Contextual Dimension of University Incubator Organizations in Iran

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Abstract

One of the most important determinants of university incubator performance is its organizational dimensions; contextual factors are one of these dimensions. The purpose of this research, based on specialized view of 28 research experts is to find answers for the following question: “What are the contextual factors of university incubator organizations in Iran?”.

By using the Delphi technique, researchers tested the model of contextual factors of university incubator organizations in Iran, so the results of this paper revealed the components of this model in terms of "size", "technology", "goals" and "environment".

Keywords: Organizational Structure, University Incubator, Contextual Dimension

Introduction

The development of new research/technology-based firms has become increasingly important in today’s competitive economies. One mechanism used for this purpose is the establishment of university incubators in or around the university campuses. Interest in the university sponsored technology incubator is due to the weakness of university members start-ups. This entity holds out the possibility of linking talent, technology, capital, and know-how to leverage entrepreneurial talent, accelerate the development of new technology-based firms, and speed the commercialization of technology. University business incubators (UBI), being employed as an academic entrepreneurship strategy for promoting the development of new research/technology-based firms (RTBFs) (Mian, 1996: 191). The organizational dimensions of university incubator have influence on its performance.

Our country, Iran has many university incubators. They have been established very quickly and most of them do not have suitable organizational dimensions.

As Daft (2009) conveys the organization have two important dimensions: contextual and structural dimensions. However, literature reviews do not provide a clear understanding of how is the contextual dimension of university incubators. This article presents research aimed at uncovering and documenting perceptions of experts who have enough experience in this field, about the contextual dimension of university incubators.
It is based on data collected from 28 university incubators' managers and experts in Iran. The following section explores the literature in more details. Then the conceptual framework of this research is introduced. Finally, the results of this research, which provides evidence for the existence of the content of conceptual framework, are reported and discussed.

Literature Review
Entrepreneurial University
The university develops its mission based on three elements: education, research and society. Each element is related with the others and the figure only is complete if the relation is kept in both ways between them; (see figure 1). The education must be based on research and the research must be directed to the society. A common criticism made against university is that it is isolated from the real world, making research closed in the laboratories, forgotten the real needs of society and the education provided reflects this isolation: it is not adequate to the actual labor market needs. The labor market is changing; a graduation course does not protect the Individual from unemployment. The conventional employment is disappearing. The young generation must learn new values as innovation and flexibility and a great diversity of competencies. They must think about the creation of their own employment. The rules of the labor market are changing and the education systems have to change. This means that the university must think on promoting entrepreneurship education. Entrepreneurship education promotes self-employment as a career alternative and at the same time, it provides to the students, competencies, abilities and knowledge needed to the firm creation. The university can participate in the promotion of entrepreneurial activity in two ways: to take part in activities that bring students directly to enterprises but also in the design of curricula that make ready the students to the foundation of firms. Lately some universities are participating in a set of activities for firm creation: science parks, innovation centers and business incubators (Ussamen, 1998:5-7). The focus of this research is on university incubators.

Business Incubators
Business Incubator is a combination of physical space and facilities, entrepreneurial ideas, administrative and management support, all joined to nurture new businesses in the critical early stages of development. Incubators assist emerging ventures by providing support services and assistance in developing their business (Kemtz, 2000:1). Incubators are commonly linked business support networks and technological innovation programs. Small business incubation is a dynamic process where young
firms are nurtured to survive and grow during periods of uncertainty, particularly during the start-up phase (Bhabra-Remedios & Cornelius, 2003:3). Grimaldia & Grandia (2005) map business incubators into four categories: Business Innovation Centers (BICs), University Business Incubators (UBIs), Independent Private Incubators (IPIs), and Corporate Private Incubators (CPIs). They then argue that the variety of incubating organizations is driven by the evolution of businesses’ requirements and needs, which encourage incubators to differentiate the range of services that they offer. They believe it makes sense to think about two main incubating models (figure 2). At one end of the spectrum (Model 1), there are public BICs and regional public incubators whose services are more oriented towards the provision of tangible assets and market commodities. At the other end of the spectrum (Model 2) there are private incubators (both CPIs and IPIs), whose services are directed towards the provision of finance and more intangible and high-value assets, with a short-term time orientation. Access to knowledge and intangible assets, to capital, and speed-to-market has become a major requirement for these companies. They believe that UBIs could be placed somewhere between the two models, their incubating model is similar to BICs, since they rely on incubatees’ fees and on public subsidies and their main objective is to provide knowledge-based businesses with continuous access to advanced technological knowledge, educational infrastructures (laboratories and facilities) and educational networking (Grimaldia, Grandia, 2005:112-114).

