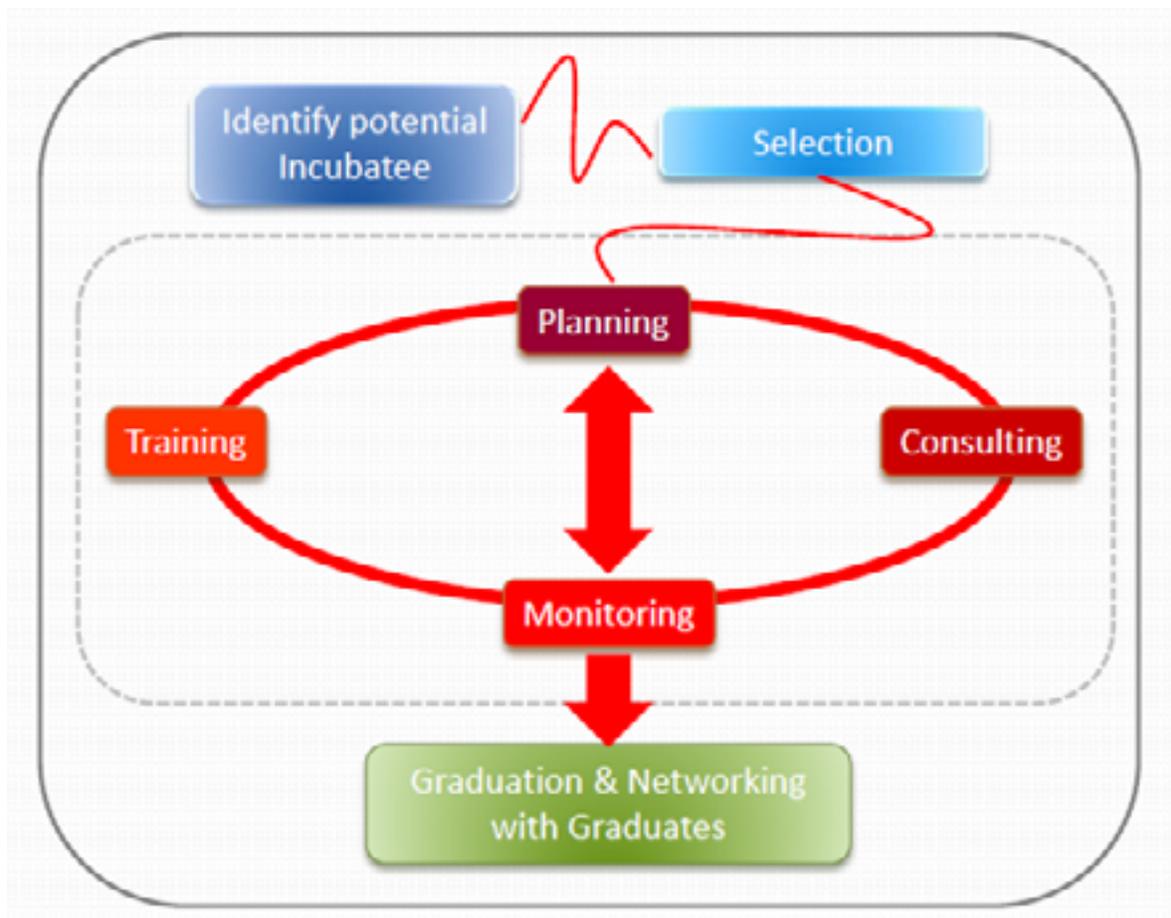


Figure 8 – Key Processes in the CENTEV/UFV-TI Incubation Process

Attracting clients

There are four main sources of potential incubatees: UFV students, UFV researchers, students and researchers from others Universities and startup companies (Figure 9) and the CENTEV/UFV-TI has a continual process for encouraging potential entrepreneurs to refer proposals for innovative projects to the incubator.

One of the incubator strategies to increase awareness of entrepreneurship in the region is to work in partnership with the UFV Centre for Junior Businesses. The vast majority of students participating in the Centre for Junior Businesses fail to submit proposals to the incubator. However, the action of the incubator does help to develop the entrepreneurial profile of these students.

