CHAPTER 3

LITERATURE REVIEW

In this chapter, the studies related to the area of research were reviewed and the literatures related to the importance of entrepreneurship, factors influencing the success of the startups, the role of business incubators in promoting startups, services provided by incubators, performance of incubators, factors influencing performance of incubators were reviewed.

3.1 INNOVATION AND ENTREPRENEURSHIP

Innovation and entrepreneurship have become the prime drivers of economic growth (Lalkaka 2002). Leff (1979) in his study stated that entrepreneurship was clearly essential if the investment, innovation and structural changes required for economic development have to be achieved.

According to Edmiston (2004), the economic development experts are relying on building businesses from the ground up and supporting the growth of existing enterprises. Hence, entrepreneurship is acknowledged as a driver for economic growth, competitiveness and job creation. This results in promoting small businesses which are vehicles for entrepreneurship and employment generation and income (Thurik and Wennekers 2004).

According to Abetti (1992), many countries are responding for entrepreneurship development by turning to technology to restore economic health. The above statement is supported by Cooper and Park (2008) stating that the development of an economic and policy environment supporting new,
high-growth, high-technology ventures have become common strategy adopted by many policy makers, as a critical means of promoting future economic growth and job creation. In the study carried out by Rothwell (1984), it is mentioned that, from the research policy statements throughout Europe, USA and Japan, the governments are becoming increasingly interested in the well-being of small firms because of their ability to generate employment, their potential for the industrial regeneration of the so-called development areas, and their ability to produce technological innovations.

From the above mentioned literatures, it is clear that technology ventures and small business contributed for the economic development of the country and the policy makers frame their policies and strategies for the development of the technology ventures.

However, the creation and survival of new ventures involve the interaction of four factors: personal characteristics of the entrepreneur, competitive entry strategies, push and pull factors, and the actions taken by the entrepreneur. (Gartner 1985). The above finding has been further profiled into four dimensions (Gartner et al 1989): individual, organization, environment and process and is named as taxonomy of new business ventures.

3.2 CHALLENGES AND SUCCESS FACTORS

The start-ups face a set of challenges during the initial stages of its establishment. According to Bruno et al (1992) the reasons for the failure of new venture are product/market problems such as product timing difficulties, problems of product design, or inappropriate distribution channels; financial difficulties such as initial undercapitalization or problems with the venture capital relationship; and managerial/key employee problems such as imbalance in the management team or succumbing to the trappings of success.
McCann (1991) in his study revealed that young, independent, technology-based ventures have an increasingly complex array of strategic choices about how they can grow while simultaneously competing based on their technological capacity and skills in their markets. On the other hand, Song et al (2008) were of the view that the success factors for new technology ventures are as follows: (1) supply chain integration (2) market scope (3) firm age (4) size of founding team (5) financial resources (6) founders' marketing experience (7) founders' industry experience and (8) existence of patent protection.

To overcome the challenges faced by the startups and ensure the success rate, Smallbone and Welter (2001) in their study viewed that Government is a major factor influencing the nature and pace of SME development, although more through its influence on the external environment in which business activity can develop than through direct support measures or interventions.

3.3 ENABLING ENVIRONMENT FOR START-UPS

The challenges faced by the start-ups have to be addressed through effective policies of the Government. The literature survey revealed that the Government through various initiatives should play an active role in supporting start-ups.

According to the study carried out by Audretsch (2002) public policy is shifting away from traditional measures, which were based on a static conception of industrial organization and thus emphasized anti-trust, regulation, and public ownership solutions, towards measures, which are geared towards supporting the dynamic role of SMEs. He further stated that the policy measures focused on providing a conducive environment for
enterprise start-ups, job creation, knowledge spillovers and technological change.

These lead to creating an entrepreneurship enabling environment by the governments to promote technology startups and Van De Ven (1993) in his study described the environment infrastructure required for promoting entrepreneurship that includes: (1) institutional arrangements to be legitimate, regulate, and standardize a new technology, (2) public resource endowments of basic scientific knowledge, financing mechanisms, and a pool of competent labor, as well as (3) proprietary R&D, manufacturing, marketing, and distribution functions by private entrepreneurial firms to commercialize the innovation for profit. Venkataraman (2004) in his study stated that for promoting technology startups with sound legal systems, capital markets, and other structural features are necessary prerequisites for technopreneurship.

3.4 DEFINITION OF BUSINESS INCUBATOR

United Kingdom Business Incubation (UKBI 2007) defined Business Incubation as a unique and highly flexible combination of business development processes, infrastructure and people, designed to nurture and grow new and small businesses by supporting them through the early stages of development and change.

European Commission (EC 2002) defined business incubator as an organization that accelerates and systematizes the process of creating successful enterprises by providing them with a comprehensive and integrated range of support, including: Incubator space, business support services, and clustering and networking opportunities.

