University of Pretoria

Networking skills of government-funded incubator managers as perceived by incubatees

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

9 November 2011

Abstract

The link between entrepreneurship and economic growth is well-established. Incubators aim to stimulate entrepreneurship, and one of the factors which contributes to effective incubation is networking.

Previous research on the role of networking in entrepreneurship has not focused on how incubatees experience the incubator managers' networking skills and how these skills contribute to the performance of the incubatees' ventures while in incubation. The main purpose of this research was to evaluate the contribution of the networking skills of government-funded incubator managers, as perceived by incubatees, to effective incubation. Networking skills were defined as the provision of access by incubator managers to their networks, to incubatees, as well as the facilitation of collaboration by incubator managers between their networks and incubatees.

A quantitative study was performed, using a questionnaire to determine incubatees' perceptions of the various networking skills of the relevant incubator managers, as well as the incubatees' growth in sales. The population of the study consisted of 565 incubatees currently in incubation at government-funded incubators in South Africa who had access to the questionnaire, and a response rate of 18.4% was realised. The results indicated highly significant correlations, at the 1% level of significance between the networking skills of government-funded incubator managers, as perceived by incubatees, and effective incubation.

Keywords

Entrepreneurship, government-funded incubators, incubation, mentorship, networking.

Declaration

I declare that this research 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 for any degree or examination at any other university. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Aniel Caro de Beer

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Date

Acknowledgements

This research project is dedicated to all the incubator managers and incubatees across South Africa who participated in this research and was willing to share their stories with me. Your passion and dedication is humbling and inspiring, and served as a reminder of the great entrepreneurial potential of South Africans.

To my supervisor, Prof Elana Swanepoel, for her dedicated, expert guidance and uncompromising standards. Elana, it has been a pleasure working with you and hope our paths cross again someday.

To my statistician, Dina Swanepoel, for her hard work and insight.

To my dear friends Suzel and Philip Hechter - you were one of the best parts of this MBA and I know you will soar in whatever future endeavours you embark upon. May the road always rise up to meet you.

To GIBS, I am not the same person I was when I started. Thank you for the new world and new possibilities – I will make the best of it.

Lastly but most of all, to almost-doctor Izaak Coetzee, for his unwavering and unselfish love, support and encouragement. I could not have done it without you.

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1.1 Introduction

The number of unemployed people worldwide reached nearly 212 million in 2009 and global unemployment remained high in 2010 (Somavia, 2010). In the third quarter of 2010, unemployment in South Africa was recorded at 25.3% and gross domestic product (GDP) growth at 2.6% (Statistics South Africa, 2011). There is a correlation between economic growth and unemployment – where there is no economic growth, there are fewer employment opportunities (Audretch & Thurik, 2001). The South African government's New Growth Path has set a target of creating five million jobs in the next ten years, which is aimed at substantially reducing unemployment from 25.3% to 15% in 2021 (South African Government Information, 2011). However, the South African economy would have to more than double its 2010 growth rate in order to compensate for the high levels of unemployment (Urbach, 2010).

The link between entrepreneurship and economic growth has been explored as far back as 1934 (Schumpeter, 1934), and since then various studies have highlighted this correlation (Timmons, 1999; Foxcroft, Wood, Kew, Herrington & Segal, 2002; Scheepers, Solomon & De Vries, 2009; Audretch, Bönte & Keilbach, 2008). According to the Department of Trade and Industry (2010), promoting Small, Medium and Micro Enterprises (SMMEs) are critical in order to contribute to economic development and job creation. In this regard, business incubators, as dynamic tools for growing new ventures, contribute greatly to job creation and economic development (Campbell, 1989; Chandra & Fealy, 2009).

A business incubator can be described as "a shared facility that provides its incubatees with a strategic, value-adding intervention system of monitoring and business assistance" (Hackett & Dilts, 2004, p. 57).

According to Bøllingtoft and Ulhøi (2005), incubators offer the services set out in Table 1.