A public call for proposals is held at least once a year - each public call is specific to the pre-incubation and incubation selection, since the objectives of each are different.

The condition for the release of the call is to have vacancies in the incubator, and the incubator receives an average of at least 30 proposals on each public call.

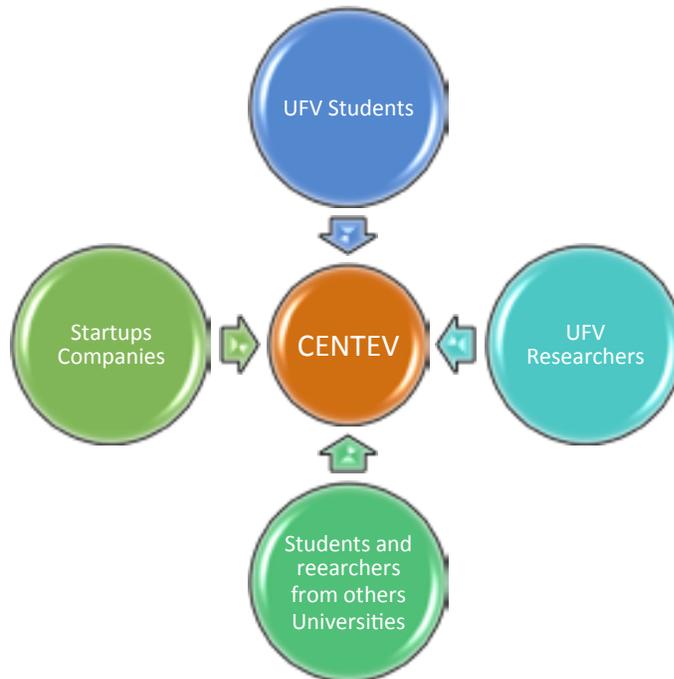


Figure 9 –The CENTEV/UFV-TI’s Main Public

Over 90% of proposals are submitted by students and researchers from UFV with technical backgrounds in engineering, computer science etc. who have no business expertise. While less than 1% of the researchers start their own business, they usually succeed because the value proposition includes innovative products, services or technology. It is the incubator’s role to develop the team’s management capacity.

Aiming to increase the number of proposals, UFV annually performs the Innovation Incentive Program (PII), which focuses on providing university researchers with the opportunity to transform their research projects into real businesses. This is done in partnership with the Government of the State of Minas Gerais.

The PII has three phases:

1. Description: Researchers submit their proposals to be evaluated according to their degree of innovation and technical and commercial feasibility. At this stage, up to 20 proposals are selected, and these move into the next phase.
2. Technical, Economic, Commercial, and Environmental Feasibility Study: The researchers selected in the previous phase explain in detail their proposals, with the purpose of demonstrating the degree of differentiation between their projects and what already exists in the market, as well as the technical and economic feasibility of the project.

3. **Prototype Development:** The proposals that are approved in the previous phase receive US\$15,000 from the State Government of Minas Gerais for the development of a prototype.

The PII receives over 100 proposals annually, and 10 out of 100 receive government financial support for the development of the prototype. Thus, this program has two important results: it increases the number of good quality proposals that reach the incubator, and it promotes entrepreneurship and innovation in the region. The results of this program have been so good that, since 2009, the Government of the State of Minas Gerais performs the PII in all of the state's universities.

It is important to highlight that the PII not only increases the proposal pipeline for incubation, with at least 30% of the approved projects entering the incubator, but also supports the development of technologies to be licensed.

The incubator performs three more important actions to attract proposals for innovative projects:

1. Lectures are held during events promoted by the different courses of the universities in the region, with emphasis on the courses from UFV.
2. The incubator receives visits from students, teachers, entrepreneurs, and the community in general. Thus, potential entrepreneurs know the structure and services offered by the incubator.
3. The management team of the incubator performs an active search (prospecting) for new ventures in conjunction with the research groups at UFV. The incubator team makes an analysis of the research with potential for generating new ventures, and then it works with the researchers to transform the research into new innovative businesses.

