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An evaluation of the effectiveness of government funded incubators in emerging markets: The South African perspective

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A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the business requirements for the degree of Master of Business Administration

9 November 2011

Abstract

The purpose of this paper is to evaluate effectiveness of business incubator process models employed in government-funded incubators operating in the emerging markets countries, using South Africa as an example. This research paper aims to add to literature on the incubator process evaluation stream of studies. Furthermore, it proposes a process effectiveness model based on the integration of organizational diagnosis theory on organizational effectiveness as well the real options theory of the incubator process. This study employs a qualitative study method based on interviews with 10 business incubator managers of the only government sanctioned Small Enterprise Development Agency in South Africa. Data was collected and analysed qualitatively. The researcher proposes an incubator process effectiveness evaluation framework with dimensions that are suitable for an emerging market context.

Key words

Incubator effectiveness, incubator evaluation, business incubator, business incubator effectiveness

Declaration

I declare that this project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before any degree or examination in any other university.

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Mpho Mokoena Date

Acknowledgements

I would like to thank my supervisor, Elana Swanepoel, from the University of South Africa, for her valuable insights her prompt response when her input was needed. To all the incubator managers that I have spoken to at SEDA ,your contribution to our society is immeasurable, you hold the dreams of our future in your hands.

To my friends and classmates, the journey could not have been with a better group of people. To my family, my God chosen life partners, you have been there through it all, thank you. To my grandmother who passed in my arms during this period, your spirit continues to give me the energy to do more. To those that gave birth to you, their blood is a source of direction that forces me to look within when I am feeling lost. To those who have fallen to make it possible for a black woman to have access to this kind of education in South Africa, your sacrifice is etched in my heart. I will never forget!

Afrika e yethu!

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1. INTRODUCTION TO RESEARCH PROBLEM

Research into the factors, characteristics and conditions which contribute to the success of new ventures has captivated the attention of researchers from the late 1980s, specifically in the field of government funded programmes (Grimaldia & Grandia, 2005; Hofer & Sanderberg, 1987; Niels Bosma & Levie, 2009). Understanding these factors lays a firm foundation in the support of entrepreneurial activity, so that innovative entrepreneurial firms may emerge as significant drivers of economic growth and wealth creation (Niels Bosma & Levie, 2009).

Government-funded business incubators are one of the tools used to offer guided preparation for new ventures at pre-start-up and start-up phases (Chrisman, McMullan, & Hall, 2005). Their main objective is the improvement of survival rates of new ventures (Grimaldia & Grandia, 2005).

Given the significant role these institutions play in supporting entrepreneurial activity and the large amounts of money invested in incubators by government, the question arises as the level of return to society from these investments (Bergek & Norrman, 2008).

1.1. State of entrepreneurship in emerging markets: South Africa

South Africa's government considers entrepreneurship to be an important mechanism for economic development through job creation, innovation and its welfare effect. (Herrington, Kew, & Kew, 2010) South Africa like many other (factor and efficiency) emerging economies with low levels of per capita income have national economies that are characterized by the prevalence of low total early-stage entrepreneurial activity (TEA).

Figure 1.1 Early-stage entrepreneurial activity rates and per capita GDP, 2010* (Source: GEM Global Report, 2010, pp 16)

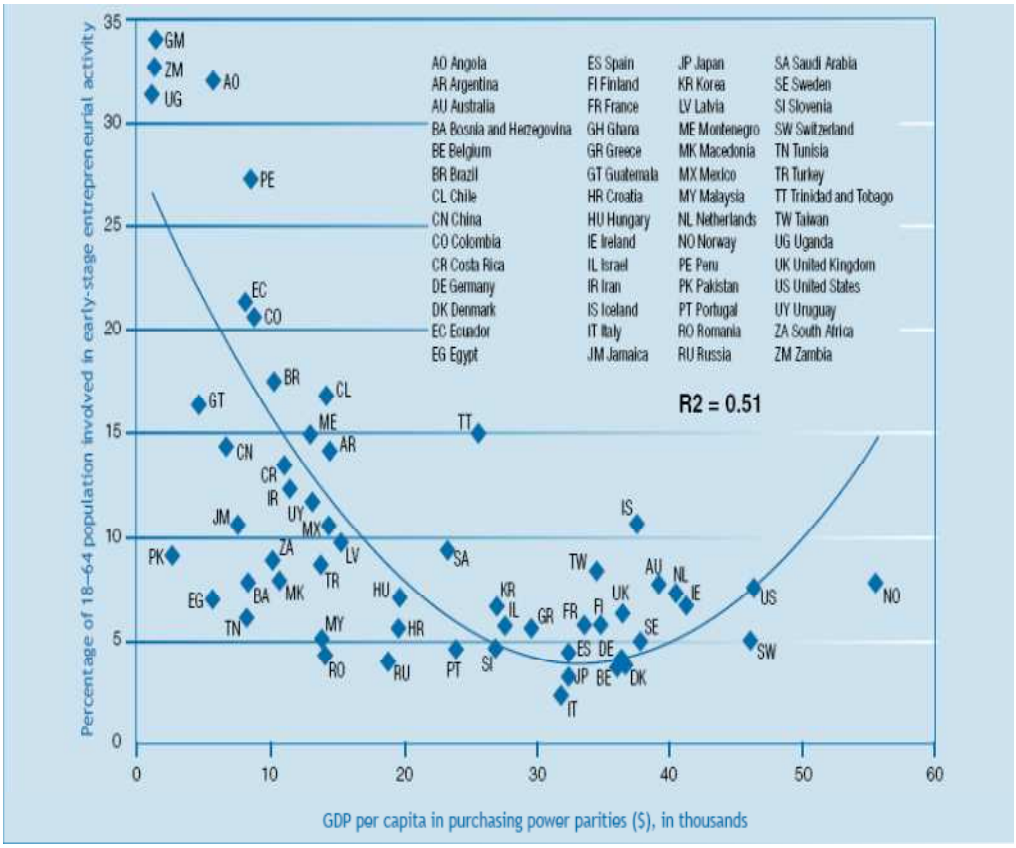


Figure 1.1 shows entrepreneurial activity rates and per capita GDP of countries that are part of the population covered by GEM surveys. According to Herrington et al.(2010) at this stage of South Africa's economic development a TEA rate in the order of 15% should be achieved, which is nearly double its current actual rate of 8.9%.

Entrepreneurial activity in these economies is also dominated by a prevalence of very small businesses which do not have the capacity to create to have a significant impact on the economy. (Herrington, Kew, & Kew, 2010). The FinScope Small Business Survey (2010) showed that there were 5.9 million small businesses in South Africa, 17 percent of which were registered. Two out of three small business owners run their own businesses and do not have any employees, while 32 percent provide between one and 10 jobs. These entrepreneurs are unlikely to create innovative businesses which are able to enter international markets or provide a large scale solution to the high unemployment rate in South Africa. However these businesses are important in they reduce the dependence on state welfare by the business owners, and present an opportunity given the right type of support , to grow into the type of businesses that have significant impact in South Africa's economy.

According to the Global Entrepreneurship Monitor's (GEM) 2010 report, poor sustainability of new ventures in South Africa relative to other countries highlights the need for policy intervention aimed at supporting and mentoring entrepreneurs through the difficult process of the new venture creation. :

South Africa's National Small Business Strategy makes it explicit that a primary policy objective is employment creation, but too often the support offered begins and ends with the provision of a generic business plan. (Herrington, GEM South Africa Team Leader, 2009).

The following sections present the research problem, objectives and the scope of the study.

1.2. Research problem

Publicly sponsored business incubators are generally oriented towards job creation, new enterprise development, product development, economic diversification and stimulation of entrepreneurship (Udell, 1990). In his study, Udell (1990) identified the imperative for incubators to demonstrate their ability to administer assistance appropriately to the needs of targeted new ventures to ensure good performance.

Attempts have been made to map the performance of incubators using impact-type studies, but the lack of consensus on the definition of ''performance,'' and how it should be evaluated and compared, has resulted in divergent views on the effectiveness of these institutions in achieving their objectives (Bergek & Norrman, 2008). In their comprehensive study, Effectiveness of State Support on Small and Medium Enterprises, Mosselman and Prince (2004) have sought to provide several definitions for effectiveness. The classical effectiveness evaluation school of thought is anchored in goal attainment theories, which includes measuring of: outputs (i.e., performance indicators), outcomes (i.e., the socio-economic effects of the support), and the attainment of set goals. These

schools provided an incomplete view of business incubator effectiveness, primarily because of:

- the complexity introduced by the differences in goals and weighting thereof from one business incubator to another
- the non-uniformity of inputs as well as the difficulty in trying to attribute outputs to certain inputs.

The result of these factors is a limitation in the comparison and or categorization of business assistance programmes. Furthermore, these goal attainment theories illuminate the symptoms of the problems, but lack depth to provide insights for decision makers to improve the chances of achieving the successful incubation irrespective of the context.

The other schools of thought are based on process effectiveness, popularly grouped as goal-free studies and of interest to the researcher.

1.3. Research objectives

The researcher introduces an incubator process profile matrix in order to first describe dominant incubator process models employed in government funded incubators. Second the researcher draws from integration of organisational diagnosis theory on congruence as well as incubator process theory in an effort to evaluate the effectiveness of the incubation models employed in government funded business incubators.

From the findings it may be possible to:

- Add to literature on incubator process effectiveness evaluation studies, through exploring differences and pointing out similarities in incubator

process models between emerging markets compared to the incubator best practice models emanating from the West and Europe. The GEM consortium have recognised this gap in literature and for the first time in 2011, they have called for papers that are specific to emerging market entrepreneurial support framework. Though this paper is not submitted for those reasons, it certainly is relevant and topical to the both academics and practitioners in this field.

- Explore different formulate normative insights, such that decision makers are able to infer certain predictions about the appropriateness of the business incubator process in meeting desired objectives.
- To provide a basis on which to minimise the impact of deadweight factors (changes that would have occurred anyway, because of other causal or contextual factors, regardless of exposure to assistance) in evaluating the effectiveness of government funded business incubators (Mosselman & Prince, 2004).

1.4. Research scope

The scope of the research is to study the government-funded incubators in South Africa and to gain insights into the incubation process employed. This will be an organisation-level analysis and will thus exclude outputs or inputs of the incubator process, focusing instead on understanding the process itself. Researchers agree that three constructs differentiate incubator processes from each other selection performance; business assistance and monitoring; and resource munificence (Aerts, Matthyssens, & Van der Bempt, 2007; Bergek & Norrman, 2008; Grimaldia & Grandia, 2005; Hackett & Dilts, 2008). The

incubation process is the transformation of inputs into outputs utilising these constructs with the aim of supporting new ventures in their early stages of development (Bergek & Norrman, 2008).

In summary, the approach of the study is to utilise an theory from organisational diagnosis of effectiveness introduced by Nadler & Tushman (1980) and developed further by Cummings and Worley (2009) to understand incubator process effectiveness. The framework of the business incubator process adopted in this study was proposed and verified by Hackett and Dilts (2008) in their seminal study.

2. LITERATURE REVIEW

The literature review first introduces the topic by offering definitions of the first three constructs of the study, namely “business incubator”, “evaluation” and “business incubator process and effectiveness”. Secondly, with focus on incubator process configuration models, major theories emerging from the late 1990s to 2008 are discussed. The chapter concludes with a proposed incubator process configuration model and summary of the main arguments presented.

2.1. The business incubator

Conceptually, the business incubator can be seen as an organization the main aim of which is “hatching” (Bergek & Norrman, 2008) or manufacturing (Hackett & Dilts, 2004a) new ventures. The term ‘incubatee’ is used throughout the literature study to describe new ventures using the services of a business incubator.

Logically, business incubators represent business systems that seek to provide new ventures with strategic and value-adding interventions that aim to facilitate their development while containing the cost of their potential failure (Hackett & Dilts, 2004a; (Schwartz M. , 2008). Smilor (1987, in Hackett & Dilts, 2004b) argues that the benefits the incubators offers to incubatees include development of credibility, shortening of the entrepreneurial learning curve, quicker solutions to problems, and access to an entrepreneurial network.

At a macro level, business incubators seek to promote job creation and economic development by linking talent, technology, capital and know-how in an effective framework to foster growth of new businesses (Chandra & Fealey,

2007). At an organization level the benefits of business incubation are delivered by the provision of, amongst other services, a reduced cost of office accommodation; access to hands-on management; access to finance (mainly through links with seed capital funds or business angels); access to legal advice; operational know-how; and access to new markets (Aernoudt, 2004).

2.2. Effectiveness of the business incubator

In their seminal framework, Tushman and Nader (1980) stated that the organization and its major component parts are the fundamental means for transforming energy and information from inputs into outputs. The transformation process in this context is the business incubation process, i.e., the process of converting inputs (new ventures) to outputs (sustainable and growing enterprises), which, as the American National Business Incubation Association (NBIA) describes it, is a dynamic process of business enterprise development (Aernoudt, 2004).

Overall effectiveness of the transformation process can be determined by the extent to which the different subsystems are aligned with each other, where alignment comprises the fit between the system and the environment, the inputs and transformations, transformations and outputs, and amongst the subsystems of the transformation process (Cummings & Worley, 2009). There is therefore a relative degree of congruence, alignment or fit that must exist between each pair of organisational components (Nadler & Tushman, 1980).

The basic dynamic of fit defines the organisation as most effective when its pieces fit together, and, as Nadler & Tushman (1980) have defined it, congruence or fit is the degree to which the needs, demands, goals, objectives,

and/or structure of one component are consistent with those of another. It follows that the process of incubation will be most effective when all the pieces of the incubation process fit together.

Through this definition it is apparent that there is no best practice model of incubator effectiveness that would suit all contexts, but rather a model should be adopted to suit a particular situation (Bergek & Norrman, 2008).

