THE ART AND IMPACT OF PHYSICAL AND VIRTUAL ENTERPRISE INCUBATORS: THE GREEK PARADIGM
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Abstract
This article presents a compilation of the basic concepts and issues involved in the art of designing and operating enterprise/business incubators (BINCs). These include the definition, the models, the starting process, the good practices, the assessment, the impacts, and the business sectors of BINCs. Then, the current status of the BINC activity in Greece is discussed and a virtual/electronic BINC developed for Greek social economy enterprises within the framework of the DYEKO EQUAL project is briefly outlined. The article concludes with some empirical observations concerning the Greek BINCs, and some suggestions for their further expansion and improvement.

Keywords: Business incubator, virtual incubator, good practice, incubator assessment, incubator impact, Greek incubators. MAIN TRACK: IV

1. INTRODUCTION

Formally, the concept of business incubation was firstly introduced by Joseph Mancuso in 1959 when establishing a warehouse at the Batavia Industrial Center (Batavia, New York) [1]. The incubation process has been expanded quickly in the U.S.A., Europe and Worldwide and in the 1980s was turned to a "real art" with strong positive results in the economic development and the sustainability of enterprises and companies [2-6]. In the Helsinki Summit of 1998, the European Union (EU) defined a business incubator (BINC) as "the place where start-up enterprises are concentrated in a restricted space". Incubation activity does not take place only in developed countries. An increasing number of incubator environments are established and operated in developing countries and raise the need and interest for financial support from national and worldwide sponsors (World Bank, European Union, e.t.c.)

In general, an incubator must provide management guidance, technical help, and consulting suitable for early stage growing companies. Incubator clients have access to proper rental space and flexible leases, shared fundamental business services and hardware/software equipment, technology support, and advice/assistance to get the economic support necessary for the client enterprises to grow.

2. BUSINESS INCUBATOR MODELS

The operational model a BINC determines its organization and operation style, i.e. the structure, the purpose of services, the possibilities of finance, and the external cooperation. The three principal incubator models found in the literature are:

1. The physical incubator model, where the incubation process and the services offered are concentrated in a building. This has the advantage that the interaction, the partnership creation and the solution of common problems are stimulated by the proximity of incubator's clients [2-8].

2. The virtual (or electronic) incubator model, also referred to as "portal model", where the incubation process (support and services) are offered through the Internet [9-12].

3. The mixed incubator model, where the incubation process is performed "in house" for some enterprises and via the Internet for some others.

The physical incubator model, which is the most "natural" one, is extensively employed in the classical incubators. The electronic incubator model also called the "model without walls" has been used to support the start-up and development of enterprises over the Internet. The current trend of widely using the World Wide Web in the economic, enterprise and production activities has as a result the increasing adoption of the virtual and mixed models. The incubator operational model of a particular incubator is designed and developed by the team of the project, which must include representatives of all enterprises/organizations participating in the project, in order to take into account the points of view and interests of all of them.

The three basic constituents that are involved in the incubation process are:

- **Services**
- **Network of relations**
- **Financing**

The physical incubators provide a restricted repertoire of services, since the services are offered within the incubator's building. Virtual incubators do not have this type of restriction, since their services are offered through the Web. The physical incubators limit their networks of relationships to their own physical space of activity, which may result in reduced quality of the relationship's network. On the contrary, electronic incubators can assure relationships' networks of higher quality. Physical incubators have restricted capability to offer financial support to incubated enterprises from their own funds and resources, whereas electronic incubators have the possibility to seek and secure more financial alternatives [9, 10].

3. **STARTING A BINC**

Business incubators are now recognized to be an effective tool for stimulating entrepreneurship and generating sustainable business growth. The decision, however, whether or not an incubator is the best business development tool in each case, should be based on careful feasibility analysis and proper planning. Actually, a good understanding of the target enterprise clients and of the market conditions existing in the surrounding environment is needed before deciding to start or not a BINC. Decisions should also be made about the services to be offered, the financing of the start-up, the incubators' governing structure, the human resources needed "in house" vs "contract out", and so on. The feasibility study should give well justified answers to critical questions, such as whether the proposed incubator project has a solid market, a strong societal support, sufficient financial resources and true champions. The BINC developers should correctly identify the obstacles that are predicted to be faced and the ways to surmount them.