The incubator also works in partnership with the Center for Technological Innovation – NIT / UFV. The role of the NIT is to promote technology transfer through licensing of technology or technology consulting, while the role of the CENTEV/UFV-TI is to support the generation of business innovators from the technology identified by the NIT. The CENTEV/UFV-TI selects those technologies with the greatest potential for success and interacts with the private sector both during the preparation of tenders and during the selection process of the incubator.

In addition to attracting potential entrepreneurs, the incubator assists in the development of proposals. This is done in two ways:

1. **Business Plan Course:** Offered by SEBRAE, this course aims to provide the basic knowledge necessary for the entrepreneur to develop a Business Plan for his or her business. At the end of the course, SEBRAE consultants offer two hours of personalized advice for each entrepreneur

2. Guidance: The incubator management team offers individual guidance for the preparation of business plans. This is done by the incubator's staff.

Selection

The CENTEV/UFV-TI has created a set of indicators that help to identify ventures with the highest probability of success, and evaluates them according to the five key aspects of business development: entrepreneurship, technology, capital, market, and management.

Selection is separated according to pre-incubation and incubation (Figure 10). The two selection processes have the same structure, which is composed of two stages: technical evaluation and oral presentation (Figure 11).

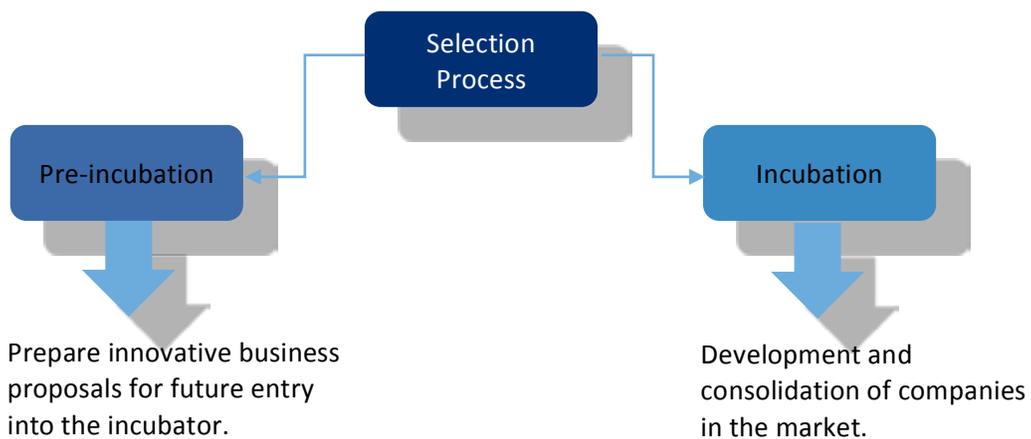


Figure 10 – Selection Streams

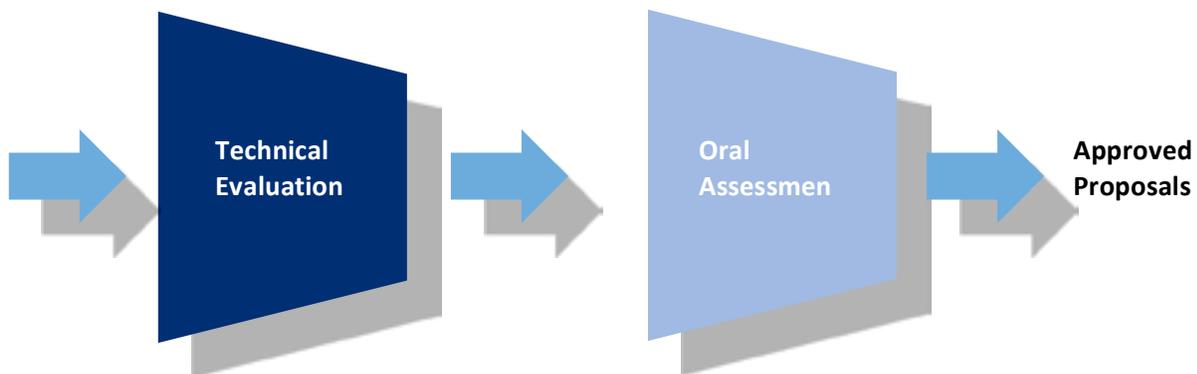


Figure 11 - Phases of the Selection Processes

The target audience for incubation is the same as the target for pre-incubation. The difference lies in the development stage of the project. During the pre-incubation phase, proposals that are still in the stage of conceptual development are accepted; the incubation phase only accepts proposals that have products or services ready to be marketed.

In the technical evaluation stage, proposals are forwarded to a UFV researcher or technician, where the degree of innovation and technical feasibility of the proposal are evaluated.

The entrepreneurs whose proposals were approved in the technical evaluation make a presentation of their business plan to the board, which is composed of the partners of the incubator, ensuring that at least one member has a market profile and that the evaluation is carried out in an impartial manner (Figure 12).



Figure 12 - Selection Team

The researchers are UFV professors who work in the same area of the proposal being evaluated. The goal is to ensure that the enterprise has an important differential in relation to what is already on the market.

The representative from the government evaluates the entrepreneurial proposal according to the socio-economic impacts that will be generated in the local government.

The investors are represented by venture capital firms, and these evaluate the potential for rapid growth of the enterprise.

The board of assessment is complemented by market consultants, seeking to assess the commercial viability of the project.