Table 1

Resources and Opportunities Offered by Incubators

Incubators:

- provide a sheltered environment for young, growing firms;
- help the firm indirectly by placing an entrepreneur in an environment with his/her peers, providing social inputs, resources (network) and psychological support across and between tenants;
- help firms directly through affordable rents and services, and equipment that would otherwise be unavailable or unaffordable, for example:
  - office and communications services, such as typing, copying and answering the phone;
  - business services, such as business and financial planning; and
  - facilities and equipment services, including a reception area, conference rooms and computers;
- can assist entrepreneurs to obtain legitimacy, as incubation in a well-known incubator enhances the tenant's visibility and credibility; and
- can assist incubatees with financing, either by investing in the ventures themselves or by arranging contact with potential investors.

Source: Adapted from Bøllingtoft and Ulhøi (2005)

SMMEs in incubation are generally referred to as incubatees. According to Buys and Mbewana (2007), business incubation was first introduced in South Africa in 1995 when the Small Business Development Corporation established premises in African townships, providing access to infrastructure such as

electricity and telephones – so-called “hives of industry.” Since then, there have been various initiatives to stimulate incubation.

The Small Enterprise Development Agency (SEDA) technology programme (STP) was established on 1 April 2006, stemming from the South African government’s decision to consolidate small enterprise support interventions across different government departments and agencies.

According to the STP Annual Review (2010), 244 new SMMEs and 6 778 jobs were created through its 30 incubators over the 2009/2010 financial year, and the STP has ensured that 80% of businesses supported via incubation “survive the first year of operation” (p. 7). However, there is little public information available from the SEDA or the STP regarding the growth rate of the relevant SMMEs while in incubation (SEDA, 2010; STP, 2007; STP, 2008; STP, 2009; STP, 2010).

Some authors have argued that not all business incubators are successful (Buys and Mbewana, 2007). In a study on the success factors for government-funded business incubation in South Africa, the aforementioned authors found that several factors influence the success of a business incubator, namely “access to science and technology expertise and facilities, a comprehensive business plan, stringent selection criteria, the availability of funding, quality of entrepreneurs, stakeholder support, supportive government policies, competent and motivated management, financial sustainability, an experienced advisory board and networking” (p. 9). This research will specifically explore the influence of the networking skills of government-funded incubator managers on effective incubation, as perceived by incubatees.

1.2 Research Problem

In the 2009/2010 financial year, the STP received the following funding in order to support business incubation: R10 million from the Department of Trade and Industry, R20 million from the South African government's Sector-Wide Enterprise Employment Equity Programme, R20.5 million from the SEDA and R68.3 million from the National Treasury (STP, 2010).

However, Buys and Mbewana (2007), in their findings pursuant to a study performed on the South African government incubation agency or GODISA (later incorporated into the STP), found that not all government-funded business incubators in South Africa are successful. Numerous possible success factors for business incubation in general have been evaluated in literature (Autio & Klofsten, 1998; Finer & Holberton, 2002; Smilor, Gibson & Kozmetsky, 1989; Wright, Hmieleski, Siegel & Ensley, 2007). One of the factors identified as influencing the success of business incubators was networking (Buys & Mbewana, 2007).

According to Buys and Mbewana (2007), networking is particularly significant in expanding market opportunities for entrepreneurs and incubator graduates. Lewis (2001) agrees that networking opportunities is a critical component of successful business incubation. Weinberg, Allen and Schermerhorn (1991) are of the view that business incubators are "interorganisational phenomena" which require special managerial attention to achieve interorganisational cooperation. In this regard, these authors found that networking is of paramount importance.

1.3 Purpose of Research

In light of the above, the aim of this research is to investigate the networking skills of government-funded incubator managers, as perceived by incubatees, and to evaluate the contribution of these networking skills to effective incubation.