The development of the BINC must assure that will be "in-line" with and promote the community's broader economic development goals. To ensure that a starting BINC will be successful, the "good practices" attained from previous BINC projects should be adopted, and adapted to the particular situation at hand. Although there are various types of BINC, they all share many good practices and common features. Finally, the legal status of the BINC is a strategic decision, because the flexibility and efficiency of the BINC will be influenced by this decision. Efficient incubation is not easy and needs a
long-term commitment from stakeholders who will have to face many challenges through the life of the BINC. BINC have substantial differences in their:

- **Sponsors** (state, business, university, venture capital, etc).
- **Objectives** (from empowerment to technology commercialization).
- **Location** (urban, suburban, rural, international).
- **Sectoral focus** (technology and mixed, including arts and catering incubators).
- **Business model** (not for-profit, for-profit).

### 4. BINC GOOD PRACTICES

Not all BINCs operate following “good or best practices”. At the one end, there are incubators that operate in a weak business environment and are characterized by a low quality selection procedure for client enterprises, not well organized support services, non professional persons acting as managers, and low rental as an attraction policy. At the other end of the spectrum we have BINCs with well-designed facilities and professional management in a good knowledge environment, that charge near market rents and provide high-level innovative and value –adding services. These BINCs follow “best practices” and their performance is the outcome of proper preparation, sufficient funding, entrepreneurial quality and an incubation process that matches well the location and time of the specific environment.

The poor BINCs have to search to find the best practices worldwide and adapt them to their own conditions, constraints, and environment. In this way the image of the overall incubation industry will be improved at the benefit of the society. In [3] R. Laiikaka presents a wide reperory of worldwide BINC programs focusing on their best practices. Countries considered include USA, China, Brazil, Japan, India, Republic of Korea, Uzbekistan, South Africa, Malaysia, Indonesia, Egypt and Poland.

Some key success factors or best practices drawn from the experience of Brazil and China are the following:

- Identify strong sponsors and a clear mission.
- Find a committed champion.
- Select a good location for the functional buildings and their organization.
- Form a well trained and dedicated management team.
- Select good entrepreneurial tenants (clients).
- Mobilize investment and working capital for incubator and its tenants.
- Develop creative ways of raising revenues.
- Secure added value via quality services to tenants and their affiliates.
- Promote the participation of women.
- Monitor the BINC’s performance and assess its impact.
- Create fruitful cooperation with universities and research institutes.
- Strengthen industry associations and international relationships.

The above key success factors are also applicable to other countries, of course with variations of importance and influence.

### 5. ASSESSMENT OF INCUBATORS

Most of the incubation programs all over the world are actually “public-private partnership” in which the initial funding comes from the governmental side. The private sector enters if it see that the program will lead to more business opportunities or create
spin-offs. Naturally, the funding bodies select for funding BINC programs that after an initial period of development can become financially viable. However, only a few BINCs have built into their management systems proper tools for accurately estimating their impact, effectiveness and sustainability. The evaluation process is complex and multiparametric, needing step-by-step analysis of the factors that influence the BINC operation internally and externally. It is noted that it is not always possible to quantify in economic terms the performance of a BINC. Measures of performance are the *medium-term benefits* for the clients/tenants, sponsors, local community, region and nation.

Some criteria that can be measured are:

- The number of enterprises generated.
- The employment created.
- The growth in the company’s assets, sales and exports.
- The corporate and personal taxes generated.
- The survival rates of the ventures incubated.
- The technologies commercialized.
- The revenues earned by patents and licensing.
- The number of graduating firms.
- The added value offered to incubating clients in comparison with those of the open marketspace.

6. IMPACT OF INCUBATORS

The impact of a BINC to different stakeholders is as follows [3]:

- **For clients**: BINCs increase the possibilities of success, improve credibility, help in the enhancement of skills, promote the synergy among the client enterprises, facilitate the cooperation with mentors, and assure access to information, knowledge and initial funds.

- **For governments**: BINCs assist to overcome market failures, promote regional development, create jobs, generate incomes and taxes, and become a tool of the commitment of the government to aid small business.

- **For universities and research centers**: BINCs contribute to the establishment of cooperative interactions between university-research-private sector, promote research commercialization, and enhance the opportunities to staff/students to better utilize their knowledge.