During the oral evaluation, the members of the board use evaluation criteria that increase the probability of the selected enterprises of completing the incubation process successfully.

For the pre-incubation phase, which aims to prepare business projects for future entry into the incubator, the following criteria are applied for the selection of proposals with greater potential for success:

- Technical and managerial capacity of entrepreneurs;
- Degree of innovation of products, processes and services;
- Alignment with the objectives of the business incubator;
- Potential for interaction with teaching and research at UFV and the activities undertaken by partners of CENTEV/UFV;
- Potential for economic development;
- Potential risk to the environment;
- Lack of similar competing business projects from pre-incubation and incubation companies in CENTEV/UFV-TI.

The objective of the incubation phase is to support the development and consolidation of companies with innovative products, processes and/or services and the criteria used includes:

- Participation in the incubator's pre-incubation program
- CENTEV/UFV skills set available;
- Technical and economic feasibility of the proposal;
- Technical and managerial ability of the entrepreneurs;
- Degree of innovation of the products, processes, and services;
- Alignment with the objectives of the business incubator;
- Potential for interaction with UFV teaching and research and the activities undertaken by partners of CENTEV/UFV;
- Compatibility with the desires of the local community;
- Potential for economic and social development;
- Marketing feasibility of the project;
- Lack of business projects for pre-incubation and incubation companies competing in the CENTEV/UFV-TI;
- Potential risk for the environment.

Planning

Once the company enters the incubator, the first action is to plan its development. This planning focuses on five areas: entrepreneurship, technology, capital, market, and management.

In the entrepreneurship area, the objective is to develop skills that positively affect the business, such as negotiation, leadership, public speaking, etc.

The technology planning involves the foreseen development of the products and services as well as the launching of new products and technologies, in order to maintain a differential with respect to what already exists in the market.

Regarding the capital area, the incubator assists the company in raising the resources needed for the development of the enterprise. Additionally, the incubator helps the company to identify the most appropriate funding sources according to the company profile, in addition to help in the preparation of projects for fundraising.

In the market area, the incubator helps to plan commercial and marketing strategies, so that the companies can have access to the target market they choose.

In terms of management, the goal is to guide the companies to implement management techniques that ensure the success of the venture.

The planning of incubated companies is carried out mainly by the incubator management team. In specific cases, the company receives the guidance of professors from UFV to resolve issues related to technology planning.

To facilitate the process of project planning, the incubator has structured a templated business plan that is used by all incubated companies and is available online.