2.3. Evaluating business incubator effectiveness

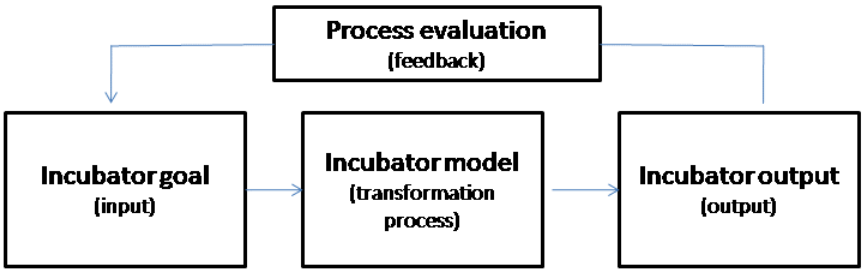
The American Evaluation Association (AEA) defines evaluation as the assessment of the strengths and weaknesses of programmes, policies, personnel, products, and organizations to improve their effectiveness. The advantages of process evaluation studies as discussed by Patton (2002) are that they:

- aim at elucidating and understanding the internal dynamics of how a programme, organisation or relationship operates
- provide avenues to investigate informal patters and unanticipated interactions
- permit judgments about the extent to which the programme is operating the way it should be
- allows for dissemination and replication of model interventions where such a project has been successful.

From the literature cited in section 2.2 and above it can be deduced that evaluation of incubator process effectiveness comprises the assessment of the fit or alignment in the process components.

Bergek and Norrman's (2008) evaluation model splits up the business incubator system into inputs, outputs and the incubator model within which the transformation process occurs.

Figure 2.1 The business incubator evaluation framework (Source:Bergek & Norrman, 2008, pp.22)



The schools of thought on incubator model process components are grouped together and termed business incubator configuration studies (Hackett & Dilts, 2004b). Literature on these theories is reviewed in the next section, to provide a brief background of how the theories have evolved.

2.4. Business Incubation configuration studies

Incubator configuration studies analyse the components of the incubator system and their mutual coherence and in so doing inform the development of specific incubation models (Bergek & Norrman, 2008; Hackett & Dilts, 2004a, 2004b). A brief overview of these theories is presented in this section, together with a justification for the theoretical model chosen for this study.

2.4.1. Structural contingency theory

From the structural contingency theory it is articulated that the embedded incubator context (the fit to local environment) facilitates the reproduction of viable business incubation systems (Hackett & Dilts, 2004b). However, while incubators in emerging markets look to the West for best practice models, significant challenges as arise from the structural impediments to application of Western models to these less developed economic contexts (Lalkaka, 2003):

“the conditions of weak business infrastructure, repressed entrepreneurial energy, scarce financial resources, poor university-business linkages and inadequate state support mean that the US practices must be adapted (not transferred) to local culture, resource constraints, and special conditions (colonial legacies, climate, etc)” (Lalkaka, Nov 2003).

From structural contingency it follows that an effective incubator process is one which is aligned to its environment.

2.4.2. Co-production theory

According to co-production theory, the incubation outputs are directly dependent on the collaboration of the incubatee and the incubator manager, and, as Rice (2002) argues, the relationship between the two is the primary determinant of

performance. Having investigated the types of business assistance provided through co-production, the modes of co-production, and factors that affect the variability of impact (i.e. performance), Rice (2002) stipulates that the readiness of the entrepreneur to engage in co-production should be determined first in order to select the type and intensity of assistance to be offered.

This theory is limited by a lack of a standardized method of evaluation of performance by the incubator, as performance is determined by the intensity and modes of collaboration between the incubator manager and the incubatee (Rice, 2002). Furthermore, it assumes existence of a comparability of the skills sets and resources available to the incubator managers, which in his analysis, Rice (2002) does not control for.

In an emerging market context, such as the one focused on in this study (South Africa), this would be therefore be a fundamentally flawed model, since the education levels, exposure and experience of incubator managers (as well as the incubatees) varies greatly (Lalkaka, 2003).

2.4.3. Social capital theory

The networked incubator model (based on social capital theory) suggests that the incubation process includes and transcends the incubator, and extends to other stakeholder relationships and access to institutionalised knowledge through networks that form part of the incubation process (Bollingtoft & Ulhoi, 2005). These networks provide a platform for social judgment of acceptance, appropriateness and desirability, whilst enabling new ventures to access other resources needed to survive and grow (Zimmerman & Zeitz, 2002).

However no one model can account for the complex social dynamics at play (Bollingtoft & Ulhoi, 2005), nor can equivalent standards be defined to categorise internal and external boundaries of such a model.

2.4.4. Real options theory

Real options theory claims that the creation of a real option is achieved through an initial investment decision of selecting an incubatee (Hackett & Dilts, 2004a). Secondly, an option is exercised through subsequent investment decisions (into the selected incubatee), which tends to confer future decision rights, preferential access to opportunities (potential upside), and the ability to contain downside risk by limiting the cost of failure to the sunk cost of the construction of the option, minus any remaining option value (Hackett & Dilts, 2004a; Lazo Lazo, Pacheco, & Vellasco, 2009; McGrath, 1999). This theory was further developed to illuminate the “black box” of the incubation process (Hackett & Dilts, 2004a).

2.4.5. Motivation for selecting the Real Options Theory

Business Incubator evaluation research is can be divided into four streams of studies in management literature: goal approach, system resource approach, stakeholder approach and internal process approach (Aerts, Matthyssens, & Van der Bempt, 2007). The goal approach did not form part of the scope of this study as defined in Chapter 1.

System resource approach and stakeholder approach are in the same domains of theory as the structural contingency and co-production theories presented above. Their focus is on understanding the relationships between the incubator and its eco-system, which is clearly outside the business incubator system boundary as given in figure, thus outside the scope of interest.

Due to the specific interest in the incubation process as defined in section 1.4, Hackett and Dilts' (2008) study on that defined and dimensioned the incubator process using real options theory is most befitting for this study. In the next chapter the elements of the black box defined by Hackett and Dilt (2008) are used as a framework , literature from other authors on each element are included and before a conclusion on the dimensions of each element are.

Work by Campbell et al. (1985, in (Hackett & Dilts, 2004b) suggest four areas where incubators add value: i) the diagnosis of business needs; ii) the selection and monitoring of applications of business services; iii) the provision of financing; and iv) the provision of access to the incubator network.

In later works (from the late 1990s to the early 2000s), five key attributes of an incubator are identified:

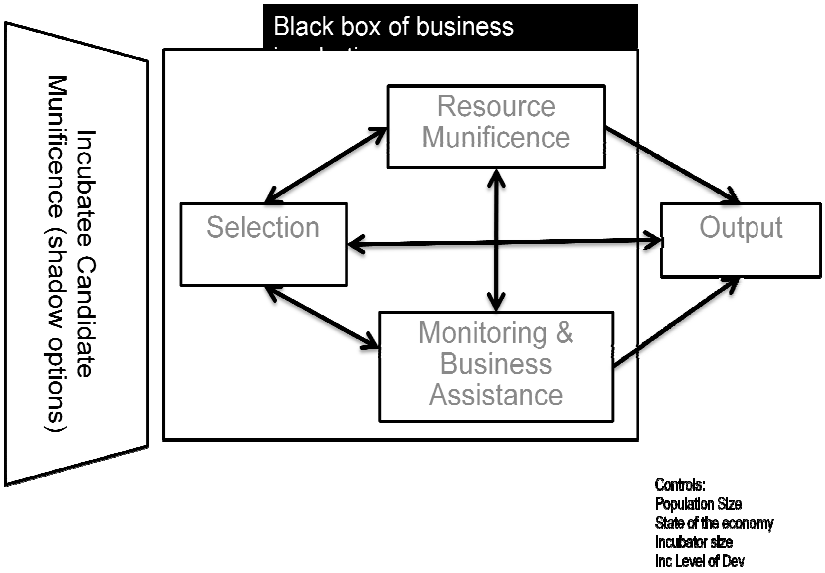
- "*Selection refers to decisions concerning which ventures to accept for entry and which to reject.*
- *Infrastructure consists of localities, office facilities and 'administrative' services.*
- *Business support is associated with coaching/training activities undertaken to develop the incubatees.*
- *Mediation refers to how the incubator connects the incubatees to each other and to the outside world.*
- *Finally, graduation is related to exit policies, i.e. decisions concerning under what circumstances incubatees should leave the incubator*." (Bergek & Norrman, 2008, pp.23)

Upon completion of an extensive literature review, Bergek and Norrman (2008) concluded that three primary components distinguish incubator models from each other, namely: selection, business support and mediation. Hackett and Dilt (2004b) agree that these are the primary incubation model components. The business incubation framework provided by the latter forms a theory base of the incubator process.

2.5. The elements of the incubator process model

The incubation process consists of incubatee selection, monitoring and business assistance, and the infusion of resources with the desired outcome of developing a successful new venture (Bergek & Norrman, 2008; Hackett & Dilts, 2008).

Figure 2.2 The incubation process (Source: Hackett & Dilts, 2004a, pp.45)



This relationship between business incubator performance and the three elements of the incubator process may be reflected as an equation (Hackett & Dilts, 2004a):

)

Where:

BIP = Business Incubator Performance

SP = Selection Performance

RM= Resource Munificence

M&BAI = Monitoring and Business Assistance Intensity

The elements of this equation are discussed to further explore the black box.

2.5.1. Business incubator performance

Voisey and Gornall (2006) presented a framework of performance that summarises the different components on business incubator performance. Their framework that shows that business incubators performance can be measured in the form of hard and soft performance measures for the incubator and the incubatee respectively,

On the one hand of there is a consensus that hard measures performance of the business incubator process can be viewd in terms of incubatee growth and profitability (Bergek & Norrman, 2008; Bollingtoft & Ulhoi, 2005; Chrisman, McMullan, & Hall, 2005; Grimaldia & Grandia, 2005; Hackett & Dilts, 2008). Incubatee-specific soft measures also include increased professionalism of the incubatee as well an increase in quantity and quality networks within the value chain in which the new venture operates (Voisey & Gornall, 2006). These measures provide little insights into the performance of the incubator process, thus we turn to incubator specific measures of performance.

Mosselman and Prince (2004) stated that hard measures of good performance of business incubators include their ability to contribute to the accelerated development of innovative, high-growth firms and their capacity to create new jobs. Voisey and Gornall (2006) concur with this, but they also they mentioned: growth and profitability of the incubator as well as the rate of graduation of incubates in the programme. Hackett and Dilts (2004a) as well as McGrath (1999) proposed a contrarian addition to hard measure of performance from the incubators perspective. They argued that the incubation process is no longer seen as successful only if the incubatees survive, but rather the cost containment of cessation of operations is seen as one of the measures of successful

incubation. The advantage of quick and cheap cessation of an operation provides an opportunity for entrepreneurial learning, firm recovery and repositioning, optimization of allocation of incubator and incubatee resources, and an optimal injection of organisational population churn being transformed in the incubation process (Hackett & Dilts, 2004a). Acceptance of quick and cheap failure is not popular view in entrepreneurial literature and it is even less popular in practice especially for a country such as South Africa which exhibits such high fear of failure (the second highest in efficiency and factor driven economies according to GEM 2010 report).

Soft measures of business incubator performance include growth and expertise of staff, recognition by enterprise development support community and continued support from stakeholders, as well as presence of a robust internal quality control mechanism based on the needs of the incubatees (Voisey & Gornall, 2006). These soft measures described by Voisey and Gornall (2006), together with facilitation of quick and cheap cessation argued by Lazo Lazo et.al, (2009) and Hackett and Dilts, (2008), are utilized as indicators of good performance for this of study.

2.5.2. Selection

Hofer and Sanderberg (1987), in their seminal work, made an important point that there are three primary determinants of high success in new ventures; namely: the growth trajectory of the industry and the configuration of the industry structure, the quality of the entrepreneurial team and market entry strategy undertaken by the team.

The term selection may refer to the evaluation of presence of characteristics that are deemed essential to develop sound enterprise (Aerts, Matthyssens, & Van der Bempt, 2007), whilst for Hackett and Dilts (2004a) selection performance is the ability of the incubator to consistently select weak but promising ventures to incubate. The researcher finds most useful the view, presented by Bergman and Norrman (2008), of selection performance as the ability of the incubator to select ventures based on the parameters set out for each incubator. Selection performance is seen as critical to the performance of the incubation process in that the rest of the incubation intervention needs to address appropriately the needs of the selected incubatees (Aerts, Matthyssens, & Van der Bempt, 2007; Rice, 2002).

Recent views on selection options discussed in various papers have been based on two determinants of success, namely the qualities of the entrepreneurial team and the strength of the idea (Aerts, Matthyssens, & Van der Bempt, 2007; Bergek & Norrman, 2008; Chandra & Fealey, 2007; Rice, 2002). A two-by-two matrix in Table 2.2 is used to summarise the selection options.

Table 2.1 Selection strategies for business incbuators (Source: adapted from Bergek & Norrman , 2008)).

	Survival of the fittest	Picking of the winner
Idea focused selection	A.	B.
	Large number of idea owners with immature ideas related to a broad spectrum of fields	Niche portfolio of thoroughly screened ideas within a narrow technological area
Entrepreneur focused selection	C.	D.
	Diversified portfolio, consisting of entrepreneurs/teams with strong forces representing a broad set of ventures	Carefully handpicked and carefully evaluated entrepreneurs, typically close to universities

From the selection strategies of business incubators summarised in the table, it can be seen that there are two dominant selection strategies employed by business incubators, namely entrepreneur-focused and idea-focused selection (Bergek & Norrman, 2008). The former focus on the entrepreneur's or entrepreneurial team's propensity to exhibit characteristics of autonomy, innovativeness, competitive aggressiveness and pro-activeness and risk taking, otherwise known as entrepreneurial orientation and related to positive performance of new ventures (Lumpkin & Dess, 2001).

The latter, idea-focused selection strategies are concerned with the marketability and uniqueness of product or service, and creativity (Aerts, Matthyssens, & Van der Bempt, 2007). However, as Bergek and Norrman (2008) assert, in order to pursue an idea-focused selection strategy, incubator managers must have access to deep knowledge in relevant technological fields if they are to evaluate

the viability of ideas, i.e., the product, the market and the profit potential related to the combination of these.

Aerts, Matthyssens and Van der Bempt (2007) assert that most incubators do not screen potential tenants on a balanced set of factors, but rather concentrate on the characteristics of the incubatee market or (idea-focused strategy) or of the incubatee's management team (entrepreneur-focused strategy).