The research objectives are:

- to evaluate the contribution of the existing networks of government-funded incubator managers (as perceived by the incubatees), measured as the provision of access to the networks of the incubator managers, to effective incubation; and
- to evaluate the contribution of the networking skills of government-funded incubator managers (as perceived by the incubatees), measured as the facilitation of collaboration between networks and incubatees, to effective incubation.

Effective incubation is defined as the growth in sales of the incubated venture from date of incubation to date of completion of the questionnaire attached hereto as Annexure A.

Accordingly, the topic of this research is the networking skills of government-funded incubator managers, as perceived by incubatees.

1.3 Motivation for Research

While numerous possible success factors for business incubation have been evaluated in literature (Buys & Mbewana, 2007; Finer & Holberton, 2002;

Gartner, Starr & Bhat, 1999; Autio & Klofsten, 1998; Smilor, Gibson & Kozmetsky, 1989), the extent to which the networking skills of government-funded incubator managers, as perceived by incubatees, contribute to effective incubation, has not been investigated.

Although Weinberg, Allen and Schermerhorn (1991) argued that the networking skills of incubator managers are of importance for effective incubation, these authors did not evaluate how the incubatees experienced their incubator managers' networking skills and how the incubator managers' networking skills contributed to the performance of the incubatees' ventures while in incubation. Wong, Cheung and Venuvinod (2005) discussed networking in the context of the founders of entrepreneurial ventures and Wu, Wang, Chen and Pan (2008) found that the competitiveness of high-technology start-up firms is determined by, amongst other factors, networking with support firms.

Davidsson and Honig (2003) as well as Zhang, Souitaris, Soh and Wong (2008) examined the effect of entrepreneurs' human capital on their propensity to network. Evald and Bager (2008) analysed network dynamics and political rivalry in corporate incubators, while Klyver, Hindle and Schøtt, (2007) found that individuals' social networks influences their entrepreneurial intentions.

Scillitoe and Chakrabarti (2010) explored how business and technical assistance for new technology-based firms within business incubators could be improved by way of counselling and networking interactions with incubator management. The aforementioned research focused on the enabling of business assistance to incubatees through counselling by incubator managers, and the promotion of technical assistance to incubatees through networking

interactions between incubatees and incubator managers. However, the aforementioned authors did not analyse how counselling and networking interactions between incubatees and incubator management affected effective incubation, as perceived by the relevant incubatees.

Ulla and Katja (2007) found that when the available time and intensity of counselling by incubator managers decrease, it negatively influences the survival probability of supported firms. In addition, these authors found that with the increasing age of a relevant business incubator, incubator managers get more involved in the managerial duties of running an incubator and has less time for focused counselling and the provision of support to incubatees. The aforementioned authors did not specifically focus on the access-providing and collaboration-facilitating networking skills of government-funded incubator managers, as perceived by incubatees, or the contribution of these networking skills to effective incubation.

This research will examine the contribution of the networking skills of government-funded incubator managers, as perceived by the incubatees, to effective incubation. It is submitted that this research contributes to the existing literature as regards networking and government-funded incubators, as it does not only focus on networking in entrepreneurship, but also evaluates the impact of the networking skills of government-funded incubator managers on effective incubation.

It is further submitted that this research has business value in that the results of this study could help to improve effective incubation in government-funded incubators by highlighting the important contribution of networking skills. This

could in turn encourage incubator managers to expand their networks and to provide incubatees both with access to these networks as well as to facilitate collaboration between incubatees and members of these networks.

1.5 Scope of Research

The scope of this research will be limited to the approximately 565 incubatees currently in incubation at the 30 non-profit government-funded incubators in South Africa supported by the STP who had access to the relevant questionnaire. This study will not include private incubators or for-profit incubators.

