ORIGINAL RESEARCH PAPER

Computer Science

A STUDY OF BUSINESS INCUBATION ENVIRONMENT INFLUENCERS IMPACTING PERFORMANCE OF INCUBATEE VENTURES

KEY WORDS:

Ms.A.G. Vigneswari

Assistant Professor, Department of Computer Science, P.K.R.Arts College for Women, Gobi.

ABSTRACT

Entrepreneurs provide the last mile connectivity for an innovation to reach markets. This entrepreneurial effort when initiated by an individual or a team of professionals is known as 'Start-up'. The start-ups as in the case of any other biological system face several risks. Technology risks, market risks, funding risks and / team (management) risks are the ones frequently encountered by the start-ups. Innovating inside an established corporate firm is becoming increasingly difficult. World over, many corporate firms have moved away from 'Closed innovation' system to 'Open Innovation (OI)' system. Firms started partnering with academia, competitors, customers and start-up firms either to receive innovations from outside the firms or to take dormant innovations from inside to the market. 'Business Incubators (BIs)' support start-up ventures by providing access to infrastructure, mentoring, funding, talent, market, and legal /Intellectual Property Rights (IPR). Such a support mitigates the risks faced by start-ups and makes them successful. This study envisages to identify dominant success qualifiers of start-ups, and to investigate dominant incubation environment influencers affecting success of start-ups. More importantly, it postulates a new theory of transforming 'Business incubators' into OI hubs for providing access to market support to start-ups. In addition, the study explores if this transformation would increase the success of incubation efforts.

INTRODUCTION

This chapter presents an overview of the topic and its significance in the context of modern management practices.

INNOVATION AS AN ENABLER

Quest for improvement of quality of life continuously propelled transition of mankind from stone ages to modern day civilisation. Process of this transition witnessed several inventions even during agrarian economy and such inventions eventually became standardised offerings through organised production efforts. The shift from agrarian economy to industrial economy resulted in emergence of several path breaking inventions through accelerated development. This process was supported and complimented by advances in

- _Science' and associated technological developments. Many of these inventions found their utility throughout 20th century as innovative products. The world has witnessed many profound technological transformations over the past century. According to a report published by _The Organisation for Economic Co-operation and Development - (OECD 1998),
- _economists interested in long-term trends often identify different periods of the 19th and 20th centuries during which clusters of innovations were introduced on a massive scale'. It addition, it mentions that these innovations were developed in specific geographical areas with distinct socio-cultural and economic characteristics (mainly in Western Europe and the United States), and were later diffused progressively and selectively to the rest of the world.

In today's knowledge economy, rapid advancements in science and technology have resulted in exponential growth of innovations in all spheres of life. It may be noted that all adaptations whether they occur in an evolutionary manner or in a revolutionary way require innovation in the backdrop. Innovation is often viewed as the core of entrepreneurship as it provides a blueprint leading to performance and growth of enterprises.

Innovation is now accepted as an organised endeavor and not one of serendipity. These organising efforts saw the transition from individual innovators taking their inventions to market place through entrepreneurial efforts. Transfer of knowledge to other entrepreneurial firms was found to be an alternate way of moving innovations to markets.

As industries grew over a period of time, innovation has essentially become an important factor to maintain competitive edge. Most firms had to set up their own Research and Development (R & D) units in order to innovate and to introduce new technologies and new products. Ultimately, basic research has become part of the R & D activity of industries. These firms started heavily investing on in-house basic research activities. This was done as the required building blocks of inventive steps (starting from basic scientific research) were not readily available to support the core innovation. Hence, innovation has become an organised systematic activity. Success of firms was heavily associated with their ability to invent new products and services on a continuum. Number of patents held by successful organisations has become a yardstick to this effect.

In most industries, this model of innovation of doing everything in house entirely was prevalent till 20 years ago. This is depicted as _Closed innovation model' (Figure 1.1).

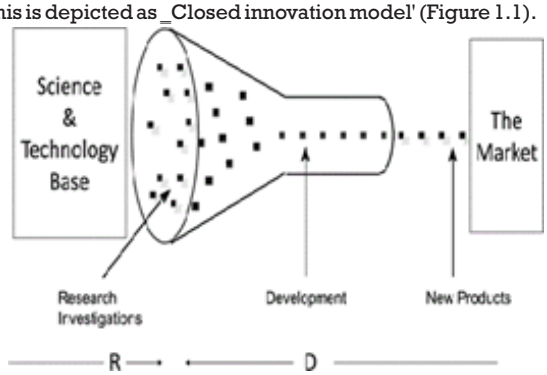

Figure 1.1 Closed innovation model (Chesbrough 2003a)

_R' indicates _Research' phase and _D' indicates _Development' phase. This approach of entirely carrying out both basic research and applied product development started causing strain within most firms. Heavy investments were needed to maintain leadership in innovations and in the markets. Such investments were deployed in upgrading research infrastructure, hiring and retaining of the best scientific and engineering talents. Cost of innovation had to be optimised using product-market strategy iterations. Consequently, many innovative ideas produced by the research groups had to be shelved without further funding as they did not align with core product-market fit requirements. Innovation management tools evolved over a period of time for optimising use of resources and to evaluate innovation-product-market fit. Large firms eventually had to adopt such a

structured approach. Tools such as _Stage-gate processes' have come into play for managing transition of ideas from its conception stage to introduction of the products in the market.