Sherman and Chappell (1998) defined business incubator as an economic development tool primarily designed to help create and new
businesses in a community. Business incubators help emerging businesses by providing various support services, such as assistance in developing business and marketing plans, building management teams, obtaining capital, and access to a range of more specialized professional services. They also provide flexible space, shared equipment, and administrative services.

Aernoudt (2004) defined business incubator as an interactive development process where the aim is to encourage people to start their own business and to support start-up companies in the development of innovative products. Besides accommodation, an Incubator should offer services such as hands-on management, access to finance (mainly through links with seed capital funds or business angels), legal advice, operational know-how and access to new markets.

3.5 IMPORTANCE OF BUSINESS INCUBATORS

One of the tools promoted by the Government with the support of various stakeholders is establishing business incubators. Incubators play a critical role in supporting start-ups during the initial days and ensure the survival of the start-ups by providing unique services.

Incubator organizations, spin-offs, informal and formal networks, the physical infrastructure, and the culture of the region are related uniquely and interact to form a system conducive for dense high-technology entrepreneurial activity (Neck et al 2004).

Small entrepreneurial businesses were the key to economic success and policy makers understood that the vast majority of new enterprises failed as a result of three common problems: lack of capital, poor managerial skills, and insufficient understanding of the marketplace. This was the starting point for the growth of business incubators. (Lewis 2001).
Business incubators, evolving in the early 1980s from experiences with other business development services, have the purpose of assisting the new venture creation process (Rice et al 1995). Business incubators are viewed by many country governments as dynamic tools for fostering new ventures with the macro objective of economic development and job creation (Bergek and Norrman 2008).

Business incubators can help young firms to survive and grow during their start-up years, and can play a key role in the economic development of a community or region (Al-Mubaraki and Busler 2010). Aernoudt (2004) in his study quotes that incubation is increasingly being used as a tool for promoting entrepreneurship and start-ups leading to new policy incentives.

According to Aerts et al (2007), the business incubators guide starting enterprises through their growth process and constitute a strong instrument to promote innovation and entrepreneurship. The purpose of an incubator is described by Cooper and Park (2008) as an organization that fundamentally shapes entrepreneurs' technical and commercial experience of markets, strongly influence their attitudes to risk and personal achievement, help develop an intricate network of social capital and resources and, finally, provide critical knowledge of the existence, availability and applicability of technology solutions in new and emerging markets.

In the research work carried out by Debackere (2000) the role to be played by the universities in promoting technology entrepreneurship is highlighted. It has been indicated that the universities should take advantage of the economic opportunities of their R&D programmes, should leverage their innovation potential through appropriate strategies, organizational structures and management processes that allow them to manage part of their
R&D portfolio as a business without hampering though the fundamental academic values and activities of research and teaching.

3.6 SERVICES OFFERED

The incubators provide a set of services, which are unique and critical for the start-ups. Lalkaka (2002) described the physical location of an incubator as “often sited within a technology park and affiliated to a technical university or research institute, provides a platform for convergence of support in a synergistic system”.

Incubator services may be classified into several types, including infrastructure, educating, business assistance and networking services based on business practices (Wang et al 2008).

Lalkaka (2003) in his study stated that services of the incubator can be classified into seven services provided at the incubator and can be represented as a pyramid, the ones most often used being at the base. He described the seven services as Smart space that is functional, affordable and on flexible terms, Shared office facilities, equipment, pre-post incubation program, Synergy among clients through exchange of experiences, Support on information and international networking, Skills development, mentoring and coaching, Seed equity capital and technology sourcing, Services on legal, Security and intellectual property issues.

3.7 FACTORS INFLUENCING PERFORMANCE

The factors that influence the setting up and operating incubators include key incubator functions, management and promotion, and performance management, i.e. evaluation of incubator services and impacts (European-Commission 2002).
Further studies on the services provided by the incubators revealed that different services are not equally important to each incubated business (Reid and Garnsey 1997). The study on the performance of technology companies in an incubator resulted in the high technology business firm’s propensity to make effective use of the University Science Incubators resources and support increases (Mcadam and Mcadam 2008) as the life cycle stage of the company increases.

According to the study carried out by Wang et al (2008), the effectiveness of services provided by a business incubator is the basis and premise for promoting the incubator itself and for incubating and developing new ventures inside. Services in different forms, contents and levels may influence the performance of incubated firms such as surviving rate and growth rate. The study on incubator performance by Weinberg et al (1991) stated that incubator capability was considered as “value-added” competence which enhances the capability of its tenants to survive and prosper.