1.6 Structure of the Research Report

This research report will be structured as follows:

Chapter 1: Introduction to research problem

Chapter 2: Literature review

Chapter 3: Research questions

Chapter 4: Research methodology

Chapter 5: Research results

Chapter 6: Discussion of results

Chapter 7: Conclusion

2 CHAPTER 2: THEORY AND LITERATURE REVIEW

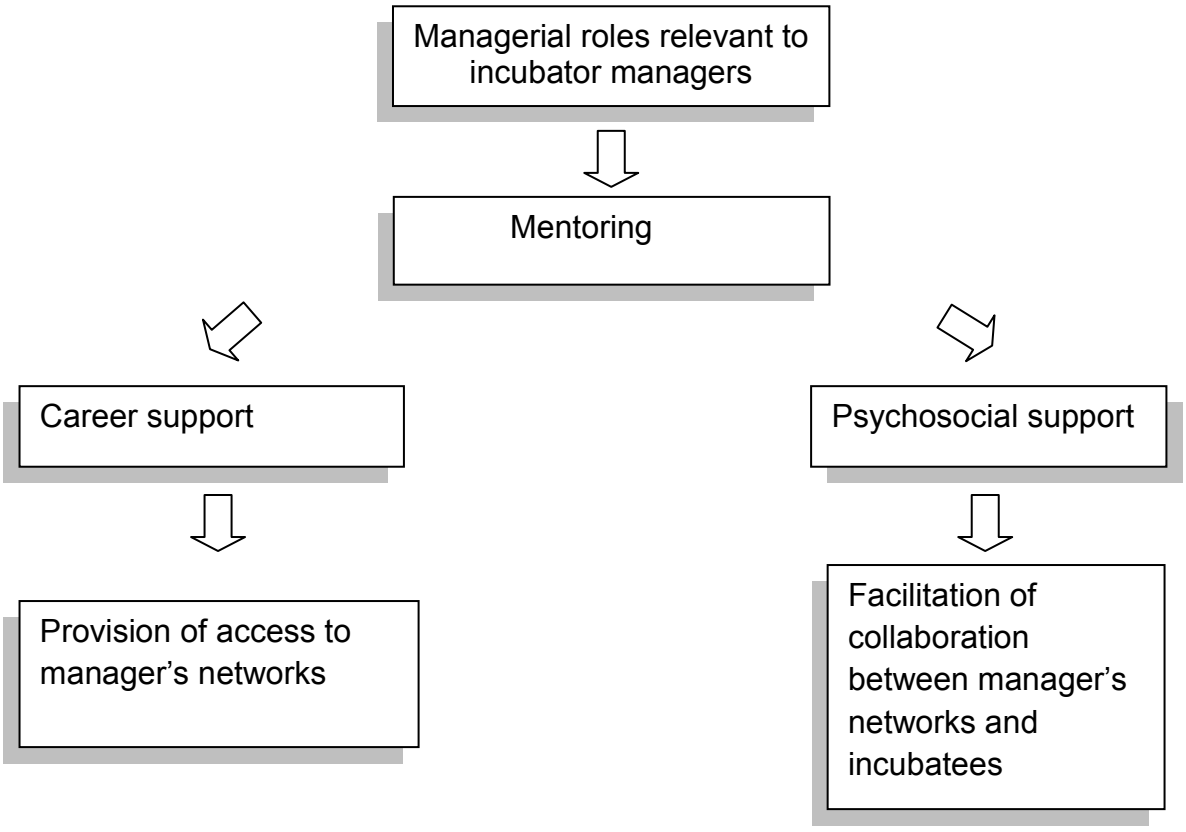
2.1 Introduction

According to Fischer (2010), a literature review is conducted to critically assess the existing body of knowledge as regards the constructs of the proposed study, and to assist the researcher to build on the existing body of knowledge. Echambadi, Campbell and Agarwal (2006) posited that constructs are the basic building blocks which connect theory development to testing. The literature reviewed in this section will therefore assess the basic secondary evidence supporting and explaining the relevant constructs of this proposed study.

The sequence of the literature review is illustrated in Figure 1 below:

Figure 1

Overview of the Literature Review



Various subheadings will be used to divide the literature into certain relevant areas, namely managerial roles, mentorship, networking, the measurement of effective incubation and South African government-funded incubators.