Although in the world of venture capitalism that is dominant in the West, selection would be optimised in quadrant D of Table 2.1 (above), however in emerging markets selection performance would have to be tailored to the specific environment.

2.5.3. Monitoring and business assistance intensity

Monitoring and business assistance intensity is defined as the level to which strategic, operational and administration assistance is given to a venture to improve its chance of success (Hackett & Dilts, 2008). Chrisman et. al (2005) term this activity guided preparation, whilst Bergek and Norrman (2008), in their model, refer to it as an element of business support, and Rice(2002) as counselling.

In their paper, Chrisman et al. (2005) posit that guided preparation is essential to fill the knowledge gap of the incubatee and that it has a positive influence on the performance of the new venture. Table 2.2 shows the quality of assistance is characterized by dimensions of time intensity, comprehensiveness and the quality of assistance provided (Chrisman, McMullan, & Hall, 2005; Hackett & Dilts, 2008; Rice, 2002). Time intensity is the typical duration and frequency of the guidance sessions with advisors (Hackett & Dilts, 2008; Rice, 2002).

Table 2.2 represents a summary of the determinants of effectiveness of which are also an indicator of comprehensiveness and quality of guided preparation (Chrisman, McMullan, & Hall, 2005) (Chrisman, McMullan, & Hall, 2005; Hackett & Dilts, 2008).

Table 2.2 Determinants of effective guided greparation. (Source: Chris et al., 2005, pp.775)

A	A process by which clients are allowed to make an informed choice of weather they would like to utilise the assistance available
B	The availability of advisors with prior/and or venturing experience who have received in the counseling process
C	A mechanism to provide just in time delivery of assistance so that knowledge gained is fresh and relevant.
D	An intervention methodology that allows clients to actively participate in the process that they gain applied knowledge rather than just ask advice or information
E	A focus on the strategic aspects of the entrepreneur's preparation, particularly the development of comprehensive business plan

Rice (2002) argues that the relationship with the incubatee and the advisor is a co-production one, whilst Chrisman et al. (2005) concur that this relationship requires the entrepreneurs' own effort to start the new venture and the effort of advisors to help the entrepreneurs in their endeavors.

Rice (2002) distinguishes between the modes of counselling offered by the incubator as: reactive and episodic counselling (initiated by the entrepreneur); proactive and episodic counselling (incubator initiated); and continual and aggressive counselling (incubator initiated). In conclusion, these modes offer a way of categorizing, monitoring, and assisting business offered by the incubators.

2.5.4. Resource munificence

Resource munificence characterizes the resources available to the incubator to enable it to conceive and implement strategies that improve its efficiency (Hackett & Dilts, 2008). Resources can be made available to the incubatee from outside (external environment) or within the business incubator (internal environment) (Bergek & Norrman, 2008). Hackett and Dilts (2008) claim that resource munificence is characterized by two dimensions, namely resource availability and utilization (Hackett & Dilts, 2008).Logically, there are two types of resource that can be bestowed on the incubatee, namely, non-tangible and tangible resources.

Access to non-tangible resources

As discussed in social capital theory (see section 2.5.3), non-tangible resources in the form of access to networks are required if a new venture is to obtain legitimacy in the new external business environment. The external environment can be defined as a combination of innovation communities encompassing the incubator and the clusters of industrial innovation networks connected to the incubator and related to the incubatees (Hackett & Dilts, 2004a; Schwartz & Hornych, 2010). This is referred to by Bergek and Norrman (2008) as mediation, whilst Rice (2002) refers to it simply as networking.

The advantages of the networked business incubator for a new venture include improving entrepreneurial drive through exposure to growth possibilities and the ability to forge partnerships which would add value to the market entry strategies employed by the new venture (Hansen, Chesbrough, Nohria, & Sull, 2000).

Access to tangible resources

Rice (2002) has stated that one of the modes of co-production of business incubation is provision of access to supportive passive environments, such as co-location facilities, and the communication services, equipment and/or laboratories, for the incubatee to utilize during the incubation process. Bergek and Norrman (2008) include access to these resources as part of their business support construct. These tangible resources are widely documented in literature, often as the starting point for the incubation industry (Aernoudt, 2004; Aerts, Matthyssens, & Van der Bempt, 2007).

2.6. Summary of literature study

The first part of the literature study has defined the constructs of the study, and the key definitions are given in Table 2.3 Summary of constructs presented in first part of the literature review.

Table 2.3 Summary of constructs presented in first part of the literature review

Business Incubator
Business incubators represent business systems that seek to provide new ventures with strategic and value-adding interventions that aim to facilitate their development of new ventures while containing the cost of their potential failure (Hackett & Dilts, 2004a; Schwartz, 2008)
Evaluation
Evaluation as the assessment of the strengths and weaknesses of programs, policies, personnel, products, and organizations to improve their effectiveness (Evaluation Association of America, 2011).Evaluation of incubator process effectiveness comprises the assessment of the fit or alignment in the incubator process components.
Incubation process

The transformation process in this context is the business incubation process – the process of converting inputs (new ventures) to outputs (sustainable and growing enterprises). The American National Business Incubation Association (NBIA) describes business incubation as a dynamic process of business enterprise development (Aernoudt, 2004).
Incubation process effectiveness
The basic dynamic of fit defines the organisation as most effective when its pieces fit together (Nadler & Tushman, 1980). It follows that the process of incubation will be most effective when all the pieces of the incubation process fit together.

Secondly, through literature analysis, the incubator process configuration models and major theories emerging between the late 1990s and 2008 have been presented in this chapter, and the main arguments are advanced in the analysis of the literature study as summarized in this section.

There appears to be a consensus that performance of the business incubator process can be measured in terms of incubatee growth and profitability (Grimaldia & Grandia, 2005; Hackett & Dilts, 2008). However, this view misses the critical component of tolerance for quick and cheap failure of business as indicator success of the incubation process; this opposing view was presented by Hackett and Dilts (2008) in the real options theory.

Figure 2.3 Incubator process literature review summary

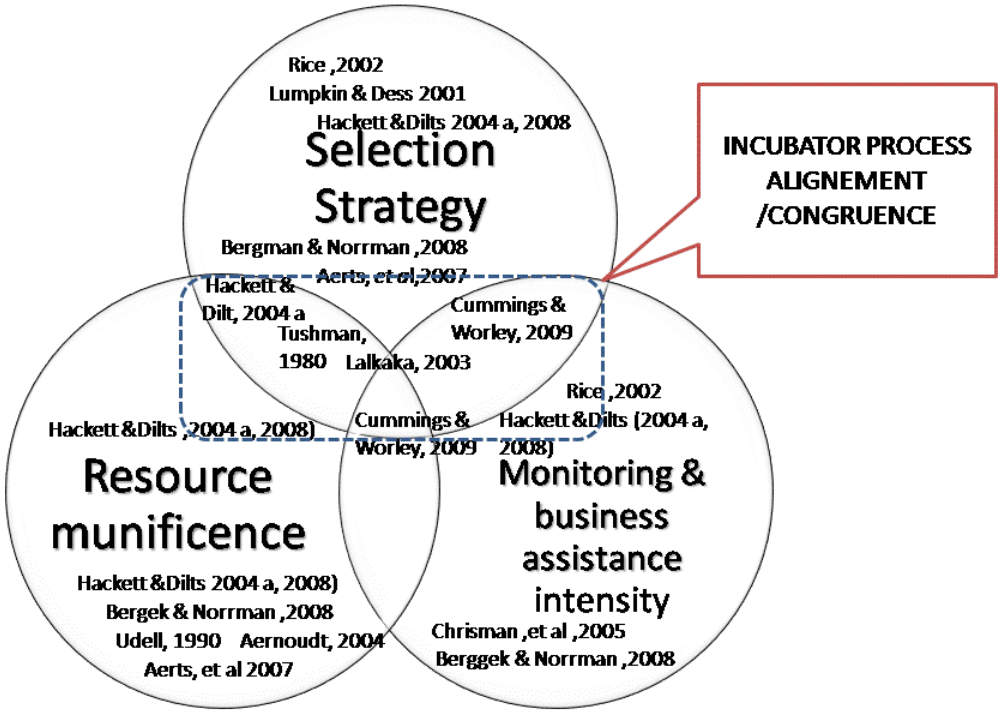


Figure 2.3 summarises the literature covered on the incubation process and alignment thereof. The three circles represents the three elements of the incubation process, and where the perfect overlap of these circles (in the centre of all the circles) is where the process elements are well aligned. It follows there can only be three possible states of existence for an incubator, thus a business incubator with a prevalence of tangible and in-tangible resources would be in category A; that which is highly weighted to monitoring and business assistance would be in category B; whilst category C would be for those with perfect alignment of resources, monitoring and business assistance, when controlling for the selection strategy of the incubator.

Cummings and Worley (2009) and Nadler and Tushman (1980) discuss the transformation process as well as congruence and or fit of the elements of the transformation process. Literature on the incubator process elements is also widely available. However the researcher did not find literature which discusses the relationship of alignment between these three model components and the incubator effectiveness as shown in Figure 2.3 and discussed above. Thus this study adds to literature on incubator process effectiveness based on congruence theory.

Proposed definitions of constructs

The following are definitions of the two constructs of the incubator process, namely resource munificence and business assistance and monitoring.

Resource munificence is concerned with the availability and quality of two tangible and non-tangible resources

- tangible resources: for example telephones, internet access, joint office space
- non-tangible resources: attributes of social capital of the incubator that are required for a new venture to gain legitimacy in the business environment.

Monitoring and business assistance should be broken up into mentorship and business assistance.

- Monitoring: the type and quality of mentorship offered by the incubator to the incubatee

- Business assistance: any type of subsided training and other assistance available to the incubatee e.g. availability of intellectual capital experts to the incubate.

3. RESEARCH QUESTIONS

From the literature study discussed in chapter two the researcher identifies key gaps in literature and these gaps are discussed and they are followed by the research questions.

There is a paucity of data on widely accepted benchmarking practices (Bergek & Norrman, 2008; Grimaldia & Grandia, 2005; Hackett & Dilts, 2008).

Western incubator process best practice cannot be superimposed on emerging market conditions (Lalkaka, 2003), and there is little literature on this topic.

Bergek and Norrman (2008) upon completion of their evaluation framework identify a key question of alignment of the model components and how this could possibly influence performance.

The researcher intends to build on this gaps identified by these researchers and those pointed out in the conclusion of the literature study, by posing two research questions.

The aims of the questions are firstly to understand the characteristics of business incubators processes employed in government funded incubators in South Africa. Secondly, to evaluate effectiveness evaluate in business incubator processes employed government funded incubators in South Africa.

3.1. Research Question 1:

What are the dominant business incubator process modes practiced in government funded incubators in South Africa?

3.2. Research question 2

Are the dominant incubator process configuration modes in government funded incubators in South Africa effective?

- How aligned is resource munificence aligned to the selection strategy?
- How aligned is the kind of monitoring and assistance to the selection strategy employed in the incubators?

The next chapter will expand on the methodology followed to answer these questions.

4. RESEARCH METHODOLOGY

The research methodology and research design is discussed in this chapter. A definition of and justification for the proposed research methodology is presented. Furthermore, details are provided of the unit of analysis, population, sampling method and size, data gathering and data analysis approach.

4.1. Selected methodology: qualitative

Tushman and Nader (1980) stipulate that the starting point for the study is to determine the key components of the organization and to evaluate the critical dynamic that shows how those components interact to perform the transformation function. The first part was completed in the literature study in Chapter 2, the second part will be covered through qualitative study method documented in Chapters 5 and 6.

A qualitative approach was selected for studying the incubator process effectiveness, because:

- process descriptions require detailed descriptions of how people engage with each other
- unique stakeholders' experiences can be captured in their own words to emphasise their points of view
- processes are fluid and dynamic and cannot be fully summarised on a single rating, or scale at one point in time
- participants' perceptions are key to any process consideration (Patton, 2002).

The qualitative study methodology enabled the researcher to provide a platform on which to explore the link between organisation design theory and the real options theory on the black box of the incubator process presented by Hackett and Dilt (2008).

Due to time constraints, a cross-sectional study was performed to understand the incubator process employed at this time (Blumberg, Cooper & Schindler, 2010).

4.2. Population, unit of analysis and sampling

A unit of analysis is the primary focus of data collection by the researcher (Patton, 2002). As discussed above, this is an organization level study. An organization can be viewed to exist in four major dimensions: (l) the task; (2) the individuals; (3) the formal organizational arrangements; and (4) the informal organisational arrangements (Nadler & Tushman, 1980). The researcher explored the informal organizational arrangements through investigating alignment between elements of the incubator process. The unit of analysis for this study is the incubator process which is an informal organisational arrangement.

The criteria used to select the incubators are as follows:

- They had to have been operational since the amendment of the Small Business Act 29 of 2003 (see Appendix 2).
- All incubators falling under the jurisdiction of the Small Enterprise Development Agency (SEDA) fall within this universe. According to SEDA there are approximately 30 incubators listed on their database.

- It was preferable that these government-funded incubators should focus on different industries and that they should not have been extensions of an existing incubator through another branch in a different location, thus the *population was reduced to 20 incubators.*

Purposive sampling was used to eliminate some of the incubators based on specific criteria and it provided latitude for the researcher to probe further into interesting findings during analysis, allowing an opportunity to gain more depth and insights in a specific investigation (Blumberg, Cooper, & Schindler, 2010).

Maxwell (2005) states the advantages of purposeful sampling are that it provides representativeness or typicality of the settings, individuals, or activities selected. Also, a small sample that has been systematically selected for typicality and relative homogeneity provides far more confidence that the conclusions adequately represent the average members of the population than does a probability-based sample of the same size. The latter tends to incorporate substantial random or accidental variation, whereas the former can be used to capture adequately the differences in the population. Other benefits are that a sample can be purposefully selected to allow for the examination of cases that are critical for the theories with which the study began. Purposeful sampling can be used to establish particular comparisons to illuminate the reasons for differences between settings or individuals, a common strategy in multi-case qualitative studies.