IMPLICATONS OF STAGE GATE PROCESS

A number of attempts have been made by researchers to develop a

- New Product Development (NPD)' model that captures the relevant stages of the NPD process. The best known among them is the Booz, Allen and Hamilton model, shown in Figure 1.2. This model is quite comprehensive and incorporates basic stages of models found in the literature (Bhuiyan 2011).

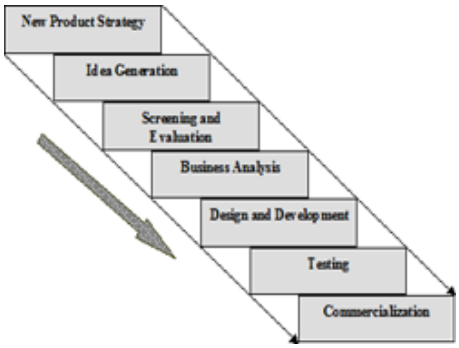

Figure 1.2 Stages of new product development-Booz, Allen & Hamilton 1982

For every seven new product ideas, about four enter development, one and a half are launched, and only one succeeds (Booz Allen & Hamilton Inc. 1982).

The stage gate process supported certain ideas that looked very promising in the initial scrutiny but did not succeed in the market (false positive decisions) and on other situations rejected ideas that would have eventually become a roaring success in the market (false negative decisions). Often, personnel from research groups who were affected by the false negative decisions became frustrated and left these firms either to start their own ventures or to join other start-up firms. This coincided with the development of venture ecosystem in places such as Silicon valley', in USA where risk funding through venture capital firms was available to bet on such ideas.

On many occasions, ideas that were shelved by large corporates have become successful entities in the market. Many such ideas were developed into products by new start-ups and were amply supported by private venture capital firms. While market leaders were watching these developments, such firms eventually grew bigger and even eliminated some of those leaders.

Early stage technology based firms face an unique set of challenges. Financially, they often fall between the cracks of traditional funding sources. As well, they are often limited in their managerial expertise, which tends to focus on technological rather than general business concerns. While their technologies are often innovative, the firms do not always have the necessary production capabilities to leverage them to the fullest potential. Furthermore, the innovative nature of their products often means that large, readily accessible markets have not yet been established, and the firm may need to seek out a number of smaller market niches if it wants to be successful and recoup its investment (Miles et al 1999).

Entrepreneurial small companies with growth-oriented management can adapt faster to change, create new products and bring them to market swiftly, trim overheads, and supply the large corporations with low-cost and high-value services and goods (Lalkaka 2006).

A few large firms started acquiring these start-ups in order to grow their innovation portfolio. This strategic acquisition was to avoid developing every product through in house R & D route. Seeing this new trend of innovation management, a number of large corporate firms followed suit to Both in-bound and out-bound OI approaches warrant specialised skills in defining the requirements, scoping, identifying potential sources, evaluating ideas, valuing, negotiating and closing deals. Furthermore, there is a need to have champions within the firm to propel integration between in house R & D with innovation partners, addressing challenges in absorption, adoption and adaptation of the external ideas.

Need for such specialised skills saw an emergence of innovation intermediaries, who started taking over a few or many of the above mentioned activities and offering them as solutions. While some of the intermediaries provide such services in the form of consulting, physical alliance formulation and deals, there are also a number of online innovation intermediaries such as

_Nine Sigma', and _Innocentive'. These online intermediaries provide a channel to reach out to a very large pool of talent, which otherwise would be very difficult for companies to reach.

Sheer necessity drove large firms to look at start-ups as a potential source of technology supply. They connect with the start-ups either for in licensing' a technology that could be taken through the in-bound open innovation or to acquire / merge relevant start-ups

Start-ups are essentially entrepreneurial ventures with intent to grow into large enterprises in the future. A significant majority of conventional micro, small and medium ventures reach a stage where further growth is heavily linked to infusion of resources and therefore stagnate. However, technology and innovation based start-up ventures have options for defying this logic and to grow exponentially.

The innovative idea, enormity of the problem being addressed, size of the market, ability of the innovation to address the problem (product- market fit), availability of risk capital in the form of Government and private grant funding, angel and venture capital investments are some of the factors that facilitate charting a new trajectory of growth process for these knowledge based start-up ventures.