During planning, the incubator works in partnership with the NIT from UFV to guide companies in trademark registration and patenting when appropriate. In this manner, the company receives all of the legal guidance necessary to safely structure their business.

Training

Short courses are organized to meet specific business demands arising from the planning carried out jointly by the management team of the incubator and the incubated companies. The courses are designed to help with the five key aspects of business development: entrepreneurship, technology, capital, market, and management.

Courses are provided mainly by UFV and SEBRAE. UFV offers courses related to the areas of technology, while SEBRAE offers courses related to the other four axes (entrepreneurship, capital, market, and management).

In specific cases, mainly those related to new technologies, the incubator selects service providers that transfer new content to the incubated companies.

On average, the incubator offers 150 hours of courses each year, with at least one course in each of the key areas: entrepreneurship, technology, capital, market, and management.

Consulting

While the courses meet the demands of a group of companies, consultancies aim to meet the difficulties specific to each company according to one of the key components of business development. In this way, the company gets personalized service in order to solve a specific problem that it may have.

One of the differentiating factors in the support offered by the CENTEV/UFV-IT is the availability of professionals that are linked to UFV and who can guide entrepreneurs in the process of market entry.

These university professionals combine market and technological knowledge in order to facilitate the marketing of the solutions presented by the businesses. This has been cited by entrepreneurs as a differentiator for market survival.

The incubator also offers consultancy focused on the marketing of products and services developed by the incubated businesses. In general, these consultancies are offered by SEBRAE, which has consultants with extensive experience in the marketing of technology-based products.

Monitoring

Monitoring is carried out by the management team of the incubator, which evaluates the evolution of incubated companies in each of the areas: entrepreneurship, technology, market, capital, and management. The goal of this process is to evaluate whether the incubated company is prepared for graduation and thus able to continue its development outside the physical space of the incubator.

Thus, periodically (monthly in the case of pre-incubation, and annually in the case of incubation), the management team performs a survey in each of the incubated companies. The result is plotted on a graph that represents how the company is performing in each of the areas. During monitoring, the incubator keeps track of the historic evolution of the entrepreneurial projects (Figure 14). To this end, the incubator uses management software that allows the tracking of the company's performance in each of the five keys of business development.