The researcher interviewed 10 government-funded incubator managers operating in different sectors of the economy. This sample size represents 50 percent of the population, which is an adequate sample size since the validity

and insights derived from a qualitative inquiry have more to do with the information richness of the cases selected and the observational or analytical capabilities of the researcher than the sample size (Patton, 2002).

4.3. Data collection

Data was collected by means of 10 semi-structured interviews with incubator managers using a questionnaire (see Appendix 1) as guidance for the interview. Semi-structured interviews allow the researcher to start with specific questions but then to follow his or her own thoughts later-on (Blumberg, Cooper, & Schindler, 2010). This method enabled the interviewer to remain free to build a conversation within a particular subject area, and to word questions spontaneously (Patton, 2002). The interviews lasted from 30 to 55 minutes. Four interviews with incubators were completed face to face, while six of the incubator managers were interviewed via a teleconferencing facility.

These interviews were pre-recorded on an audio-device and stored for analysis on a compact disc, included as part of the submission. An interview guide is attached (Appendix 4), which provides a list of questions, issues, topics or subject areas that were explored in the course of the interview (Blumberg, Cooper, & Schindler, 2010).

4.4. Data Analysis

The method of analysis was inductive. Blumberg, Cooper, & Schindler (2010) assert that inductive reasoning starts with observations of individual cases and develops towards generality. Firstly, individual cases were analysed, following

which a cross-case analysis was carried out in search of patterns and themes that cut across the individual cases.

Firstly and foremost data analysis began immediately after each interview. The interviews were listed to at least twice, at times 3 or 4 times in order to note not only the content of the discussion but the mood of the interview candidates.

Content analysis was performed, based on the manual coding of transcripts (Blumberg, Cooper, & Schindler, 2010). The core method of manual content analysis included counting specific words and phrasess, categorising them into themes then completing frequency analysis on these themes. Content analysis helped to ensure that emergent categories and discovered patterns were grounded in specific cases and their specific contexts (Blumberg, Cooper, & Schindler, 2010; Maxwell, 2005; Patton, 2002).

For the purposes of this study, the word content is defined as what resides on the surface of communication and is therefore easily observable (named Manifest content) (Rourke, Anderson, & Archer, 2001). Further analysis was combined for more meaningful themes to emerge (Rourke, Anderson, & Archer, 2001).

4.5. Reliability

Since interpretation of a qualitative inquiry depends on the skills, training, insights and capabilities of the inquirer, issues of reliability are a common challenge to qualitative studies (Patton, 2002). Reliability measures the consistency of results of content analysis (Blumberg, Cooper, & Schindler, 2010; Rourke, Anderson, & Archer, 2001).

A test of objectivity in content studies is inter-rater reliability, which is defined as the extent to which different coders, each coding the same content, come to the same coding decisions. To improve inter-rator reliability, data was collected, transcribed and encoded by the same researcher.

4.6. Validity

Validity is mainly concerned with the question of plausible alternative interpretations and validity threats to these interpretations, as well as how the researcher deals with them (Maxwell, 2005). Validity of research findings can be external or internal, the former referring to the data's ability to be generalised across persons, the latter limited to the ability of a research instrument to measure what it purported to measure (Blumberg, Cooper, & Schindler, 2010).

External validity was achieved by having a sample size that represented 50 percent of the population, as well as spreading the data collection across 96 percent of economic sectors of the incubator population. Internal validity was achieved firstly by utilising the incubator process model proposed by Hackett and Dilt (2008). Secondly, a pre-test interview was conducted with an award winning private sector owned incubator manager, who helped to include questions relevant to an emerging market context. Furthermore, expert online discussions

helped to verify that some of the questions being asked were indeed topical ones for expert practitioners. These questions were asked to a wide online network of expert practitioners in the Africa Incubator Network. All online discussions were open to all the members of this group.

4.7. Ethical considerations

Ethics is the study of the right behaviour and, in the context of this study, how to conduct research in a moral and responsible way (Blumberg, Cooper, & Schindler, 2010). When data was collected during interviews and observations, the respondents' rights were safeguarded. A letter of consent was used to communicate the benefits of the study as well as to explain those rights, including protection (Blumberg, Cooper, & Schindler, 2010). In this study the researcher used an informed consent form to confirm that the interviewee had been informed accordingly and it forms the first part of the interview questionnaire (Appendix 3). Assurances were made that the names of the interviewees would not be connected to any of the reports, and their anonymity was guaranteed. Questions to interviewees were not of a personal nature. The respondents were assured that data would only be used for academic report evaluation, unless SEDA were to grant permission in writing that the contents of the interviews might be published for non-academic intentions.

4.8. Limitations

A qualitative study does not lend itself to being generalised as a result of the small sample size, however, in place of this it hopes to bring depth to the perceptions of the effectiveness of the incubation process (Blumberg, Cooper, & Schindler, 2010).

Social desirability bias is common weakness in qualitative studies, as people try to respond in ways that would be perceived as favourable rather than expressing their true feelings. This was mitigated through the emphasis on anonymity in the interview session (Patton, 2002).

Another limitation is that access to the funder itself was limited , thus the views presented in this study may be biased towards the incubator manager's point of view and not balanced to the funders' views.

5. RESULTS

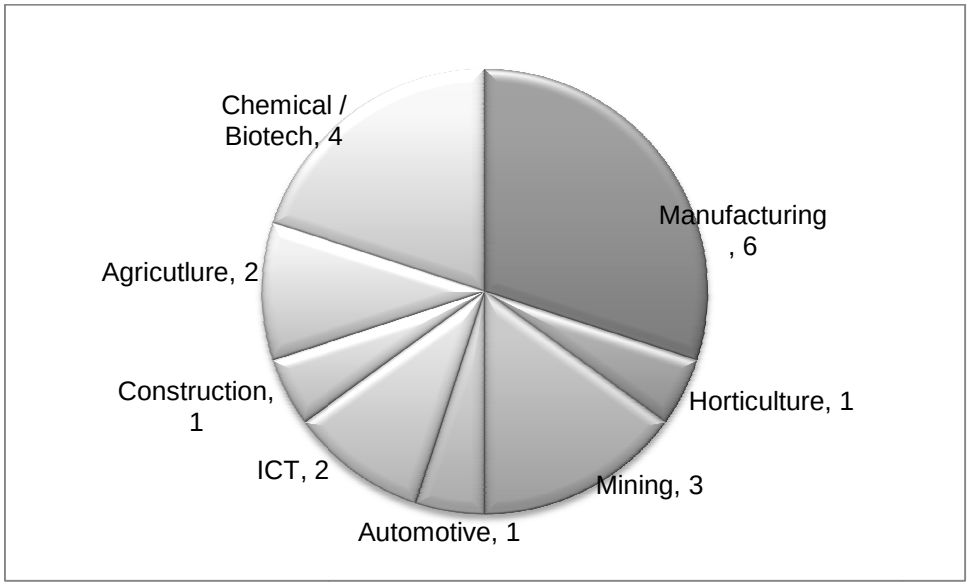
In this section the researcher presents the results obtained from the data collection phase. The chapter starts with a description of the demographics of the incubators and the incubator managers, followed by the results of the interviews, discussed according to four main themes, namely:

- incubator profile: graduation policy, mission statement, recognition from SME development community
- selection strategy
- resource munificence
- monitoring and business assistance.

5.1. Sample description

Currently there are 30 incubators listed as part of the SEDA incubation programme. Some of the incubators listed were extensions or franchises of the same model and could not offer insights into a differentiated model. These were thus eliminated from the population, leaving only 20 incubators in the population. The incubator industry profile is shown in Figure 4.1 (below).

Figure 5.1 Industry sectors of government funded business incubator population



It can be seen from Figure 5.1 the graph that most incubation activity is concentrated around the manufacturing sector (6), chemical and biotechnology (4) and mining sectors (3), respectively.

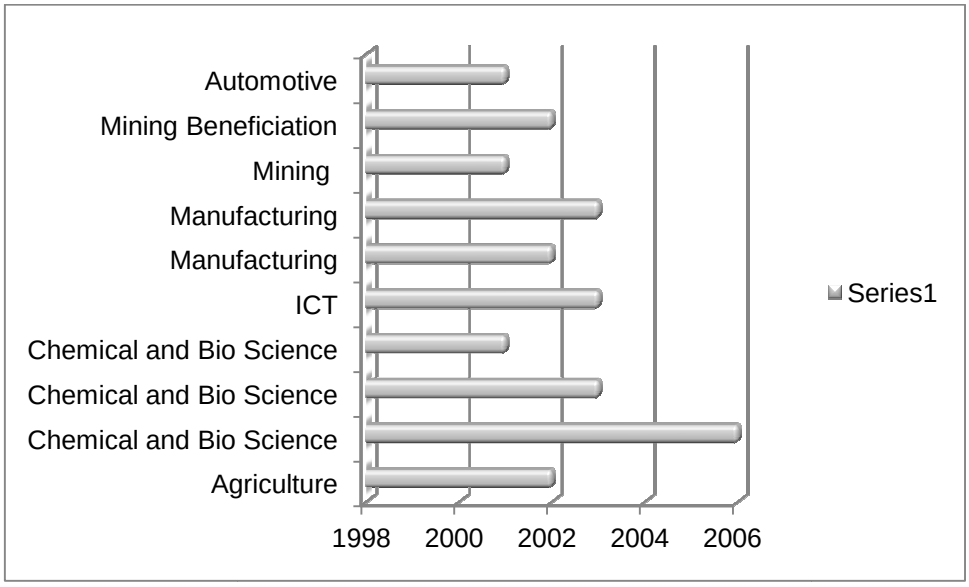
Table 5.1 shows the interviews obtained by industry sector. The last column represents the same data in percentages. It should be observed that no interview was conducted in the Horticulture or Construction sectors.

Table 5.1Sample size and sample sectoral distribution

Sector	Population	Interview completed	Percentage of sectors sampled versus the population
Manufacturing	6	2	33%
Horticulture	1	0	0%
Mining	3	2	67%
Automotive	1	1	100%
ICT	2	1	50%
Construction	1	0	0%
Agriculture	2	1	50%
Chemical / Biotech	4	3	75%
Total	20	10	

Table 5.1 shows that each incubator model has been in operation for at least five years. The funder has stipulates that the graduation period of incubatees should be of three to five years for all incubators. Thus, even the incubator with the least number of years in operation has enough history to provide in-depth details about the incubator process and its impact on performance.

Figure 5.2 First year of operation as an incubator (data given by sector)

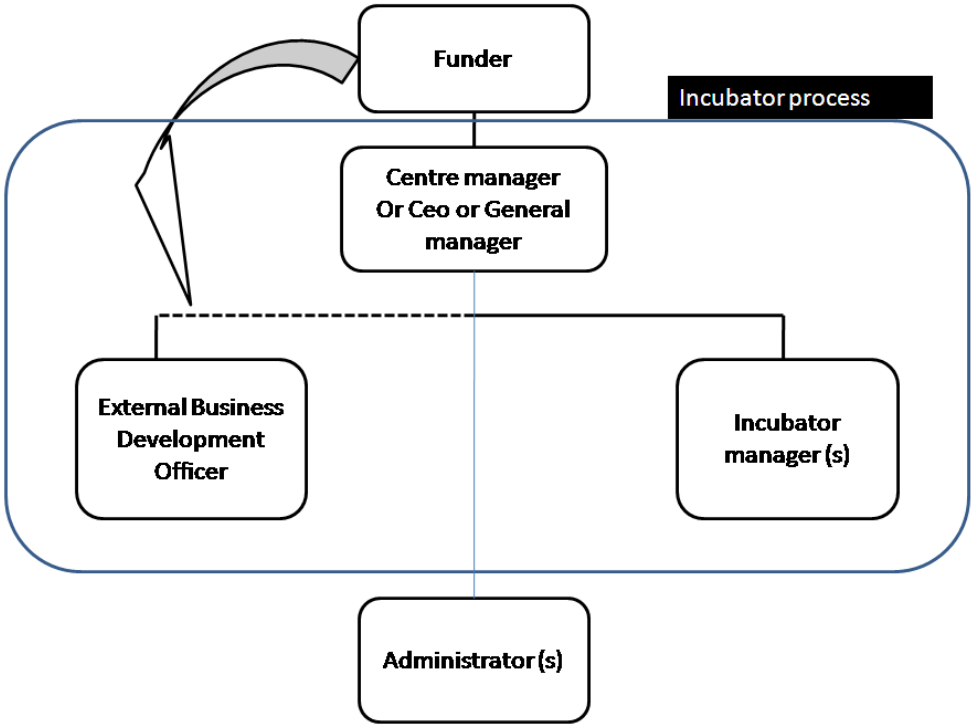


It is also important to observe that the government-funded incubation industry in South Africa is relatively young compared to developed countries such as the United States of America and those of Europe, with the average age being nine years in operation. Furthermore, it should be noted that the oldest incubators are in the automotive, chemical and bio-science, and mining, agriculture sectors.

5.2. Incubator organisational structure

Figure 5.3 shows the typical organizational structure of the incubator, consisting of centre manager or general manager, the incubator manager, the administrator and, occasionally, the external business development officer. The centre manager and the incubator manager are responsible for compilation and implementation of the incubation process; they were thus appropriately selected to be candidates for data collection.

Figure 5.3Typical organisational structure of a business incubator



The centre or incubator manager is assisted by external service providers who give specific training or guidance to the incubatees and are funded through a 90 percent subsidy to the incubator from SEDA, on whose database they are listed. Depending on the incubation programme outline, the incubator manager or centre manager contracts the services of the service provider from a database.