The obvious questions here are:

- Can some of the start-ups having strong technological assets look at large firms as a market for licensing out technology?
- Is getting acquired / merged with a large firm a prudent decision to monetise the efforts?
- Would this be a smart way considering road blocks and challenges in organic growth?
- Can imminent failure in most of the start-up efforts be minimised through outbound OI route?

BUSINESS INCUBATORS (BI) AS OPEN INNOVATION (OI) INTERMEDIARIES

Bis were set up in the mid-fifties and early sixties in the USA as organised office spaces for small businesses. Later such efforts were morphed into innovation centers, technopoles and science parks in Europe and United Kingdom. BIs serve the political, economic and social objectives of any nation for meeting some or more of the following objectives:

I. Job generation
ii. Wealth creation
iii. Innovation and technology commercialisation
iv. Establishing linkages between academic researchers based out of Universities, industry, government agencies and research institutions.

v. Organised development of industrial clusters and reviving sick industrial regions.
vi. Guiding, mentoring and coaching young individuals

BUSINESS INCUBATION IN INDIA

The _Department of Science and Technology (DST)', Government of India was a pioneer in setting up BI movement in India. DST has established around fifteen _Science and Technology Parks (STEPs)' during 1983 - 2000 and fifty _Technology Business Incubators (TBIs)' during 2000- 13. The other departments of Government of India such as _Ministry of Information Technology', _Ministry of Agriculture', _Department of Biotechnology', _Ministry of Micro, Small and Medium Enterprises' too have started business incubation programs in their respective domains. From 2012 onwards, the state Governments of Kerala, Maharashtra, Karnataka, Andhra and Telengana have embarked upon several ambitious business incubation programs. A number of private firms too have initiated business and venture accelerator programs.

A majority of the DST supported BIs have evolved into mature start-up support organisations by virtue of their business models mirroring that of multi stakeholder organisations. They work with Government departments, _Non-Government Organisations', international development agencies, industries, academia, research agencies, industry associations, voluntary agencies and start-ups. Such strong networks provide them good bandwidth for garnering support from various quarters in order to support start-ups. Indian incubators have worked as innovation promotion agencies, technology commercialisation providers, seed fund managers, project management agencies, consulting service providers and on several occasions undertaken some innovation and technology commercialisation assignments.

In order to succeed, start-ups need to be connected with their potential customers. They need to get early feedback from potential consumers of their product and service offerings. Acceptance of start-ups' product / service offerings by customers would enable them to manage their revenues, cash flows and eventually result in profits and growth.

By undertaking innovation intermediary activities, business incubators might address an important requirement of providing access to markets and customers to their incubatee clients. For firms scouting for innovations through in - bound OI (seekers), business incubators might become an important source of providing such connections to innovative start-ups (providers). Thus BIs could become partners in carrying out intermediary / facilitation between seekers and providers.

OBJECTIVES OF THE STUDY

Major exploratory propositions are grouped into primary objectives and their allied propositions are grouped as secondary objectives for this study.

Primary Objectives:

I. To discover qualifiers which describe success of an incubatee firm and identify the dominant ones among them.
ii. To determine whether _Access to market support' rendered by a business incubator is the most significant factor among various factors that are contributing to the success of an incubatee start-up venture.
iii. To determine if the _open innovation activities of the business incubators' would enhance the success of incubatees.

Secondary Objectives:

I. To examine if business incubators can be open innovation intermediaries and if the necessary wherewithal is available with them.
ii. To determine if the open innovation activities of the business incubators' would result in improving the access to market support provided to incubatees.

SCOPE OF THE STUDY

DST has established a separate board ––National Science & Technology Entrepreneurship Development Board (NSTEDB)'' to promote innovation, incubation and entrepreneurship in the country. NSTEDB has established more than 60 incubators in different thrust areas across the country. Hence, considerable domain experience is available with DST promoted business incubators over a period of 30 years. Most of these DST supported business incubators are hosted and supported by academic institutes of repute. Hence, the study focuses on business incubators promoted by the DST.

REFERENCES

1. Abduh, M, D'Souza, C, Quazi, A & Burley, HT 2007, _Investigating and classifying clients satisfaction with business incubator services, Managing Service Quality: An International Journal, vol.17, no.1, pp.74-91.
2. Adkins 2001, A Report for the Japan Association of New Business Incubation Organisation: Summary of the US Incubator industry. Athens, OH.
3. Aernoudt, R 2004, _Incubators: Tool for Entrepreneurship?', Small Business Economics, vol.23, no.2, pp.127-135.
4. Allen, DN & Rahman, S 1985, _Small Business Incubators: A Positive Environment for Entrepreneurship', Journal of Small Business Management, vol.23, pp.12-24.
5. Al-Mubaraki, HM & Busler, M 2013, _The Development of Entrepreneurial Companies through Business Incubation Programs', International Journal of Emerging Sciences, vol.1, no.2, pp.95-107.