**Figure 2: The Two Incubating Model (Grimaldia, Grandia, 2005: 114)**

![Diagram showing two incubating models: Model 1 includes BICs and UBIs, while Model 2 includes CPIs and IPIs.](image)

**University Incubators**

University incubators are established in or by university campuses. There are different models and sizes regarding these kinds of initiatives. The common factor is that these incubators promote the development of new research/technology-based firms inside their own facilities. The role played by universities consists of linking research, technology, capital and know-how to leverage entrepreneurial talent, accelerate the development of new technology-based firms, and speed up the commercialization of technology. Their success is considerably tied to the capacity of linking research with industry (Scaramuzzi, 2002:7-8).

Bajmócy (2006) to summarize the role of university incubators in the development of innovative start-up companies and thus in the strengthening of emerging knowledge-intensive industries, we can identify two principles:

- First, university incubators play role in the strengthening of the formal and informal connections among the start-up enterprises of the industry and thus begins the cumulative learning process.
- Second, they take part in the development of the industry-specific institutional and business environment, and so help to exploit the potential of the emerging industry (Bajmócy, 2006:5).

Lalkaka (2003) argues that the incubation process calls for prepared inputs in order to achieve required outputs, (Figure 3):
**Inputs:** these mainly consist of the inputs made by stakeholders (e.g. providing finance), management resources, and projects put forward by entrepreneurs;

**Processes:** the various inputs are brought together in the business incubation process through the provision of incubator space and a variety of value-adding services to companies;

**Outputs:** successful companies graduate with positive job and wealth creation impacts (Lalkaka, 2003: 4).

The report also made by the European Commission (2002) presents an incubation model that includes the elements necessary for the generation and development of the incubated companies and based on the previously mentioned model consist of three steps: entry, process and exit.

It means during the process of the commercialization of the idea the entrepreneur should pass several processes in incubators. In this research, these processes divided to three main periods: establishing new tenants, pre-incubation period and incubation period.

Lavrow & Sample (2000) define the pre-incubation and incubation period as following:

**Pre Incubation:** primary function of a business incubator, a process of facilitating accelerated growth of incubatee (an incubator’s client or a start-up whose growth acceleration is the primary business of the incubator) through an array of business support resources and services.

**Incubation period:** the incubatee resides at the incubator and receives all the available services agreed upon them (Lavrow & Sample, 2000:8)

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**Business Incubators, Networks**

It is important to comprehend an entrepreneur’s needs, to make sure that an incubator links an entrepreneur to the most appropriate networks. These networks will assist an entrepreneur to overcome obstacles she faces and assist to build new networks if that is required. An incubator’s network in general offers access to resources and know-how that entrepreneurs often do not have, but definitely need. However, without the assistance of incubator personnel, an entrepreneur might experience a hard time in locating the right individuals from the often-complex network. Therefore, the incubator personnel have an important task in assisting and supporting the creation and development of value-adding network relations. An incubator’s network can enable the incubator to serve an expanded number of client tenants with a given number of employed personnel (Tötterman & Sten, 2005: 489). In recent years the role of the incubator in network development has been recognized with Lender, he argues, ‘incubators can serve as a network node point for relationships with important external consultants such as tax accountants, patent and other lawyers, business consultants, marketing and public relations firms. Such relationships can be crucial to the development of the firms (McAdam et.al, 2006:462).
**Organizational Dimensions**

Organizational Daft (2009) argues organizational dimensions fall into two types: structural and contextual dimensions. Structural dimension provide labels to describe the internal characteristics of an organization. They create a basis for measuring and comparing organizations.