- **For business**: BINCs provide additional chances for acquiring innovations, offer chain management and spin-offs, and help the client enterprises to meet their responsibilities for the society.

- **For the local community**: BINCs create self-esteem and entrepreneurial culture, along with local incomes from the graduating business that stay within the area.

- **For the international society**: BINCs produce opportunities of trade and technology transfer between client enterprises and their host incubators, and facilitate the exchange of experiences via associations and alliances.

The above benefits are not always achieved due to poor management and other weaknesses. However, there is an increasing evidence that in most BINCs some or all of the above benefits are realizable and out-weight the net public subsidy.
7. BUSINESS INCUBATORS IN GREECE

7.1. General issues

The business incubation activity in Greece began about one and a half decades ago. Today there exist six independent autonomously operating BINCs in Greece [13]. Most of them were created with the help of national and EU funding within the framework of the European-Greek development program ELEFTHO (ΕΛΕΥΘΟ) [15]. Generally, the Greek BINCs follow the traditional operation model(s) described in Section 2, but their approach to the implementation is usually different than that of other countries. The differences are mainly due to the way and the level of economic support that offer to their client enterprises. Some of them have their own funds to assist the incubates, while the majority of them are mediators and bring into contact the incubators with possible “Venture Capital” sponsors. Those which are embedded in the activity of VCs, are accepted as members in the Hellenic Venture Association and have the benefits of the relevant legislation. Actually, their activity presents peculiarities that cannot be faced by the legislation of stockholder companies. Some other efforts that are made in Greece in the private or public sector, do not actually arrive at the true incubator level, mainly because they do not provide funding support to their clients, and so they do not possess part of their capital.

7.2. Presentation of Three Greek Incubators

Here we will briefly present three Greek BINCs in order to show the level and impact of their activity. These are the following:

- **i4G**: Incubation for Growth
- **1-CUBE**: Intelligent Ideas Incubator
- **THERMI**: Business Incubator

**i4G**: This is one of the most successful incubators of Greece and constitutes one of the EUROCONSULTANS S.A. main tools for implementing its entrepreneurial goal to establish links among research and business [16]. Its operation is based on three fundamental issues, namely:

- Housing and operating support
- Effective management consulting services
- Provision of capital

The long-term vision of i4G is to maximize its workforce and expertise acquired within the incubator’s everyday operation, in order to promote its operational model and make it identifiable within an international incubator network extending over European Middle East and North Africa countries.

Based on the 15 enterprises currently incubated in i4G (Actus, CellMedical S.A., Digital Innovations, Entersoft S.A., Exper Team, ICTV Hellas S.A., Medical Technology S.A., e.t.c.), whose activities cover informatics, communication, digital economy, industrial applications, environmental protection, medical applications and wireless communications, we can say that i4G achieves its goals to contribute to the local and regional economic and sustainable development.

**1-CUBE A.E.**: This incubator operates since December 2000 and invests in new business schemes, providing integrated support at strategic, management and technical level [17]. i-cube provides services in informatics, specializing particularly in network and Internet problems. Among the applications of interest to i-cube a dominating position is kept by renewal energy resources and the environment (photovoltaic and wind electric energy production, etc). The stockholder capital of i-cube is about €300,000 (ranging from 100 k€ to 800 k€). Part of this investment is financed by the Ministry of
Development (GSRT) through the ELEFTHO Program. The i-Cube BINC lowers the investment risk for the investor, the incubator and the inventor, and offers integrated services, synergetic actions (sales channels, suppliers, etc) and joint ventures. i-Cube has a network of sponsors/investors and cooperators.

According to the data published by i-Cube, 14 enterprises have been incubated till now. Thirteen of them are commercial companies and five have successfully graduated (taking a stockholding part of i-Cube A.E.). These companies are: SYMPER A.E., SPIRIT, INNOVIS, THERON, Click Home.gr, Travel Zone, Oration, Future Reality, Regate, Imagics, R.E. Net, MindWell and Your Partner. From the above it follows that i-Cube A.E. plays well its role towards the improvement of local and regional sustainable development.