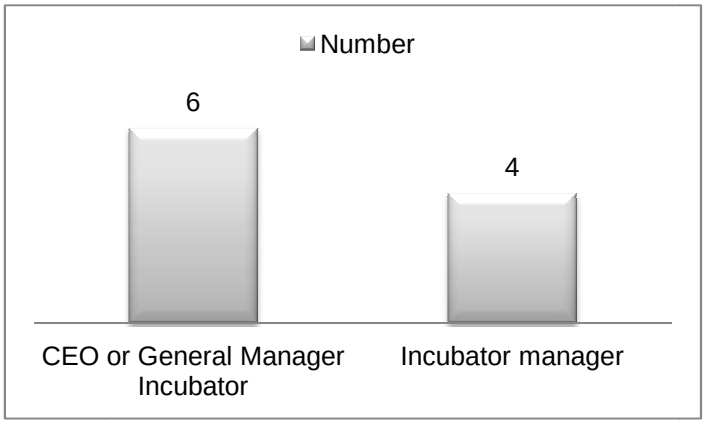
The ratio between the number of incubatees and the incubators is shown in Table 5.2, which represents the average number of incubatees per incubator type (where type equates to a sector in which the incubator operates). As shown, the average number of incubatees ranges between 30 and 50 per incubator, with the exception of the agricultural sector, which has a high number of incubatees, but they are mainly “virtual” off-site incubatees (located on their farms).

Table 5.2 Average number of incubatees in an incubator shown by incubator sector

Sector	Average number of incubatees by sector
Manufacturing	40
Mining	60
Automotive	50
ICT	30
Agriculture	120
Chemical / Biotech	50

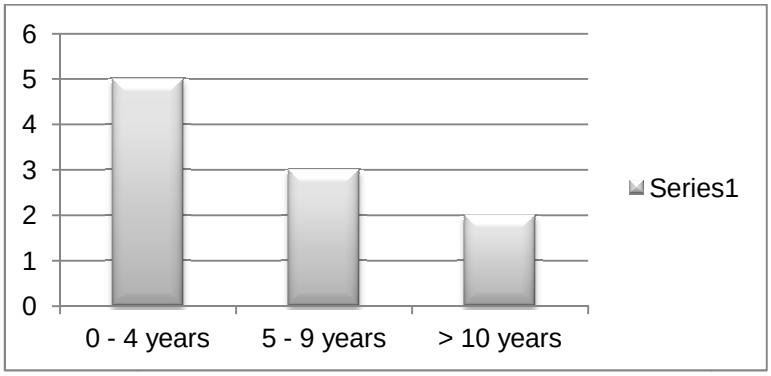
Six out of 10 respondents were incubator chief executives or centre managers(Figure 5.4.)

Figure 5.4 Titles of the interview respondents



The other four respondents were incubator managers working on projects with incubates, and were familiar with the incubation process.

Figure 5.5Duration of experience in incubation industry



Less than two out of ten respondents had more than 10 years experience in the incubation industry, as shown in figure 5.5 (above).

Figure 5.6 Race of respondents

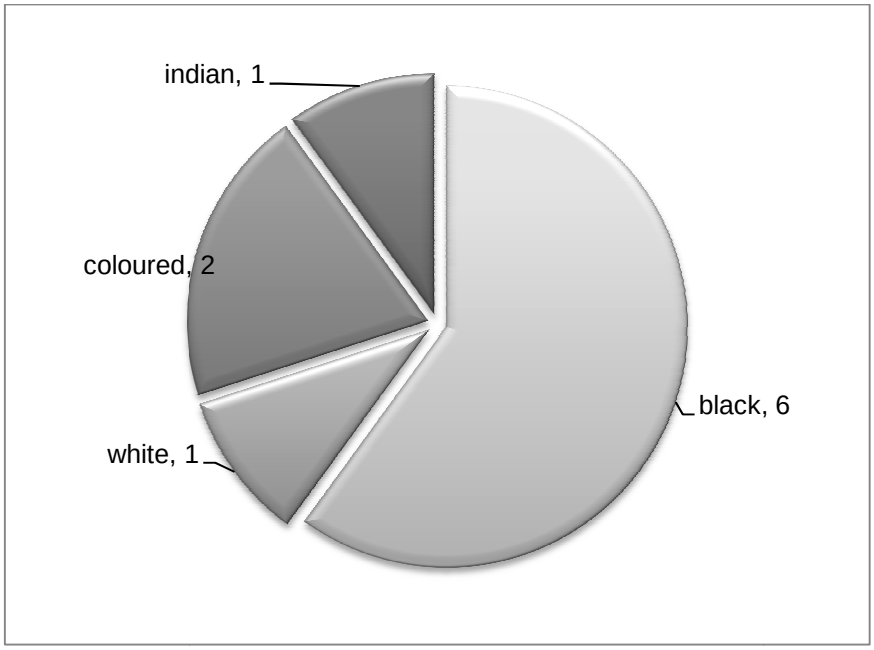


Figure 5.6 shows the racial distribution of the respondents. This is relevant in the South African context since business incubation is a relatively new industry and a

history of racial segregation (apartheid) has split the skills and experience in the industry levels of the incubator managers along these lines.

The results from the interviews are summarised by themes in the next section, and presented in frequency table as well as a ranking based on the frequency. For each theme the table of representation of results is presented first, followed by some excerpts from the interview from several respondents in support of the results.

5.3. Incubator performance

The incubator process performance is discussed under three main themes stated below, namely the incubator mission, graduation policy and recognition by SME development community.

5.3.1. Incubator mission statement

A consensus view on incubator mission from all respondents was the necessity to establish and grow new ventures. Four key themes emerge in the mission statements of the incubators, ranked and tabulated in Table 5.3

Table 5.3 Mission of the incubator

Mission of the incubator	Frequency	Ranking
To simulate, grow and launch new SME	5	1
To commercialise viable SME	1	4
To stimulate job creation	2	3

Provision of value added service	3	2

On inspection, from the highest ranking response the main view is that mission of incubators is concerned with the establishment and growth of small business. As discussed by various incubators:

R2: "We are ...an incubator that [aims to] stimulates, grow and launches early-stage, technology-rich businesses through world-class technology incubation."

R6: "To stimulate long term growth of SMEs in the [redacted] *industry."*

The second most prominent theme that emerges is the provision of value added services:

R7: "…aims to create an environment where new and emerging enterprises are able to set-up business and with professional support and development."

R8: "Our incubator mission is to develop and mentor small businesses in the platinum value chain."

The third most prominent theme covered by incubators was to stimulate job creation, for example:

R6:"…Growth in terms of revenue, job creation in terms of adding to the tax base of Africa."

R4: "Our mandate is job creation; we look at our KPIs in terms of job creation, turnover of entrepreneurs."

Only one respondent mentioned the mission as involving the commercialization of the SMEs:

R3: "We provide entrepreneurs with the opportunity to commercialize viable small scale… (businesses)."

5.3.2. Incubator graduation policy and actual implementation of the policy

The graduation period as stipulated by the funder is three years for all incubators. Graduation is defined as a formal exit from the incubation process through some sort of certification or ceremony defining the end of the incubation intervention. The question of graduation period was typically asked after the question on the incubator mission and this question elicited a few sighs of exasperation form the incubator managers. The main view of the incubator managers are that a three year graduation period is not practical. Figure 5.7 shows is a visual representation of those views, which are further discussed below.

Figure 5.7 incubator graduation period

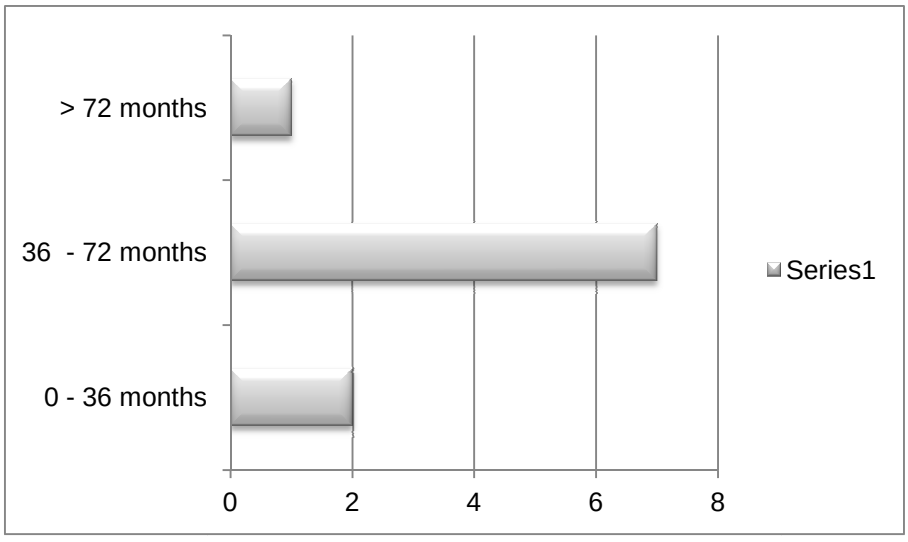


Table 5.4 Management views on the graduation policy of incubator

Theme	frequency	ranking
Graduation reached within stipulated time	3	2
Decision to graduate contradicts the funders intention	7	1

Seven out of 10 respondents seem to be to disagree with the graduation policy as set by the funder (Table 5.4)

R3: "Somewhere between four and five years .. this is longer than the funder expects … we incubate them until they are able to obtain an investment partner … which is rare but often as soon as the [legal] [redacted] *are secured and a viable business plan is established they leave the incubator."*

R4: "There is no maximum incubation time, sometimes it can take three to ten years, depending on politics. The funder recommends three years, which is a problem in our field for example if there is a [patent] [redacted] *that needs to be developed it can take up to ten years."*

R8: "Three years… (sigh) subjective based on your assessment of entrepreneur and their business. In my opinion three years is too soon. Unfortunately our donors are prescriptive about what it should be. It should be anything from five years … my view is that small business do not have capacity to be able to be sustainable after three years."

Some respondents mentioned that graduation was subjective and depended on their assessment of process, and that the divergent quality of the selected inbatees (very poor and illiterate, or educated) meant selection based on these

two groups creates challenges in maintain the same graduation criteria across the incubatees. The respondents mentioned that three years graduation periodic not an adequate to enable the graduates meeting the mission of the incubator of growing and employing more people

Two out of 10 respondents agreed that proven viability of the business was a key exit criterion for the incubator, and this viability could also be determined by non-financial measures, for example:

R6:"Some more than three years, on average between three and four years. Graduation criteria are based on sustainability of the business, whether the business is fully funded, e,g., acquisition of new management. We also graduate projects that are too big for us."

R 10: "When they start we request them to start with a something small [redacted] *… we would like to see growth from the first year to three year. On average our graduates are planting about a hundred hectares."*

5.3.3. Incubator recognition by Small and Medium Enterprise (SME) development community

Only two out of ten incubator managers mentioned that their specific incubator received accolades of good performance from the SME development community.

R6: "Yes we have had entrepreneurs who have won awards as such, as the most successful entrepreneurs. One of our clients received an award...in the

financial year two thousand and ten, and numerous awards in quite a number of categories."

R 8: "Infact the awards that I am aware of is one won by an entrepreneur in two thousand and eight, as the fasted developing entrepreneur, in two thousand and nine first incubatee award by DTI."

Eight out of 10 of the incubators had not received any accolades from the SME development industry, nor did they indicate any ambition to participate or gain this recognition in the foreseeable future.

5.4. Incubator selection strategy

The views on selection criteria are rather divergent across the incubators, as evidenced by the number of themes captured Table 5.5. Some in incubators have a strict entry and well developed selection process, while others have no entry criteria other than that the entrepreneur should have an idea. A common view from the low-tech industry sector incubators is that literacy or education is not a pre-determining characteristic of an entrepreneur selected to participate in the incubation process.

Table 5.5Selection strategies of incubators

Theme	Frequency	Tanking
Good viable idea	2	3
Entrepreneurial Orientation	2	2
Good education and or technical skills	4	2

Low skills and education levels	5	1

The highest frequency *is for basic skills or no education entry requirements with a frequency* of five, for example:

R 10: "Sometimes we make mistakes in taking people in incubator … we were recruiting people who run back yard garden, you will not reach sustainability with these groups."

R4: "We incubate small business in [redacted] *sector, whoever comes to our offices who is a potential entrepreneur."*

R3: "I think our approach is totally different from all incubation models … we are operating in a very unique sector where some of the entrepreneurs may be communities … some very skilled, some may be lawyers … some may be literally unlearned. But what has transpired over the years is that most of them have very limited mining knowledge."

R8: "We go out there and find SMEs operating from their backyards and take them out of the back yard and take them into formal business."

R9: " We see people who are retrenched with technical skills and offer them an opportunity to be incubated .. also when you are in the township we see some people welding exhausts on the side of the road, we go to them and tell them about the programme."

The second most dominant theme is *entry requirements based on some level of tertiary education as well as skills of the entrepreneur*. It had a frequency of four.

The incubators which had this result were mainly technology-based. Some excerpts from the interviews are as follows:

R2: "Most of them have qualifications [and they] have working experience, some retrenched, most have tertiary education. .. Most come from the University of [redacted] *We have a feed of entrepreneurs from satellite incubators at the university. In this sector there it becomes very difficult to conceptualise opportunities without prior education."*

R4: "Third generation (in) Biotechnology requires IP .. those (entrepreneurs) are really from the university. The eagerness of the client is also considered so that the person can remain engaged (in the incubation process)."

R8: "Some of them have degrees in [redacted] *design and manufacturing. Some have diploma..mainly people with tertiary qualification."*

Respondents from the technology rich sectors mentioned prior tertiary education as a minimum entry point to the programme, adding that they intended to create an alternative career path for their incubatees through it.

Another theme that is closely linked to the previous one deals with *entrepreneurial orientation of the entrepreneur or entrepreneurial teams*:

R4: "The eagerness of the client is also considered so that there is a team in place to get clients into the incubation process."

R6: "…is there a team in place to be able to pursue this idea."

R10: "…we look for a [redacted] *entrepreneur with passion."*

5.5. Resource Munificence

This construct was divided in two sections for the purposes of the interview; namely infrastructural resources and access to networks. For purposes of representation of results this section is subdivided in this manner.

5.5.1. Access to tangible resources

Most of the respondents mentioned good availability and usage of infrastructural resources available at the incubation centres. These included use of offices and internet services, available at nominal charge to the entrepreneurs though some had to be paid monthly, while others had to be on graduation of the incubatee.

For labour-intensive sectors such as agriculture and manufacturing, the incubator made available equipment, laboratories and workshops under the same auspices. The incubator centre managed the upkeep of these resources and as a non-profit centre they charged cost price for use of these resources by the incubatees. These resources were available to the incubatees during the hours of a normal working week, but not over weekends.

