

IMPACT OF DRIVERS AND INHIBITORS ON TECHNOLOGY BUSINESS INCUBATORS

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Abstract - Technology and entrepreneurship are often reckoned to be the twin-horses pulling national economies towards their developmental destinations. Technology business incubators have become popular because of economic development strategies like promoting technology/knowledge-based businesses, culture of techno-preneurship, creation of value added new jobs, Technology commercialization, interfacing and networking of academic – R&D – industries and financial institutions, value added services to its tenants as well as to the existing technology dominated Small and Medium Enterprises (SME) and also technology upgradation activities. Though TBI's are generally considered to be a major facilitator of Technology Business Enterprises (TBI's), the experience of their effectiveness has been mixed, especially in the emerging economies' context. It is against the background of such diversity of experiences that we have undertaken a comprehensive investigation to assess the roles played by the Technology Business Incubators and to identify key drivers and inhibitors in Indian context.

Key words: TBI, innovation, drivers, inhibitors

I. INTRODUCTION

The importance of new technology-based firms to the economy is now widely recognized not only by the western industrialized world, but also by many countries at large, from Asia to Africa. New technology-based firms make significant economic growth in the creation of new jobs.

Another important contribution of new technology-based firms is their catalyzing role to technology and knowledge accumulation process of innovation system. However in reality, among the success stories of the emerging of new technology-based firms, many have failed and collapsed in the early years of their establishment. The firms found a difficulty to develop their innovation capacity. The dilemma that always appears is the choice between to keep innovating (exploring a new market) and exploiting the existing market.

Technology based enterprises are especially attractive to policy-makers because of their higher potential for job creation and wealth generation through business growth as well as their lower disappearance rates compared to non-technology based firms. As new technologies are often developed in R&D institutions, it was such institutions in the Western nations that first took the initiative of providing incubation facilities to transfer these new technologies to the market. The model was later used by public and private agencies for facilitating technology development for new ventures. Such initiatives are now known by the common name of Technology Business Incubators (TBI), some of which are focused on technology transfer and others on Technology development for new ventures.

In spite of the fact that development of SME are key to economic growth and achievement, many believe that new firms and to some extent even the established firms fail due to poor managerial skills, capital deficiency and difficulty in understanding and capturing the market. In order to overcome these deficiencies, entrepreneurs have started looking towards incubators for value added services. Though TBI's are generally considered to be a major facilitator of Technology Business Enterprises, the experience of their effectiveness has been mixed, especially in the emerging economies' context. It is against the background of such diversity of experiences that this study undertaken.

A. Indian Economic Scenario

India has made considerable achievements during its sixty years of independence. Economic reform and liberalization measures over the last decade have led to strong economic growth, increased exports, reduced inflation and a positive impact on social indicators. Today, India is the fifth largest economy and second most popular country in the world. Indian Economy has

significantly grown in the recent years. Both social and economic indicators have reflected their respective positive impact for the development of the Economy [4]. In the Social sector the best example today is 108 million children attend primary schools in India by making the country's education system the second largest in the world after China. In the economic sector Gross Domestic Product (GDP) in nominal terms of US\$692 billion in 2004, has made the country the world's tenth largest economy. Real GDP grew by 6.9 percent in 2004 – 05 compared to 8.5 percent a year earlier. Prospects for real GDP growth for 2005 – 06 is 6.5 to 7 percent. External position of the economy is becoming significantly stronger. Exports have grown, especially exports of services, which grew by 105 percent in 2004 – 05. Growth in services has largely been fueled by the information technology boom in which India is emerging as a world leader and is helping in building a strong economy.

B. Future Vision on Indian SME Sector

In the present scenario dynamic world “change” is the only permanent thing. The process of change has accelerated in most recent years due to macroeconomic transformation both in house as well globally. In the present situation the two big global economic forces which are competing for world attention are (a) the advent of a new economy due to information and communication technology and (b) due to globalization increased instability and uncertainty. With the formation of WTO, a new trade environment is emerging and a large number of items are now under Open General License (OGL). In the recent times there has been reduction in import duties. These have thrown a challenge before the SME sector which warranted them to be more competitive and efficient to face the international competition successfully. Further, consumer's choice, preference and their quality are varying a lot. To cope up with these changes, the SME sector will have to undergo many internal and external transformations.

C. Technological Requirement

The competitiveness of any economy depends on how efficiently all the resources in the process of production are utilized and how efficiently these are marketed, hence the entire chain of production and marketing has to be efficient. Many of the items produced in the small-scale sector are becoming redundant because of the change in consumers choice, preferences and also due to change in new technology. The entry of foreign products/services has given consumers a wide choice of hi-tech and good quality products at competitive prices. This means that the process of production has to be cost efficient and meet quality needs of the consumers. This improvement can come through the use of latest technology.