Lalkaka (2002, 2003) in his studies revealed that the importance of the performance of the incubators in meeting their objectives and the impact of irregular performance. He described that while incubators have grown in numbers, the uneven performance and poor sustainability in many situations have become serious issues with the governments and sponsors which continue to subsidize many of them. He also revealed that raising the majority of incubators to a higher performance level would help move the industry towards the key performance goals of high relevance, efficiency, effectiveness, utility and sustainability. He mentioned that further to the above finding, the evaluation and benchmarking of incubator operations are of increasing importance, in order to improve operations and achieve the outcomes planned.
The good performance of business incubators helped an economy to attain the macroeconomic target: promote economic growth and increase employment. Similar operation models cannot lead to similar results. Tenants’ lodging preference, financial support and professional services influences the performance of technology business incubators heavily.

Ghasemizad (2009) in his study explained that the technology incubators were able to realize their philosophy of existence, which provides help and supports to newly established companies, and meet the targets they are pursuing. The factors improving their effectiveness should be recognized.

Chan and Lau (2005), in his study identified nine sets of criteria and incorporated in the assessment framework: advantages from pooling resources, sharing resources, consulting services, positive effect from higher public image, networking advantages, clustering effect, geographic proximity, cost subsidies and funding support.

Markley and Mcnamara (1994) in his study stressed that the important factor in incubator success is flexibility-flexible space, flexible rental arrangements, and flexible graduation policies. The above statement is further strengthened by Martin and Fk (1997). In the study carried out on the incubators to understand the performance of the incubators in creating new business, he concluded that the incubator should provide flexible space and rental facilities, have a clear policy as to the entry criteria required of clients, set the maximum length of stay in the incubator clearly, manageable by the business development arm of the promoter and not the property function, promote the networking and intangible benefits element of an incubator facility.
According to Hannon (2003), the nature and experience of incubator management and leadership positively affect client perceptions of the value and impact of their incubation experience.

Incubator managers are advised to invest in infrastructural and external resources and networking capabilities, which are positively correlated with performance. (Lin et al 2011).

According to Buche (2007), networking means to provide resources in those areas where entrepreneurs have gaps, which is vital to the success of start-up firms.

The interaction and cooperation among the incubator, incubated firms and third party stakeholders, the intensity and range of networking influence the performance of incubated firms from the aspects of resources acquisitions, relationship-building and entrepreneurship-nurturing. (Lin et al 2008).

Business Incubators should try to provide training and guidance for firms to improve their development capability, which can be achieved by establishing resources network, because the network can provide the resources of development and professional services to firms (Hongwei et al 2010). Terziovski (2003), in his study explained that the most significant networking practices were found to be: searching and incorporating diverse points of view; challenging the status quo; learning from failures; communicating with people outside the company, including experts; allocating resources to support communication linkages.

One of the important factors for incubator firm performance is the strength of their linkages to the research university sponsoring the technology incubator (Rothaermel 2005).
Ratnho and Henriques (2010) in their study confirmed that university links and suitability of management to be critical to a science park or business incubator success in this converging economy.

In the research study carried out on the attributes that are critical to success, O’Neal (2005) identified that the incubator's location within a major research university, its ability to bring together diverse and often disconnected resources to assist in the incubation process, and the single vision of the regional partners to create a larger incubation system in a region were the stronger attributes for the critical success of the incubator.

According to the study carried out by Akçomak and Taymaz (2004), absence of venture capital initiatives, low levels of business networking, lack of marketing and inadequate business support mechanisms appears to be major problem areas that drive down the positive impact of incubators.

In the study on incubators by Smilor (1987), he concluded that usefulness in leveraging resources, encouraging development, and promoting cross-institutional networking will ensure its continued growth.

According to Florida and Kenney (1988), the existence of well developed venture capital networks in technology-based regions significantly accelerates the pace of technological innovation and economic development in those regions. In the study carried out by Cui and Zha (2010) it has been stated that different development phases need different financial support because SMEs in the incubation face different financial cycles.

Various studies on the business incubator performance revealed the importance of mentoring for the better performance of the incubator. Berry et al (2007) in their study stated that the degree of use of a range of external advice was positively related to the growth rate of the SME.
The services that relate to the success of the incubator contribute mostly to the presence or absence of coaching and access to networks (Peters and Rice 2004).

Mentors considered themselves to provide higher levels of psychosocial support than did the mentees. Mentees perceptions of business success were predicted by the frequency of mentor contact, and the level of career-related support provided by their mentor (Waters et al 2002).

Business assistance, in the form of venture learning about buyer preferences, is greatly enabled through counseling interactions with incubator management. Technical assistance, in the form of venture learning technological know-how skills, is best enabled through networking interactions with incubator management (Scillitoe and Chakrabarti 2010).