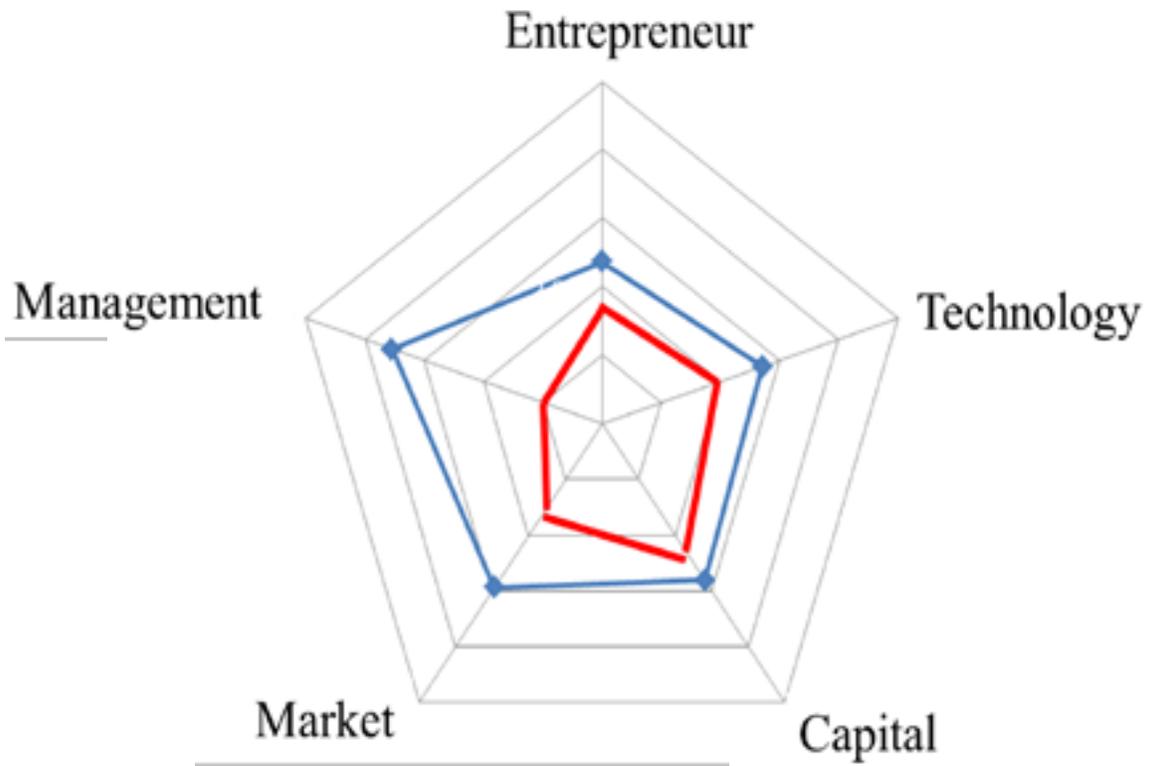


Figure 14 - Monitoring Areas

This results in a decision regarding the future of the incubated business:

- Graduation: The company is ready to graduate, and the incubator begins the support and guidance process to help the company to settle itself into another address.
- Incubation: The company is not yet ready to graduate, but it will achieve graduation. In this case, the company remains incubated.
- Discontinuance: The company is not ready to graduate, and it will not reach this goal. Thus, the incubator prepares the procedures for the company to leave the incubator.

The monitoring process also assesses whether or not the detailed planning is being implemented and whether or not the courses and consulting services offered by the incubator have contributed to the development of the company and increased its competitiveness.

In situations where the company needs to continue the process of incubation (meaning that the company is not ready to graduate), planning is performed again to incorporate the actions defined jointly by the company and the incubator.

Systematic monitoring conducted by the incubator is a key element of its success. With this monitoring, the incubator management team not only identifies the problems and limitations, but also the potential and opportunities for companies.

Graduation and Networking with Graduated Companies

The CENTEV/UFV-TI follows the evolution of the companies outside the incubator and can measure its impact on the region's development. It does this by annually surveying the basic information of the graduated companies such as: status (operating, closed, merged with another company etc.), location (e.g. have they moved premises, moved out of the state etc), sales and jobs generated.

In addition, the CENTEV/UFV-TI overcomes one of the major constraints to post-incubation monitoring by requiring graduated companies to contribute 0.5% of sales to the incubator for the same period that they were incubated. This not only ensures communication compliance, but also generates revenues of approximately \$ 15,000 per year to the incubator. Unfortunately, only 60% of businesses are effectively paying this fee.

The results show that the graduated companies, on average, have an average annual growth rate of 30% when compared with an average of 8% for other businesses in the region.

The graduated companies have a combined revenue of about US\$20 million per year. Considering the fact that Brazil's corporate tax is 35%, the graduated companies contribute about US\$7 million annually and US\$400 000 in Viçosa alone.

5 BUSINESS MODEL

The nature of grant financing does not give the incubator flexibility in resource distribution, nor does it guarantee funding. Consequently, relationships with public and private institutions are essential to its survival. To expand its financing base, the Incubator seeks to provide its consulting services in developing feasibility studies and management systems to businesses outside its incubator program. The Incubator could also earn additional revenues by selling its business development software.

Currently, FUNARBE Foundation provides financing for the infrastructure and some overhead costs of the Incubator. To fund its research fellows, management courses, and events, the incubator seeks sponsorships from public and private entities. Businesses participating in the incubator program must also contribute a percentage of their revenues when they graduate, which goes to future operations.

Internally, the incubator charges a program fee of \$7.00 per square meter of rental space, discounted by 80%. The discount decreases over time and this fee is the only cost incurred by incubates as consulting services are offered free of charge.