Hence, the need for change in technology is more relevant for SME's than large units.

D. Glance at Entrepreneurship Development in India

Entrepreneurship is a global and multifaceted phenomenon with significant difference between countries. It has positive relationship between entrepreneurship and economic growth that contribute towards the wealth and social development of a nation under the given technological, industrial and political framework. The government support for the small firm sector like funding infrastructure and protection from competition has been withdrawn. Social and cultural norms in India favour stability and security. Capital investment, particularly for early stage development, is a major hurdle faced by most of the entrepreneurs in India. Growth is hampered due to the scarcity working capital, financial institutions do not appreciate the specific nature of entrepreneur's needs.

The infrastructure in the country is better but inadequate, as is the supply of professional and commercial services. There is a short fall in skill-based learning and the principles of the market economy in education. While government agencies and educational institutions carry out quality research and development, there is little focus on the commercial aspects of business. Industry investment in research and development is low.

II. OBJECTIVES OF THE STUDY

From the literature it is clearly evident that systematic and objective feasibility study of business incubators has been performed to identify the best practices being followed to ensure the survival of graduate firms at a significantly higher rate than the general population of new ventures. Graduated firms in the local area of host incubator are expected to benefit the incubators too and help in restoring public confidence and support.

It becomes very essential especially in a developing country like India to identify the various factors that contribute to the survival, growth and success of incubators that too in technology driven business incubators. Even though few of the factors have been identified there is no evidence of it being considered by the practising incubators. Hence, the objectives of this study are to investigate and assess the roles played by the Technology Business Incubators and to identify key drivers and inhibitors that contribute further for economic growth, innovation, regional development, job creation and create a good entrepreneurial climate.

III. METHODOLOGY

Research instruments was developed, tested and administered to managers of Technology Business incubators. Their responses were analyzed through factor analysis, one sample t – test and correlation analysis using statistical packages.

The research results for Technology Business Incubators obtained through the statistical tool have identified 11 dimensions. Analysis includes factor analysis for data reduction, one sample t - test to know the significance of factors under each dimension, followed by correlation to understand the relationship between the dimensions.

IV. RESULTS AND DISCUSSIONS

TABLE – I

Dimensions	No. of Factors	t - value	Degree of freedom	Sig. (2-tailed)
Incubator Challenges	10	31.522	9	.000*
Incubator Barriers	07	27.923	6	.000*
External factors	06	32.185	5	.000*
Incubator Effectiveness	05	44.364	4	.000*
Return on venture	03	29.443	2	.001*
Review and follow up	03	49.047	2	.000*
Community services	03	10.924	2	.008*
Technology Know – how	03	48.367	2	.000*
Financial Challenges	04	15.044	3	.001*
Performance appraisal	03	23.029	2	.002*
Successful entrepreneurship	03	17.229	2	.003*

* Significant at 0.05 level

Table – I specifies the ‘t’ value and the significance of each factor at 95% confidence level under the each dimension, which signifies the hypothesis stated for the purpose. Further, Correlation analysis is used to describe the strength and direction of the linear relationship between the two dimensions. The relationship was investigated using Pearson correlation coefficient.

V. CONCLUSIONS AND SUGGESTIONS

Based on the results of statistical analyses and the findings of the study following conclusions have been drawn as detailed below:

- **Incubator Challenges** are regarded as the **key drivers** in rolling out successful entrepreneurs
- **Incubator Barriers** have an adverse impact with other relevant dimensions of the study. These are **key inhibitors** and sincere efforts must be made to overcome them
- **Review and follow-up** as the **key drivers** to ensure success of clients
- Factors of **community services** are the **key drivers** in ensuring social responsibility
- **Technology know-how**, being a significant dimension contributes positively towards other relevant dimensions of the study and is the **key drivers** in effective incubation
- Factors of financial challenges have negative impact limiting entrepreneurship from becoming successful are the **key inhibitors**
- The significant factors of **performance appraisal** have a positive impact on the incubator performance and are one of the **key drivers**
- **Successful entrepreneurship** have positive impact on all the dimensions considered in the present investigation, thus its factors are the **key drivers**
- **External factors** of incubators which are beyond its control have an adverse impact on the performance of incubators and are the **key inhibitors**
- **Incubator effectiveness** factors, being **key drivers** increase return on venture leading to successful entrepreneurship.
- Factors of **return on venture** are the **key drivers** in the success of incubation program

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