There follow some excerpts from the interviews:

> *R5: "We provide a holistic service support. Infrastructure - office space, manufacturing space, IT comms, and so forth to the low-tech guys. High-tech it differs, it depends on the level of certification or on the process you are doing (but they can use the generic services."*

R9: "We have just developed a processing plant at the incubation centre so that their [redacted] [product] can be further processed. The model is interested incubatees will bring their [redacted] (stock) into the plant. They will produce [redacted] an [end product], they will sell it for higher price [redacted] and the profit is theirs."

5.5.2. Access to non-tangible resources

Most incubators were aware of the importance of having access to networks, however only three out of 10 respondents affirmed existing relationships by use of examples. The incubator eco-system consists mainly of industry bodies, funders, investors and angel networks, potential customers, suppliers, academic institutions, and the media.

Figure 5.8:Participation of incubator managers in the business incubator eco-system

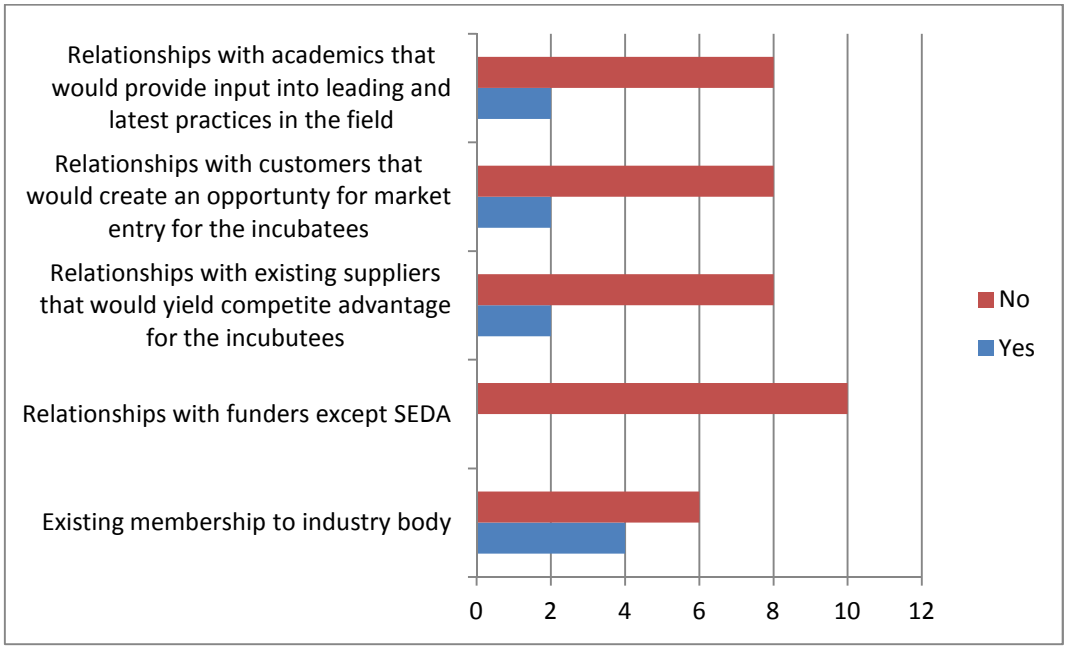


Figure 5.8 above shows the participation of the incubator in the incubator eco-system. These are the main points from this figure:

- Four out of ten incubators belong to an industry body (South African Business Incubator's Association)
- None of the incubators had existing relationships with funders (other than SEDA), investors, venture capital or angel networks.
- Two out ten incubators had access to suppliers and potential customers. They were based in the agricultural sector.
- Two out of ten incubators had access to academics through their local university. They were in the biomedical and ICT sectors respectively.

Through these networks the incubators are able to provide:

- access to markets

- access to specialist advice for intellectual property advice
- access networks that lower production inputs.

Most of the businesses being incubated had an average of three employees, with one being the owner. The owner was often highly involved in product development and had neither time nor experience to build sufficient networks.

R3: "We have co-incubation relationships with partners in America and Europe such that our incubatees can have access to these markets and specialist knowledge overseas. We have relationships with Research and Development departments at universities and some of the entrepreneurs come from universities."

R9: "We facilitate access to markets for the [redacted] *[entrepreneurs].Like currently we have secured the market with [customers]* [redacted]*. We have an agreement that we will supply them with* [redacted] *[end product]. The entrepreneurs are able to use the* [redacted] *incubator brand to market their products. Those who do not intend to utilise this channel to sell their raw materials with the local markets, we have that relationship existing with the market."*

Re): We also have access to other networks… we assist with production inputs mainly [redacted]*. Like currently we managed to speak to the* [redacted] *and they agreed that they are going to supply our* [redacted] *[entrepreneurs] with these inputs. In the processing side we have a relationship* [redacted] *a company working in the[production value chain]…they are providing us with access to labs to*

test the quality of the products. They are also project managing the processing plant."

R8: "We will talk to [redacted] *companies about opportunities available, give them the information so that they can combine their proposals and request funding, that they aware of that…"*

5.6. Monitoring and business assistance intensity

During the interviews, several views were expressed about the mentorship programmes, to be explained further in this chapter before interview excerpts supporting these themes are shown.

The funder offers a monitoring and assistance model based on external consultants that are allocated to incubators on a needs basis. They are paid mainly by the funder, and the incubator pays a nominal fee. The incubator respondents view this assistance as a mentorship relationship and agree that this relationship is between the incubatees and the external consultants.

5.6.1. Incubatee development plan

The business support requirements are documented after an incubatee has been accepted into an incubation programme. All the incubators interviewed mentioned the existence of such a plan, with some excerpts from the respondents as evidence of these views presented here:

R4: "Mentorship - agreement regarding mentorship at the start. Mentorship is at the core, whatever step you take we will be there for you."

R1: "Mentorship is less about building the relationship with the entrepreneur, it is more about guiding the entrepreneur through the goals identified at the initiation of the incubation process."

R5: "We mentor the entrepreneur based on the program determined at the beginning of the programme."

Generally, the monitoring and assistance programme is split into two facets, namely technical as well business development assistance.

5.6.2. Monitoring and business assistance intensity

Most of the incubator managers mentioned the lack of technical skills of incubatees as a key need they aim to address in the incubation process. The other knowledge gap identified includes general business skills. Technical and business skills mentorship programmes are both concerned with transfer of technical or business skills from the external consultants to the incubatees.

All the incubators have access to scientists and or engineers or other consultants from a funder's database. Very few incubators have relationships with academic institutions such as universities or leading experts to provide access to knowledge on the latest leading practices in the sector. Those who had close association with universities found this assistance very useful for their incubation programme.

> *R10: "The [redacted] [consultants] have scheduled visits at the farm. e.g., this week would like to visit 10 of my farmers in ties region. We have a hundred and fifty farmers … also if the farmers want to make appointment they are accessible."*

In the agricultural sector, agronomists visit farmers regularly or as and when the key milestones are reached. In these sessions there are discussions about proven production techniques and these are modified to the specific incubate:

> *R4: "We also offer technical support. This is completed using two training as well as pre-scheduled sessions with external consultants. We also offer*

assistance in IP management, patent registration through external consultants who are contracted to the incubator."

R7: "The first thing is to establish the business through registration, and then we will train them in very basic business skills, workshop training and health and safety. Workshop training includes that we train them to use machinery and equipment, as well what materials they can use. This is an issue since [redacted] *raw materials] has so many grades and versions. We also complete training* [redacted]*, which is very important to the skills base they have. We also teach design, creativity as part of the training."*

5.6.3. Business assistance intensity

This assistance is commonly known as *business development mentorship* amongst the respondents, and is concerned with transferring business skills through training programmes and/or use of external consultants who are found through an existing database of the funder. This training varies from numeracy and literacy skills, through to business plan creation and other business-related courses.

Most respondents raised concerns about the mentorship programme offered by their incubators. The main issues were the quality of the skills of the external consultants versus what is available in the industry. They also felt dissatisfied with the frequency and timing of interaction between the incubatees and the consultants, and with its infrequency. There is a preference by incubator managers to have mentors internally, whom the incubatees can access at any time. Their main criticism of the use of external consultants was that these kind of relationships do not allow for rapport to build with the mentor, so as to be able

to gain depth and/or insights from the mentorship relationship. As one respondent expressed it, *"since the mentorship is touch and go.. the entrepreneurs do not receive an opportunity to cement lessons from the interaction with these mentors."*

The following are excerpts from the interviews:

R2: "We do have external consultants who come in at specific times."

R3: "We are getting mentors externally and this sometimes does not align with the level of technical skills required in the incubator."

R7: "Mentorship is through the SEDA branches that come in, it is an ongoing thing but because of their nature that they mentor randomly without any regular relationship. So I have given a contractor to my incubator a 6 months contract to provide more long term mentorship ..Just to cement the lessons. We are completing mentoring by facilitation and through engagement of a consultant. We would like to engage established business to mentor the entrepreneurs but these businesses worry about our entrepreneurs competing with them."

R6: "We really would like to have in-house mentors instead of acquiring mentors outside.. They are expensive and need to be technically skilled. We are technical incubator and need much more specific technical skills than those that are available from the funder."

Business development services are largely generic and offered as part of the standard programme from the funder.

5.7. Challenges experienced in the data collection phase

Since the researcher had no previous contacts in the industry, securing appointments with incubator managers was a challenge. In order to obtain access to incubator managers, the researcher attended several workshops conducted by SEDA with the aim of making contact with the incubator executive managers.

All incubators in SEDA's structure report through to the national incubator executive, whose permission was needed before any contact could be made with the incubator managers. The researcher then proceeded to interview the incubator managers, who were rather receptive upon mention of this permission being granted.

The improvement in technique of the researcher's qualitative data collection method over time allowed the respondents to relax and speak freely about the specific experiences at the incubator. Some incubator managers even reverted to their home language, which had to be translated into English for data analysis purposes. Fortunately, language was not a great barrier since the researcher was conversant in local languages.

In order to maintain anonymity, the researcher blocked out words which could be used to identify the incubator and/or the incubator manager in the transcripts. These words were replaced by generic words such as 'raw material,' instead of the actual raw material specific to the industry.

5.8. Conclusion

Evidence from grouping of the themes suggests the following:

- Selection strategies: most incubators utilize the selection strategy based on survival of the fittest and idea strategy. Evidence of this is that barriers into the incubators are rather low for most sectors, except for high-tech businesses.

- Business monitoring and assistance: most incubator managers' views are negative towards over-dependence of business monitoring and assistance on external service providers. This is primarily because external service providers that are contracted directly to SEDA provide periodic intervention to the incubatees and are thus unable to build rapport with the incubatees.

- Resource munificence – most incubatees have access to discounted tangible resources, such as joint office space, telephone, and grants for productive inputs. However, most incubators do not provide access to networks for the incubatees. If the relationships exist at all, they are dominated by verbal agreements with the incubator managers.

The chapter following consists of analysis of these themes emerging from the interviews, with reference to the research questions.

6. Discussion of results

As discussed in chapter 3 the researcher aims to determine dominant incubator process models and then to understand the effectiveness of government funded incubators in South Africa by answering the following two research questions. In order to complete the analysis a framework is required. Since none exited that would explain the data and combine it with literature, one is proposed for this purpose.

6.1. Incubator process configuration framework

Dominant practices can be identified from aggregating the elements which are prominent in a incubator process model.

The categories presented in Table 6.1 of the three constructs emanate from integration of literature study as well as the main themes that emerged from the interviews. The vertical categories are made up of selection strategies, while the horizontal categories depict the subdivided constructs as defined in Chapter 2.

The four selection strategies employed are extracted from literature covered by Bergek and Norrman (2008), Aerts et al. (2007) and Lumpkin and Dess (2001). The dimensions of monitoring are defined by Rice (2002), whereas business assistance dimensions are extracted from interview results covered in chapter 5 above. The dimensions of tangible and non-tangible resources are also obtained from the results presented in chapter 5.

Table 6.1 Incubator process configuratio options

Selection	Monitoring and business assistance intensity		Resource munificence	
Strategy	Monitoring /Guidance/Mentorship	Business assitance	Tangible	Non -tangible
Survival of the fittest, entrepreneur	Incident based counseling	Generic assistance, no strategic or technical consultation	Co-location and admin facilities	Limited or no industry relationships
Survival of the fittest, idea	Incident based counseling	Affordable generic & technical assistance	Co-location, admin facilities, Comprehensive tools e.g. including equipment	Participate in industry forums, known but not actively leveraging networks to create competitive advantage
Picking the winner, idea	Periodic counselling	Industry standard generic & technical assistance	Co-location, admini facilities, Comprehensive faciliteis to develop, test commercial product	Industry relationships governed by memorandum of understanding, that provide competitive advantage
Picking the winner, entrepreneur	Aggressive continual counselling	Tailoured mediation & availability of world class strategic and technical consultation	Co-location, admin facities,World class resources to develop,test commercial product	Industry relationships governed by structured agreements

Further discussion on the first research question will be based on the table 6.1 above.

6.1.1. Selection strategies

Aerts et al. (2007) stated that a screening process that seek out promising ventures to incubate by nature lend the incubation process to suffering from selection bias. This is because such promising ventures are likely to succeed inspite of the incubation process. Hackett and Dilts (2004, 2008) pursue an argument in support of this “picking the winners” selection strategy because it guarantees business incubator performance.

Seven out of ten incubator managers agree that incubatees are not selected according to very strict entry criteria. The general view from the respondents is that the incubatees who are selected into the programmes have:

- very basic education (sometimes none) and only minimal skills required to compete in the industry
- a poorly developed business idea
- no legitimate networks in the industry sector to interpret industry forces or to enable them to devise successful market entry strategies.

Rice (2002) refers to these kind of entrepreneurs as “long shots” who are eager to receive assistance but are not ready for this. He further argues that these incubatees should only receive the first tier of support and nothing more.

Furthermore, these respondents agreed that they required incubatees with passion, but admitted that due to the mandate of the government-funded incubators they had little choice but to recruit incubatees without great strictness on the entry criteria into the process.