**THERMI A.E.:** This incubator is relatively new (2004) and has a supermodern building of 6,000 square meters (the largest in Southeast Europe) with an impressive infrastructure [18]. THERMI’s total investment is 14,5 Million euro. By the end of 2006 this BINC had 31 new high technology incubated companies coming mainly from the following branches:

- Medicine, biomedicine and biotechnology
- Software research and production
- Computer hardware and digital equipment
- Intelligent mechanisms and systems
- Telemetry, telematics and wireless data transmission
- Development of environment protection systems
- Energy systems production and distribution
- Implementation and utilization of Internet systems
- Agro technology

Stockholders of THERMI A.E. are the following companies: KOUVAS and SYMMETOCHES A.E., PROTON BANK A.E. and IBG A.E. (a daughter company of MARFIN FINANCIAL GROUP). Through the company INI – NOVATION GREECE A.E., THERMI A.E. BINC is participating in the international network INI – Graphics Net which has created BINC and other bodies of technology development and transfer in Europe, U.S.A. and many Asian countries INI-NOVATION GREECE A.E., a consultancy company, is the basic cooperator of INI-Graphics Net for innovative technology transfer in the Southeastern Europe with its center in Thessaloniki. THERMI A.E. has developed an integrated enterprise support system, called “THERMI DEVELOPMENT” with a competent group of professional advisors as its basic constituent.

### 7.3. The virtual incubator DYKEO

This electronic incubator was developed within the framework of the EQUAL project DYKEO: “Support Network for Social Economy and Enterprises” co-financed by the EU (EQUAL Europe)[19] and the Greek Ministry of Employment and Social Care (EQUAL Greece)[20]. Coordinator of the consortium was the 21 OTA Coalition (21 Municipalities of Attica) and partners: The Institute of Communication and Computer Systems (ICCS) of NTU Athens, Asset Tech., Holargos Municipality KEK, Panhellenic Women Society “Panathinaiki” and KPEE (Political Research and Communication Center).

The main goal of DYKEO was to promote women’s entrepreneurship in social economy, directing it toward the real needs of the women in North and East Athens. This has been accomplished through the creation of four pilot small size social economy enterprises owned exclusively by women entrepreneurs. The actual implementation of the project was based on the VIRTUAL BINC which provided the proper mentoring and support services to the starting social enterprises. In addition, Holargos KEK has run a number of seminars for selected groups of unemployed women (supported by the E & SC Ministry). The
pilot enterprises were given an initial capital by the E & SC Ministry to start their business.

Among the support services offered by the DYenko virtual BINC are the following: advice and help in marketing, accounting, taxation, insurance, banking/finance, and legislation actions. Also, fundamental educational material on social economy, informatics and related topics is offered in the incubator. The current virtual incubator of DYenko (in Greek) can be found at the site: http://argo.cs.unipi.gr/e-thermokoitida.gr/index.php. This will be moved soon to the server of a public Internet provider.

8. CONCLUSIONS AND SUGGESTIONS

A study of the Greek BINCs was conducted by the interdepartmental MBA of Athens Economic University using a set of questionnaires and personal interviews [14]. The final distribution of the people that provided answers is: 24% BINC staff members, 43% incubees' staff members, and 33% other specialists (from government, sponsoring bodies, academic institutions, advisors, auditors, etc). Three different types of questionnaires were provided dealing, respectively, with economic figures, specialized issues, and evaluation of the ELEFTHO program.

Very broadly the following results were drawn:

- The contribution of the government to the development of incubators is poor, and must be strengthened.
- The cooperation of universities with the incubators is very weak. More involvement of universities is needed in the effort to create a culture that reinforces entrepreneurship.
- The two weakest points of the Greek incubator activity are: (i) the
- More attention is given by the incubators to internal services (accounting and legislation services, personnel recruitment) and external services (market search, sales, etc), than to pre-incubating services and access to potential sponsors.
- The survival index of the "graduates" is low (12.56%).

On the basis of the above empirical observations, the following minimal set of additional suggestions for improving the Greek business incubation efficiency and impact is the following:

- The government must offer a better environment for entrepreneurship and venture creation (better corruption fighting, bureaucracy simplification, legislation improvement, etc).
- The incubators and their clients must strengthen their cooperation with universities.
- The incubating enterprises must increase their links with sponsors.
- Better coordination of all the players involved in the incubation game is needed for improved efficiency.
- The relevant university and state research teams must cooperate with the proper private sector bodies towards identifying the key factors and developing a valid and sustainable Greek incubator model.
- More virtual incubators should be developed (virtual incubators either within the framework of the existing incubators or as separate entities).
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