While analyzing the effect of selection criteria Bergek and Norrman (2008) opined that selection is not only a matter of criteria – it is also a matter of flexibility or strictness in applying them. The researchers developed a model for selecting incubatees with four strategies Survival-of-the-fittest and idea, Survival-of-the-fittest and entrepreneur, Picking-the-winners and idea, Picking-the-winners and entrepreneur.

Aerts et al (2007) in his study revealed that the business incubators concentrate either on the characteristics of the tenant's market or on the characteristics of the tenant's management team while selecting the clients. The selection process should allow the incubator to identify whether the company is at a suitable moment for type of services, which are offered by the incubator.

Kumar and Kumar (1997) stated that “the list of criteria used for selecting tenants includes job creation and local ownership. As well, the
tenant company must be able to pay its own operating costs, provide a unique opportunity, be a new startup enterprise with fast growth potential, have clients who are in some cases required to have a business plan, and have business liability insurance. In terms of exit rules, most incubators impose a time limit on tenant residency”.

Scaramuzzi (2002) elaborated that screening criteria generally include issues such as the innovativeness of the business/product idea; product feasibility and patentability, understanding of market and growth potential, financial plan, risks / opportunities involved in the project, professional and education background of the applicant, community benefits, ecological awareness, etc.

Scaramuzzi (2002) also explained the importance of the graduation policy. The incubator should clearly define and communicate to applicants its graduation policies. Such policies should include the time limits, and the type/amount/value of services that would be provided by the incubator during the incubation process. Graduation causes an immediate negative effect on survivability that lasts up to three years after leaving the incubators (Schwartz 2008).

Schwartz (2008) mentioned that the graduation caused an immediate negative effect on survivability that lasts up to three years after leaving the incubators.

Carpenter and Petersen (2002) stated that highly variable returns, asymmetric information and a lack of collateral should cause small high-tech firms to have poor access to debt. According to Lindstrom and Olofsson (2001) firms in the technology forefront experience greater problems in fundraising as compared to firms of lesser technological sophistication.
On the incubator governance and management of incubator Mian (1994) explains that universities must build their technology incubator programs by setting reasonable objectives and management policies that will encourage tangible results consistent with the new mission requirements of an entrepreneurial university.

Westhead and Batstone (1999) in their study stressed that proactive management of the incubator manager supports knowledge dissemination to the technology venture through counseling and the transfer of business skills and advice.

In the study carried out by Gassmann (2006), the advantage of the autonomy of the incubator manager was discussed. Gassman suggested that the flow of resources to the incubator from the parent can either occur to top-down from the senior management, or be attracted internally from the bottom-up if the incubator manager has a highly autonomous position.

### 3.8 MEASUREMENT OF INCUBATORS

Though business incubators seem to have a wide variety of objectives, several incubator studies indicated that an incubator’s ultimate goal should be incubatee survival (Aerts et al 2007) and growth (Hackett and Dilts 2007). However, Age and size of facility (Allen and McCluskey 1990) were found to be important determinants of jobs created and firms graduated.

In the study on business incubator models, Allen (1988) described about three stages of an incubator life cycle. The start-up stage is characterized as real estate driven; emphasis is placed on preparing the space and locating initial tenants. The business development stage occurs when the facility is on sound financial footings and attention shifts to managing up
tenant firms. Incubator maturation is characterized by a sophisticated enterprise support network and demand for additional user space.

Lalkaka (2000) mentioned that there is no consensus yet on the most effective means of providing such support or on the methods for evaluating the performance of these services.

In the study carried out by Avenue and Cornelius (2003), it is explained that measures of effective operation of an incubator were based upon the economic agenda of those sponsoring the incubators, that is, whether jobs were created and firms successfully developed beyond the protected incubator environment.

According to Mian (1997), the performance of the incubator is measured in terms of the program sustainability and growth, tenant firm's survival and growth; and contributions to the sponsoring university's mission.

According to the study carried out by Costa-David et al (2002), the factors influencing the performance of incubators were classified into three categories: 1. Setting up and operating incubators 2. Key incubator functions, management and promotion and 3. Performance management.

The authors further discussed the key parameters in each of the above three categories and concluded with the key parameters that influence the performance of the incubators. The key performance indicators under setting up and operating of the incubator include the percentage of revenue from public subsidies, incubator space, and number of incubator tenants. The key performance indicators under incubator functions include: incubator occupancy rates, length of tenancy, number of management staff, the ratio of incubator staff: tenants, percentage of managers’ time advising clients. The
key performance indicators considered under Evaluating Services and Impacts include survival rates of tenant firms and cost per job.

From the above literature survey, it is obvious that the incubator performance is influenced by the operational level, management and services provided by the incubators. At the same time, the performance measurement of an incubator is necessary for enhancing the service capability of the incubator and for ensuring the growth of the incubator with the support and help from the stakeholders involved in promoting innovation and entrepreneurship in the region.