The implications of selecting incubators based on such broad and low entry criteria on the incubator are:

- Over-subscription to incubation programmes by low EO candidates: this has specific lower pro-activeness and readiness to utilize the resources and assistance offered to them. The incubatees perceive incubation as a form of employment and thus become complacent, looking to the incubator manager to take accountability for their participation in the programme.
- The incubators have to spread limited resources to a large number of lowly skilled and under-educated incubatees. This has implications for the design of the other two elements of the process, as will be discussed further in sections 6.1.2 and 6.1.3 to ensure successful incubation.

- When the incubator contains the second cohort of incubatees with higher skill sets and education, complexity is introduced to the spittting of limited resources to provide appropriate assistance to these different incubatee cohorts. Thus, economies of scale in programme design cannot be achieved.

Since incubator managers are bound by the mandate of the funder to select these incubatees, they remain with two choices to manage this problem. The first is to introduce attrition in the incubation process,or to lower graduation criteria out of the incubation process. The first option is taken by less than two in ten incubator managers, as evidenced by those respondents who mentioned that they enforced incubatee exits, when the idea was too great for the incubator or when the incubatee failed to adhere to or participate fully in the programmes of the incubatee.

In conclusion, the dominant selection strategy utilized in government-funded business incubators is survival of the fittest and idea (selection strategy number two).

6.1.2. Monitoring and business assistance

Monitoring is the type and quality of mentorship offered by the incubator to the incubatee, and encompasses the relationship of co-production of a new venture between the incubator managers and the incubate (Rice, 2002). Monitoring and business assistance is commonly known as business development mentorship amongst the respondents, and is concerned with transferring business skills through administration of training programmes to bridge the incubatees' skills gap identified during the compilation of the incubation plan.

All respondents agreed that a monitoring and business assistance plan drawn up for each incubate just after they were accepted into the incubation programme would be a good idea. The presence of this developmental plan is to provide a basis of evaluation of the progress made during the incubation intervention. The plan is implemented through the use of external consultants who are sourced from the funder's database. Table 6.1 below shows an analysis of what was found versus the literature covered on this topic.

Table 6.2 Quality of business assistance and monitoring intensity

Chrisman, McMullan, & Hall, 2005	Hackett and Dilts (2008) and Rice (2002)	Respondents
A process where clients are allowed to make an informed choice of whether they should utilise the assistance	N/A	This is achieved through the signing of the incubatee development plan
Availability of advisors with prior business and/or venturing experience who have received training in the counselling process		The external advisors have received training on the counselling process from SEDA and have some business or venturing experience. However, external consultants are not industry leading advisors, and this is important for an hith techindustry sectors such as bio-chemistry. Respondents found these skills not to be commensurate with industry skills levels
A mechanism to provide just-in-time delivery of assistance so that knowledge gained is fresh and relevant	Time intensity is the typical duration and frequency of the guidance sessions with	Since this aspect of the incubator process is facilitated through external consultants, there is no flexibility to offer just-in-time access to knowledge for the incubatee, thus knowledge is mostly not fresh or relevant. This

Chrisman, McMullan, & Hall, 2005	Hackett and Dilts (2008) and Rice (2002)	Respondents
	advisors	was a source of frustration as the respondents felt it was the major stumbling block to provision of monitoring and business assistance services. One out of ten incubator managers decided to go outside the mandate of the funder and hire an external consultant to be on site for at least six continuous months, where incubatees could access them easily.
An intervention methodology that allows clients to actively participate in the process so they gain applied knowledge rather than just advice or information	Strategic management	All respondents had an intervention methodology that allowed clients to participate in the process, so they gained applied knowledge through the use of their laboratories and/or workshops to facilitate these discussions
A focus on the strategic aspects of the entrepreneur's preparation, particularly the development of a comprehensive business plan	Strategic management	All ten incubator managers mentioned that the role of the incubator included the compilation of a viable business plan

Thus, the type of assistance offered is periodic and based on pre-determined needs. From Table 6.1 (above) it is evident that monitoring and business assistance is situated in category number 3, which is that most incubators offer periodic counselling and access to affordable technical skills to the incubatee.

In light of the above analysis, the advantages of the use of external consultants to offer monitoring and business assistance could include the following:

External assistants are used mainly to help achieve economies of scope and scale in delivering monitoring and business assistance. This achieved by having a database of specialists in different fields, working with different incubators at different times to offer similar services to different incubators. As a result the rates charged by external advisors to the incubators through this arrangement are more cost effective than if the incubator managers were sourcing these skills by themselves.

Another advantage is that the quality of monitoring and business assistance is centralized to the funder, thus quality control can be standardized across incubators, irrespective of the sector in which they operate.

However, in practical terms this arrangement could remain problematic for the incubator manager, for several reasons:

- The incubator managers find the comprehensiveness of assistance mismatched with the kind of incubatee selected to participate in the incubation programme. As discussed in incubatees selected to participate in the incubation programmes have skill levels and educational backgrounds that at the start of the programme are rather sub-optimal. In order to help these incubatees to reach graduation (i.e., not to exit the incubation programme through forced attrition), monitoring and business assistance services need to be administered at a higher frequency and at a more personal level than what is currently available from the funder. This implies that the economies of scope and scale employed by the funder through administrating business assistance and monitoring by use of external consultants are not aligned with survival of the fittest selection

strategy. It could be argued that the incubator managers practically require monitoring and business assistance to be under category 4 of Figure 6.1 The researcher agrees with Bergek and Norrman (2008) and Rice (2002), that there are incubatees who are not in essence ready to be incubated. Rice (2002) terms these incubatees “long shots” and argues that the intensity of the co-production relationship should not be higher for this cohort since they are not ready to absorb the benefits of the incubation process.

Incubator managers in technology-rich industries argue that centralization of consultation skills to the funder removes from them any flexibility needed to obtain the best skills the industry has to offer and so ensure a successful incubation process. They argue that the skills available through external consultants is below industry standard, thus operating in category 1 to 3 of the incubator configuration matrix given in. The incubator managers acknowledge that in order to succeed they require highly qualified consultants who operate in category 4 business assistance Table 6.1.

6.1.3. Resource munificence

As discussed in the literature study, resource munificence is the exercise of an option (by the incubator) to allot incubatee-specific resources that enable the incubatee to conceive and implement strategies that improve its efficiency (Hackett & Dilts, 2008). Furthermore, this construct was broken up into tangible and non-tangible resources, as the researcher considered tangible resources to be those received from within the incubator and non-tangible resources to be networks which link the incubator to the industry eco-system or value chain. The

dimensions offered by Hackett and Dilts (2008) to measure this construct were availability and usage of these by the incubatee.

Availability and utilization of tangible resources offered by the incubator

All of the incubators provided tangible resources to the incubatees at rates lower than the market price. These resources included availability of space, workshops, equipment, access to the internet and computers, all of which were maintained by the incubators. Most of the respondents confirmed that these resources were charged at cost to the incubatees, and most were available to both the resident and non-resident (virtual) incubatees. Prevalence of these resources was expected since the presence of these resources have in the main been synonymous with the term business incubation (Aernoudt, 2004; Aerts, Matthyssens & Van der Bempt, 2007; Grimaldia & Grandia, 2005.)

Only one respondent in the technology reich industry sector complained about the non-existence of a well-equipped laboratory, which was crucial to the testing of prototypes or samples created by the incubatees. Nine out of ten incubators qualified for category 2 of the evaluation matrix, hence the dominant mode is the presence of comprehensive resources to be able to prepare and evaluate incubatees' products and services. According to the incubator managers these tangible resources are utilized by the incubatees. There is an inherent limitation to determining the degree of utilization of resources, which cannot be adequately determined based solely on the view of incubator managers. A study of including incubate responses, as well as looking through secondary data on spend items from the incubator annual reports would add reliability to the data.

Availability and utilization of non-tangible resources offered by the incubator

Most incubators were aware of the importance of having access to networks, however only three out of 10 respondents affirmed existing relationships by use of examples. Of those three incubators who were actively participating in the business-incubator ecosystem through their networks, all had more than five years working experience in the industry sector and had worked at the incubator for no less than the same number of years. They provided a direct market entry strategy through understanding the value chain and being able to leverage that understanding to seek, evaluate opportunities for their incubatees. A clear market entry strategy is part of the incubation development plan agreed upon after selection into the program.

Recently there has been an evolution to a new incubator model, the 'networked incubator,' which is a hybrid form of the standard business incubator (BI), based on territorial synergy, relational symbiosis, and economies of scope to enable incubatees to advance their market entry strategies through leveraging these factors (Bollingtoft & Ulhoi, 2005). The relative novelty of this evolution in business incubator theory globally is completely eclipsed by the relative novelty of the incubator industry (formally legislated in 2004) to South Africa. As this theory and its dimensions are well understood globally the South African incubator industry will lag behind these developments. Evidence of this is that the funder did not see this competency as fundamental to the suite of competencies required when searching for incubator managers. The dominant view (70%) of the incubator managers did not provide this service, hence that means the dominant mode is *that limited or no relationship exists between the business incubator and its eco-system*

This was surprisingly similar to the finding in Rice's (2002) study, in which all of the eight incubator managers acknowledged the importance of networking yet all responded that they had gained very limited if any traction in this aspect of the incubation process.

6.1.4. Visual representation of answer to research question 1

Utilising the framework presented in the introduction to this chapter, the dominant practices employed in the government funded incubators can be mapped to give the results in Table 6.3 below.

Table 6.3 Dominant incubator process configuration

Selection	Monitoring and business assistance intensity		Resource munificence	
Strategy	Monitoring /Guidance/Mentorship	Business assitance	Tangible	Non -tangible
Survival of the fittest, entrepreneur	Incident based counseling	Generic assistance, no strategic or technical consultation	Co-location and admin facilities	Limited or no industry relationships
Survival of the fittest, idea	Incident based counseling	Affordable generic & technical assistance	Co-location, admin facilities, Comprehensive tools e.g. including equipment	Participate in industry forums, known but not actively leveraging networks to create competitive advantage
Picking the winner, idea	Periodic counselling	Industry standard generic & technical assistance	Co-location, admini facilities, Comprehensive faciliteis to develop, test commercial product	Industry relationships governed by memorandum of understanding, that provide competitive advantage
Picking the winner, entrepreneur	Aggressive continual counselling	Tailoured mediation & availability of world class strategic and technical consultation	Co-location, admin facities,World class resources to develop,test commercial product	Industry relationships governed by structured agreements

6.2. Effectiveness of dominant incubator process configurations

The incubation process is a transformation process and it is concerned with transforming new ventures into successful and growing enterprises. Overall effectiveness of the transformation process can be determined by the extent to which the different subsystems are aligned with each other (Cummings & Worley, 2009). In other words, effectiveness is achieved when a relative degree of congruence, alignment or fit exists between each pair of organisational components (Nadler & Tushman, 1980).

The question of effectiveness will be answered in two parts, firstly alignment or fit will be discussed, then evidence of performance based on soft measures of performance will be used to support conclusions about effectiveness.

Business incubator performance includes recognition from the enterprise development community in the form of accolades as well as analysis of the successful implementation of the graduation policy, with specific focus on adherence to the policy outputs and how the process caters with failure.

6.2.1. Alignment of resource munificscence to selection strategy

As discussed to chapter 5 a result of the low barriers to entry and the abundance of under-educated and under-exposed entrepreneurs, has created several challenges for the incubators. The main arguments advanced were firstly that the low barriers to entry had resulted in over-subscription to the incubation programme by under-motivated entrepreneurs. Secondly, there are several

sectors where the incubator process is required to be effective in providing value-add services to a distinctly different incubatees (under-educated versus well-educated incubatees) using the same set of resources available to the process.

The selection strategy of survival of the fittest and idea assumes that natural attrition will occur when resources are scarce and that the tangible resources can be used to develop and test the idea.

As discussed in section 6.1.3 , *fairly comprehensive tangible resources* are made available at cost price to all incubatees. The availability of tangible resources in government-funded incubators in South Africa is aligned with the selection strategies employed, for the following reasons:

The incubatees in the programme have limited access to financial resources and thus benefit from the cost structure offered for access to the resources.

The new ventures have access to minimal human capital and thus there is limited time and knowledge to secure access to suitable resources at a single location.

Irrespective of the selection strategy employed by incubators, access to networks that enable the new venture to gain market entry advantage are viewed as critical to the sustainability of that new enterprise by both the incubator managers and the incubatees (Bollingtoft & Ulhoi, 2005; Rice, 2002).

As identified in section 6.1.2, this is an area for development for the West and more so an area of development in emerging markets, in which most incubatees do not have an understanding of the eco-system (due to under-education and under-exposure). Worse, they do not have relationships that would enable them

to access meaningful opportunities in the eco-system. Building relationships takes time away from the new venture, at the initial stage, and with little human capital this responsibility would rest solely on the incubate.

The lackluster performance of government-funded incubators in this aspect of the incubation process and its impact on incubator performance is possibly one of the most important aspects that could be influenced without massive capital outlay on the part of the funder. The researcher did not find literature on this aspect of the incubation process in this context and thus argues that greater understanding of the relationship between the networked incubator and incubation performance benefit immensely from future research. Non-tangible resources are in the main unavailable to the incubator, thus this aspect of the incubator process is not aligned with the needs of the incubators selected for the programme.

6.2.2. Alignment of monitoring and business assistance intensity to selection strategy

The most important aspect of monitoring and business assistance is the guidance part of the incubation. As the incubators are mainly under-educated, the incubator must provide comprehensive monitoring and business assistance (otherwise known as mentorship) through comprehensive mentoring.

As evident from section 6.1.3, the time intensity of monitoring (as provided by external advisors) is not commensurate with the needs of the incubatees, since they need just-in-time and increased contact time. The new knowledge also needs to be reinforced regularly so that the lessons from the managers can be entrenched. The training programmes offered by the incubators are well developed and do provide adequate business assistance to the incubatees.