Contextual dimensions characterize the whole organization, including its size, technology, environment and goals. They describe the organizational setting that influences and shapes the structural dimensions. Contextual dimensions can be confused because they represent both the organization and environment.
**Contextual Dimension**

**Size:** be able measured for the organization as a whole or for specific components, such as a division. Because organizations are social systems, the number of employees typically measures size. Other measures such as total sales or total assets also reflect magnitude, but they do not indicate the size of the human part of the system.

**Organizational Technology:** refers to the tools, techniques, and actions used to transform inputs into outputs. It concerns how the organization actually produces the products and services; it provides for customers and includes such things as flexible manufacturing, advanced information systems, and Internet. An automobile assembly line, a college classroom, and an overnight package delivery system are technologies although they differ from one another.

**The environment:** contains all elements outside the boundary of organization. Key elements include the industry, government customers, suppliers, and financial community.

**The organization's goals and strategy:** define the purpose and competitive techniques that set it apart from other organizations. Goals are often written down as an enduring statement of company intent. A strategy is the plan of action that describes resource allocation and activities for dealing with the environment and for reaching the organization's goals. Goals and strategies define the scope of operations and the relationship with employee, customers, and competitors.

Contextual dimension can tell a lot about organization and about differences among organizations.

The present study seeks to fill this gap in the literature on university incubators by examining experts' views on size, technology, goals and environment of university incubators (Daft, 2009: 114-115).

**Research Model**

The objective of this paper is to present a practical model; it is composed of contextual dimension of university incubator in Iran. Based on earlier mentioned model of contextual dimension, the conceptual model of this research was designed. The content of this model is composed of the present ideas about the contextual factors that affect the structure of university incubators in Iran. These ideas are extracted from the result of interviewing the experts in this field and reviewing the documents and comparative studies about other university incubators in the world including: Austin Technology Incubator, Arlington Technology Incubator, Velour Incubator, Kryat Weizmann Technology Incubator, Plattvil Business Incubator, Incubator of Yuan- Ze, Bombay Technology Incubator, Strathclyde Incubator, Ohaio Business Incubator (Figure4). The dimensions of this model are described in the following:

**Goals of University Incubators:** contain the goals that university incubators follow them.

**Technology of University Incubators:** the technology includes the establishing new business start-ups, pre-incubation period and incubation period.

**Environment of University Incubators:** includes the relation of university incubators with the units inside the university for finding entrepreneurs and the relations of university incubators with other agencies outside the university for supporting firms after leaving incubators.

**The Size of university Incubators:** The size of incubators is determined through the individuals who work in incubator.
Research Process
In this study, after choosing the subject, describing the problems and raising the main questions, the aforementioned conceptual model was designed. This model was approved by using the two-round Delphi technique and finally the results were discussed.

Methodology
This study is an exploratory investigation, from the survey type based on the two-round Delphi technique.

Data Gathering Instruments
Questionnaire and interview are the two instruments in this study. Interview was used for studying the existing ideas and the two questionnaires were designed for applying the Delphi technique. The first questionnaire measured the necessity of statements and the second one measured the importance of the statements.

Delphi Technique Rounds
First round: in this step, the necessity of statements was measured in the form of "yes, no" answer. From 50 distributed questioners, 28 ones were gathered.
Second round: In this step, the importance of the resulted statements from the first round, measured based on the Likert Scale in the form of "very much, much, so-so, little, very little". From 28 distributed questioners, 28 ones were gathered.

Questionnaire Validity
In this study, for assessing the validity of statements, some experts’ ideas were observed. Some of their main suggestions are:
1. Changing some ambiguous statements;
2. Omitting some repetitive words;
3. Changing some words;

Questionnaire Reliability
One way for measuring the reliability is Alpha Cronbach that is based on the data analysis with SPSS software. This Alpha is 0.96 for two questionnaires.

Statistical Population and Sample
In quantitative research, there is a population that the results of data analysis are generalized to it, but in Delphi technique, there is not as such population. In this technique the sample is chosen from those who have specific view about the research theme or they are somehow related to it. Based on the above-mentioned method, the sample group in this study is selected from the managers and individuals who work in university incubators in Tehran. Selecting the sample group was based on some studies and asking from these people themselves.