These benefits, coupled with expert managerial training and reputation, make the Incubator an attractive opportunity for new businesses. In addition, UFV-affiliated businesses also have increased credibility and legitimacy and when combined with a business skill set, are attractive to investors.

While UFV can't guarantee funding, it provides access to potential funding sources and increases the likelihood of funding through business development training and support.

6 OUTCOMES

6.1 Graduation Data

In the CENTEV/UFV-TI's 15 years of existence, it has seen 24 incubatees graduate and all were still in business two years after graduation.

On average, graduated companies generate \$2.5 million in revenue three to five years after graduation.

The success of each business is attributed to technological innovation, effective business models, and the strong leadership of each entrepreneur. Additionally, the most sustainable businesses have been those with continued innovation in their product, service or processes.



6.2 The Value of CENTEV/UFV-TI to Graduate Companies

Graduated companies say they have benefited from the program as follows²:

1. Gained credibility through association with the UFV brand
2. Had access to university researchers
3. Received management assistance in getting products to market
4. Made use of incubator infrastructure
5. Interacted with other business leaders
6. Obtained licensing assistance
7. Learned about marketing

² Interview with Graduated Firms, February 25, 2011, pg. 2-5

Mainly because of its association with the UFV, the CENTEV/UFV-TI is recognized and highly sought after by entrepreneurs and businesses. Graduated firms and incubatees have strongly emphasized how important the brand name of “CENTEV/UFV Technology Incubator” is for reinforcing the credibility of their new companies and products, for opening up doors with government agencies and other businesses. The CENTEV/UFV-TI is beginning to expand its consulting services and disseminate its business development software to entities outside the incubator program, which will further enhance its reputation, market share and revenues.

6.3 Graduate Companies

Three of the successful graduated agribusinesses are described below:

*RIZOFLORA*³—A biotechnology business specializing in a fungus that protects plants from parasitic nematodes. This product will help reduce the yearly \$100 billion losses in world agriculture and thus fulfills a lucrative market gap. Rizoflora resulted from a 50–50 contract between UFV and Fundo Criatec, a seed capital investment fund sponsored by the Brazilian Development Bank (BNDS), which over time UFV divested to Fundo Criatec. Even though Rizoflora receives most of its financing from Fundo Criatec, it is located in UFV’s Technological Park which provides necessary infrastructure and utilities for production. UFV also sponsored and protects Rizoflora’s patent, something that gives the business a great amount of legitimacy.

*DAP Florestal*⁴—One of the Incubator’s very first pre-incubator firms, created by two forest engineering students who saw a market for forest inventory. During its incubation phase, the company developed elements of forest management that included GIS land-mapping systems and quantitative analysis of tree types and quality in both Brazil and Angola. The company’s alliance with the incubator enabled it to win a new software development project. Incubator facilitated management courses taught DAP Florestal’s entrepreneurs how to negotiate and win government projects. DAP Florestal receives financing from FINEP.

*NUTRYCLIN FOODS*⁵—Initiated in 2003 by three food engineers, the company first sold protein food supplements that yielded a large initial cash flow due to the firm’s association with the UFV brand. This market advantage combined with new product development courses prompted the company to expand to other products such as “Longevida,” designed for elderly consumers, “Good Nut” to combat calcium deficiency, and “Diet Clin” for weight loss. The firm’s association with UFV helped it win financing from SEBRAE and FINEP.

In terms of job creation, incubator records show that over the past six years, a total of 197 jobs were generated with an average annual growth rate of 23%, as shown in Figure 15.