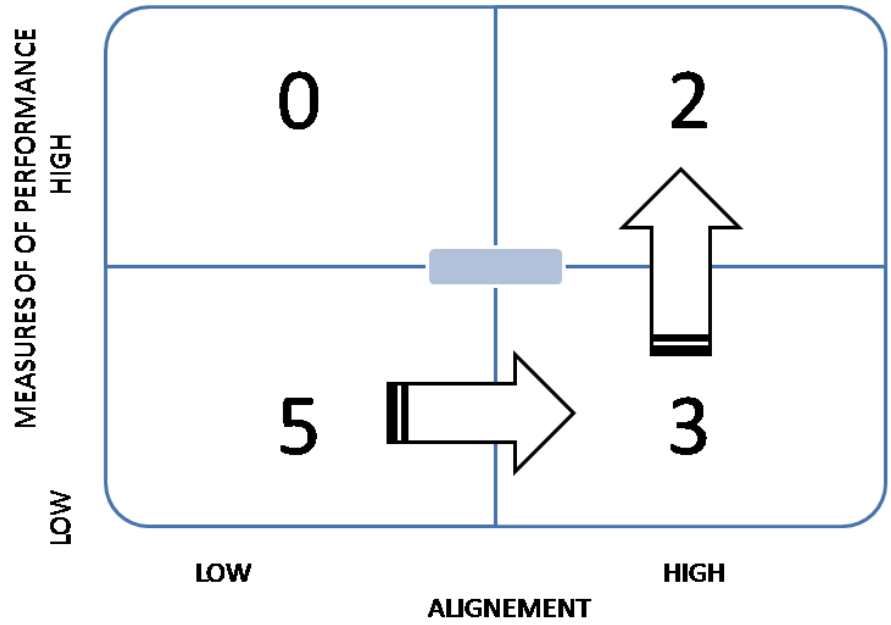
However, one could argue that for a process of natural attrition that would reduce the numbers of incubates, and so rationalize costs that would otherwise be incurred as a result of over-subscription to incubation programmes by these incubatees. The lack of flexibility of the model to recognize what Rice (2002) refers to as “stars” is in itself destructive to the overall performance of the incubator.

Thus, the type of monitoring offered by the business incubators in government-funded incubators in South Africa is not aligned with the selection strategies employed. The opposite can be said about the business assistance intensity which is offered through the development process.

6.2.3. Effectiveness of the configurations

The results of effectives can be summarized in the two by two matrix below (Figure 6.1). These soft measures described by Voiseyand Gornall (2006),together with facilitation of quick and cheap cessation argued by Lazo Lazo *et.al*, (2009) and Hackett and Dilts, (2008),are utilized as indicators of good performance for this of study. Good performance scores one and bad performance scores a zero. The score for alignment is arrived at through deduction of fit (Cummings and Worley 2009) of the two other elements (resource munificence as well as monitoring and business assistance intensity) to the selected incubatees as per definition discussed by. A good fit scores a one and a bad fit scores a zero.

Figure 6.1 Alignment and business incubator performance matrix



Three out of 10 incubators exhibited indicators of alignment, however they had not received recognition from their peer communities. For three out of 10 incubators, there was misalignment between the provision of non-tangible resources and the comprehensiveness of mentorship offered to the incubatees selected. On the other hand, there was alignment with the comprehensiveness of the training programme and the availability of tangible resources offered to the incubatees selected. This represents a mixture of determinants of effectiveness of the incubation process. By actively addressing the alignment shortcomings, these could move from the quadrant of low performance and low alignment to at least obtain a good score on alignment. It is hoped that by doing so good performance will start to follow.

7. CONCLUSION AND RECOMMENDATIONS

This chapter highlights the main findings of the research and makes recommendations to funders and founders of business incubators, such as SEDA, who have a government mandate to assist small businesses. This chapter also proposes recommendations for future research.

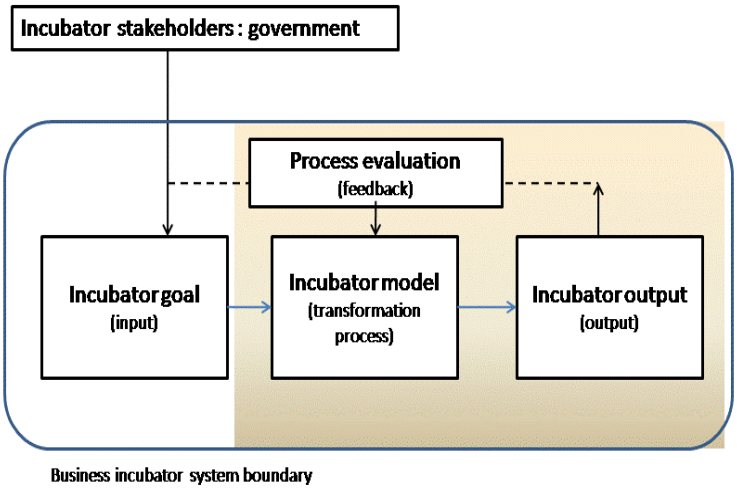
7.1. Research objectives and findings

The research findings are stated in the context of the research objectives stated in chapter 1. For ease of reading the objectives are restated first followed by the specific finding.

7.1.1. Research Objective 1: Addition to literature

A modification to the evaluation framework presented by Bergek and Norrman (2008) is presented below (Figure 7.1).

Figure 7.1 Proposed incubator evaluation framework



This evaluation framework illustrates the following:

- The outputs of the incubator process evaluation based on congruence or alignment can be used to inform incubator model improvements for an incubator.
- The goals of the incubator should inform the transformation process, but through isolation of the process itself, comparison of effectiveness can be made amongst incubators in different sectors.

By focusing the study on incubator process effectiveness, the inputs and outputs of the transformation process were discussed only with respect to their impact on the process.

An argument was advanced that good incubation process performance relies requires alignment of incubator process elements Thus best practice is defined as that which aligns to the needs of the selected incubatees.

7.1.2. Research Objective 2: Normative insights about incubator process effectiveness

An incubator process configuration option framework was proposed from the integration of existing literature and the data collection framework. This will aid practitioners to be able to complete a self-evaluation in order to map their own incubator process configurations and selection strategies.

The normative insights can be deduced from understanding the relationship between incubator process element alignment or congruence and performance as discussed in figure 7.2.

Though limited, this matrix is the starting point of developing an empirical framework for incubator evaluation studies.

7.1.3. Research Objective 3: To minimise dead-weight factors

An attempt at eliminating the impact of dead weight factors in evaluating effectiveness of government funded business incubators was made through focusing the study on the incubator process, such that incubator context factors that would influence performance are not included in the scope of this study. This objective was only partially met, as other contextual factors besides selection were not considered in this study of the incubator process effectiveness

The main findings from the data collection process are as follows:

- Selection strategies: 70% of incubators utilize the selection strategy based on survival of the fittest and idea strategy. Evidence of this is that barriers into the incubators are rather low for most sectors, except for high-tech businesses.
- Business monitoring and assistance: Eight out of ten incubator managers' view were negative towards over-dependence of business monitoring and assistance on external service providers. This is primarily because external service providers contracted directly to SEDA provide periodic intervention to the incubatees and are thus not able to build rapport with them.

- Resource munificence: Ten out of ten incubatees have access to discounted tangible resources, such as joint office space, telephone, and grants for productive inputs that are accessed from the incubator site.

- Seven out of 10 incubators do not provide access to networks for the incubatees. If the relationship exists at all, they are dominated by verbal agreements with stakeholders.

Upon mapping these results (based on the configuration matrix introduced in section 6.1) It was seen that only three out of 10 incubators displayed characteristics of being fully aligned with the needs of the incubatees. Only one incubator mentioned having received accolades from the SME development community for their incubation programme. The other two had not, but it is expected that these will start to become the new stars in the incubator cohort. The rest of the incubators were firmly in the quadrant of low alignment.

7.2. Recommendations to stakeholders

Stakeholders include the funder, incubator managers, national incubation and SME assistance associations. Two key recommendations are made:

7.2.1. Survival of the fittest

Incubator managers are bound by the mandate of the funder to select incubatees with low levels of entrepreneurial orientation and skills, which partially mimicks the survival of the fittest selection strategy. This is only a partial compliance because there is no process of attrition that sees to it that only the fittest entrepreneurs survive and graduate out of the incubator. One could argue that the incubators allow the markets to play this role by keeping weak and struggling

firms in the process and eventually graduating them due to the time they have spent in the incubation process.

A first recommendation is that the agencies introduce attrition in the incubation process, or to increase the selection criteria into incubation process. Introduction of attrition would be able to kick out ventures which are not able to keep up with the incubation process. This could be done through introducing competition for access to the other two dimensions of the incubators in a fun and exciting manner. This would deliberately develop some aspects of entrepreneurial orientation, such that the cohort of incubatees that graduate would be the fittest to survive the incubation process.

This would open up avenues for the development of structured pre-incubation program that would aim to transform these incubatees to incubator ready nascent entrepreneurs.

7.2.2. The networked incubator

Instead of only implementing incubation models based on old models from the West, SEDA should place more emphasis on understanding the benefits of this new space in incubation process configurations and using its position as a state owned company to lead the pace of collaboration in SME development to aggressively pursue private public partnerships that advance the building of symbiotic relationships in the eco-system.

The “networked incubator”, is a hybrid form of the standard business incubator (BI), based on territorial synergy, relational symbiosis, and economies of scope to enable incubatees to advance their market entry strategies through leveraging these factors (Bollingtoft & Ulhoi, 2005). This requires new skill sets from

incubator managers, and it is in the interest of the agency to start developing these in business incubator managers of the future.

This model is successfully practiced in innovation nodes such as Silicon Valley in San Francisco, where start-ups are nurtured through exploitation of territorial synergies and business incubation. It would be worthwhile for the agency to start developing relationships with such nodes in order to make meaningful advances towards their mission of nurturing new enterprises and so create jobs in this emerging economy.

7.3. Recommendations for future research

It would be interesting to understand the relationship between this high variability of incubatees' entrepreneurial orientation characteristics as well as skills level in the incubator and how the incubator can foster a culture of collaboration within the incubator.

The relationship between the culture of fear of failure and Total Early-stage entrepreneurial Activity (TEA) rate has been established by the GEM consortium however the relationship between this behaviour and obstacles to implementation and the incubation program to meet the objectives highlighted in incubator mission should be explored.

There researcher proposes a study that aims to describe the relationship between a country's entrepreneurial culture and networking in the business incubator eco-system. The incubator eco-system comprises the relationship between funders, government, angel investors and venture capitalists, universities and media.

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APPENDIX 1: EXERPT FROM NATONAL SMALL BUSINESS AMENDMENT ACT 29, 2004

2. The following Chapter is hereby substituted for Chapter **3** of the principal Act:

"CHAPTER 3

Small Enterprise Development Agency

Establishment of Small Enterprise Development Agency

9. (1) The Small Enterprise Development Agency is hereby established as a juristic person.

(2) The Public Finance Management Act, 1999 (Act No. **1 of** 1999), applies to the Agency.

(3) The Agency acts through its Board.

Objectives of Agency

9A. The objectives of the Agency are to—

(a) design and implement development support programmes;

(b) promote a service delivery network that increases the contribution of small enterprises to the South African economy, and promotes economic growth, job creation and equity; and

(c) generally, strengthen the capacity of—

(i) service providers to support small enterprises; and

(ii) small enterprises to compete successfully domestically and internationally.

APPENDIX 2: CONSISTENCY MATRIX

RESEARCH QUESTIONS	LITERATURE REVIEW	DATA COLLECTION	ANALYSIS
What are the dominant business incubator process configuration modes practiced in government funded incubators in South Africa?	Refer to Figure 2.3	Question 3.1 Question 3.2 Question 3.3	Content analysis Frequency analysis
Are the dominant incubator process configuration modes in government funded incubators in South Africa effective?	(Cummings & Worley, 2009) (Nadler & Tushman, 1980) (Hackett & Dilts, 2008) (Schwartz M. , 2008) (McGrath, 1999) (Hofer & Sanderberg, 1987) (Lalkaka, 2003)	Question 2.1 Question 2.2 Question 2.3	Content Analysis Frequency Analysis

APPENDIX 3: INFORMED CONSENT LETTER AND INTERVIEW GUIDE

Informed Consent Letter

I am conducting research on effectiveness of incubator processes. I am trying to find out about the effectiveness of incubator processes employed in government funded incubators. Our interview is expected to last about an hour, and will help us understand the challenges faced by government funded incubators in South Africa. Your participation is voluntary you can withdraw at any time without penalty. Of course, all data will be kept confidential. If you have any concerns, please contact me or my supervisor. Our details are provided below.

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PROPOSED TITLE OF STUDY	Evaluation of effectiveness of government-funded business incubators emerging markets: The South African Perspective
RESEARCH SUPERVISOR	Elana Swanepoel
E-MAIL OF SUPERVISOR	swanee1@unisa.ac.za

Signature of participant: Date

Signature of Researcher : Date:

1. Incubator and respondent profile

1.1. Please provide describe the role that you play in this business incubator

1.2. Which Industrial Sector does the incubator serve?

1.3. How long has the incubator been in operation?

2. Incubator performance

2.1. What is the Institutional mission of the incubator?

2.2. Describe the graduation criteria and how the incubator has been performing in this regard.

2.3. What is the average Incubation Period? Has the incubator received recognition from SME development community

- Has the incubator won any awards?
- Have incubatees in your incubator won any awards

3. Incubator process model configuration

3.1. Selection Strategies

- How do you select applicant (i.e. new venture) to participate in the incubation program?
- What is your feeling about how your selection strategy fits into the institutional objectives highlighted in question 1?

3.2. Monitoring and business assistance intensity

- Tell me more about the kind of mentorship offered in the incubation process
- Describe the kind of business assistance offered by the incubator?
- How is contact time initiated?

- Probing question ...what would you categorise the kind of assistance as strategic or operational?

3.3. Resource Munificence

- What kind of resources are available to the incubatee as part of the incubation program. Please elaborate on availability and quality of the resources .
- Access to Networks
    - Tell me more about the networking aspect of the incubator.... do you provide access to networks in your incubator?Do these networks provide a strategic advantage to the incubatee
    - Through your networks are you able to provide access to markets for the incubatees?