Results
In the first round of the Delphi technique, the statement necessity was measured by using the "Binominal Test" that the zero hypotheses were:
\[ H_0: P \leq 0.6 \]
After data analysis, some of the statements were omitted.
In the second round, the importance of the rest statements were measured by using the "T-Student Test" that the zero hypotheses were:
\[ H_0: \mu \leq 3 \]

Findings and Discussion
As mentioned before, the organizational structure of university incubators is affected by several factors including: environment, organizational technology, organizational size and goals. These factors are described as follows:

Goals
Designing the organizational goals is the first step for incubator effectiveness. The result of this research shows three important goals for university incubators:
1. Creating necessary services, resources and facilities for new businesses;
2. Supporting the local economy development and creating high quality jobs through the establishing successful and durable businesses;
3. Promoting entrepreneurship at university and supporting the young individuals' innovations;
Technology (The process of establishing new enterprises, pre incubation and incubation)

As before, mentioned technology is an instrument for transforming "inputs" to "outputs". In this research, the technology of university incubator including the process of establishing new enterprises, pre incubation and incubation. The necessary steps in each process are as follow:

The Process of Establishing new Enterprises
1. Distribution public statements in university campuses for attracting entrepreneurs and individuals who have new ideas, through website, newsletter and seminars;
2. Familiarizing the entrepreneurs with the goals and functions of university incubators through the educational sessions;
3. Preliminary registration in university incubator: In this stage, the applicants should fill a special form and write in two or three lines about their ideas;
4. To write the abstract of business plan: In this step, individuals should write about their business plan in two or three pages;
5. A council of referees does preliminary evaluation of business plan;
6. Applicants provide their business plan entirely;
7. Reviewing the business plan by a technical council including (incubator manager, at least one specialist in that business field and one specialist who is familiar about business management);
8. Contracting with applicants: in this step regarding the applicants' needs for entering; to pre incubation process or incubation process, the incubator will contract with them;

The Necessary Steps in Pre Incubation Period
1. The new business start-ups should participate in consultant programs and educational courses. They should give their reports of their development in fixed periods to the incubator assistant;
2. They are evaluated in the end of pre incubation period. If they have, enough qualifications they can enter the incubation period, otherwise they should remain in pre incubation period or if the incubator manager does not have adequate satisfaction with them, they should leave the incubator;

The Necessary Steps in Incubation Period
1. In this period the new businesses should start their activities for developing the new product. They should give the reports of their performance regularly (every 3 months). A council of the academics will assess it;
2. If their performance evaluated positively, they will be persuaded, otherwise they will be given notice. If they get notice for three times, they should leave the incubator;
3. The end of this period the businesses will be evaluated and after this evaluation, it will be decided that they should remain in the incubator or should leave it and work for themselves;
4. After leaving the incubator. University incubator will introduce businesses to the public or private investment sectors and provide them suitable supporting policies;

The Size
The size of one organization shows as the number of its employees. The result of this study shows that the size of university incubators with regard the number of firms is small; it means the university incubator has a few employees.
The Environment
In this research environment includes the connection of university incubator with other parts at the university for attracting entrepreneurs and with related organizations out of university. These relations are described in the following:

1. The university incubator has connections with other university campuses through the posters, seminars and so on;
2. The university incubator has relations with other agencies outside the university through the websites and membership in different networks and through the negotiation with public and private organizations;

Conclusion
This study has found evidence of the contextual factors of university incubators in Iran. The results show that the size of the university incubators regarding the number of employees is small. It has many connections with different parts at the university for attracting young entrepreneurs or individuals who have new ideas. University incubators also should have connections with other agencies outside the university for finding financial support or for introducing the businesses to related agencies after incubation period, and providing enough support for them. The results of this research show that unlike most university incubators, which studied in this research, the university incubators in Iran should provide three different stages for tenants including establishing, pre-incubation and incubation processes. Most university incubators have only two stages: pre incubation and incubation processes. The results also revealed that the university incubator should support the businesses after exiting of incubator. However, due to the constraints of time and resources, the scope of this study could not be extended to make suggestions that are more specific on some of the contextual factors discussed in this study. It is suggested that more research is needed to produce relevant knowledge in organizational structure of university incubators.

References