³ Rizoflora website: <http://www.rizoflora.com.br/interna.php?area=empresa>

⁴ Interview with Graduate Firms, February 25, 2011, pg. 3

⁵ Interview with Graduate Firms, February 25, 2011, pg. 2

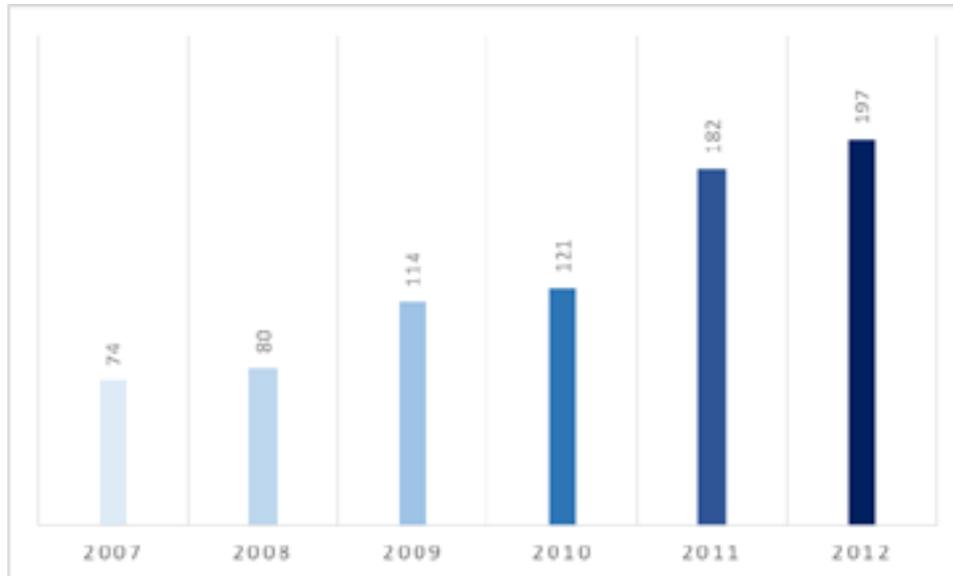


Figure 15 - Total Employment Generated by Incubated Companies

7 SUMMARY AND CONCLUSIONS

7.1 Critical Success Factors

Three factors that have been essential to the success of the CENTEV/UFV-TI's success:

"Aproveitar muito o que tem" or "Take much advantage of what we have"

The incubator's structured, efficient system uses a small team of fellows to conduct technological research and help entrepreneurs adapt innovations for their businesses. The efforts of both the researchers and incubatees mutually benefit each other, providing incentives for them to invest themselves in their roles. Furthermore, a limited endowment forces the incubator to budget its funds and select incubatees wisely. This strong nucleus combined with budgetary constraints creates a "can-do" spirit within the incubator, and motivates staff to take advantage of all resources.

Diversification

The incubator's open-minded selection process has enabled it to maintain competitiveness in many markets and sustain its reputation for effective business-development strategies. Furthermore, in having to manage many different technologies, UFV's research capabilities are challenged and thus more advanced than if research and development were focused on one product.

Leadership

As an academic himself, Dr. Claudio Furtado saw how infusing entrepreneurial agendas into academia could be valuable for the community and the university. His commitment to entrepreneurship was instrumental in creating the incubator's base structure. His enthusiasm spurred a commitment to

business development that has pervaded every aspect of the incubator's service delivery. Dr. Furtado also helped connect CENTEV/UFV to university financing and external partnerships.

7.2 Lessons Learned and Implications for Agribusiness Incubators

Create a Base System—A core nucleus of activities and actors supported by good management will create a solid structure from which other activities may feasibly emerge. Furthermore, this structure makes it easier for staff to improve or adapt the management systems.

Leadership Matters—Technological innovation requires committed staff. An effective leader can encourage dedication by creating a participatory environment, applying motivation techniques, and clearly assigning goals and responsibilities. The incubator's association with a prestigious university has also helped it gain technological leadership.

Create and Nurture Partnerships— Partnerships are necessary for technology transfers, access to technical expertise, financing, market access etc. These need to be strategically developed, especially from a financing perspective.

7.3 Goals Moving Forward

One key area of focus is to increase the sources of revenue. The incubator must determine how to market its technology, business development, and software services to business entities outside of the incubator program. Since incubatees receive these services for significantly less than their cost, these services produce little revenue within the Incubator. Additional financing would improve the incubator's staff retention rate and enhance its sustainability and business management.

8 REFERENCES

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