These headings have been used to establish the importance of networking skills in the entrepreneurial context. Firstly, the importance of the managerial role will be discussed and it will be evaluated whether there is a difference between traditional managerial roles and the managerial roles of entrepreneurial managers, such as incubator managers. Mentorship as a necessary managerial role for incubator managers will then be explored, including the provision of career and psychosocial support, whereafter the role of networking in entrepreneurship will be evaluated as part of the career development dimension of mentorship. Networking in entrepreneurship will be explored with reference to the external organisational field. Lastly, the measurement of effective incubation as well as South African government-funded incubators will be discussed.

2.2 Managerial Roles Relevant to Incubator Managers

According to Drucker (2001), not knowing how to manage is the biggest reason for the failure of new entrepreneurial ventures. Lewis (2001) added that the manager is a critical factor in the success of an incubator, and that an incompetent incubator manager can lead to the failure of an incubator despite all the best practices being in place.

Buys and Mbewana (2007) found that competent and motivated management is one of the success criteria for business incubation. The aforementioned authors established that the quality of the management team affects the success of the

business incubator – incubator managers should not only have a business background, entrepreneurial skills and good leadership skills, but also be well-networked in the business community. The aforementioned authors were of the view that competent managers should be recruited to manage incubators and these managers should be offered incentives to reward outstanding performance.

Rice (2002) found that significant gaps exist in knowledge, competencies and resources of both incubator managers and incubatees. The aforementioned author advocated proactive incubator management where the incubator manager drives the flow of knowledge, competencies and resources to the incubatees. One of these resources is the incubator manager's community "know-how network" (Rice, 2002, p. 182), which includes bankers, attorneys, accountants, marketing and other consultants, and potential investors. The aforementioned author found that the referral by the incubator manager to a member of his or her network is usually a reactive response to a request by the incubatee for assistance, and advocated that more pro-active measures should be taken by the incubator manager.

Scillitoe and Charabarti (2010) added that incubator management is often central to successful networking of incubatees, and determined that the time allocated to an incubatee, the intensity of interactions with the incubatee and the readiness of the incubatee to accept support are all relevant factors which influences whether the incubator manager will be a beneficial resource to an incubatee. Duff (1994) suggested that development programs should be designed to create relationships of interdependence rather than dependence,

and found that incubator managers should place more emphasis on creating opportunities for entrepreneurs to develop relationships.

Furthermore, incubator management is a primary source of social capital for incubatees, providing knowledge, expertise and access to the network of the incubator manager (Scillitoe & Charabarti, 2010). Burt (1992) argued that social capital can be defined as the value which is generated by social networks, and Sequeira, Mueller and McGee (2007) found a strong association between business network ties (even if these are weak relationships) and nascent entrepreneurial behaviour.

However, according to Morris, Kuratko and Covin (2008), there is a difference between management and entrepreneurship. Management focuses on setting objectives and co-ordinating resources to obtain these objectives. Morris et al. (2008) argued that an effective manager is a "planner, organiser, communicator, coordinator, leader, motivator and controller" (p. 12) and most of all, a facilitator. While a manager focuses on optimising current operations and using technical, human and conceptual skills to transform inputs into outputs, entrepreneurs focus not on what is, but on what can be. Entrepreneurship therefore requires vision, as well as an emphasis on creating the future and identifying untapped opportunities. Accordingly, Morris et al. (2008) argued that, within organisations, managers must become entrepreneurs, and the entrepreneurial manager needs to achieve a balance between traditional managerial roles and entrepreneurship.

Manikutty (2005) agreed that traditional managerial roles may no longer be apposite in a fast-changing modern environment. He argued that, as leadership

is about creating a context for learning and change, a manager's role as a mentor is extremely important.

The question therefore arises how an entrepreneurial manager should mentor his or her employees (or, in this instance, his or her incubatees). Duggan (2010) suggested that there are many different forms of mentorship, which will be discussed in more detail below.

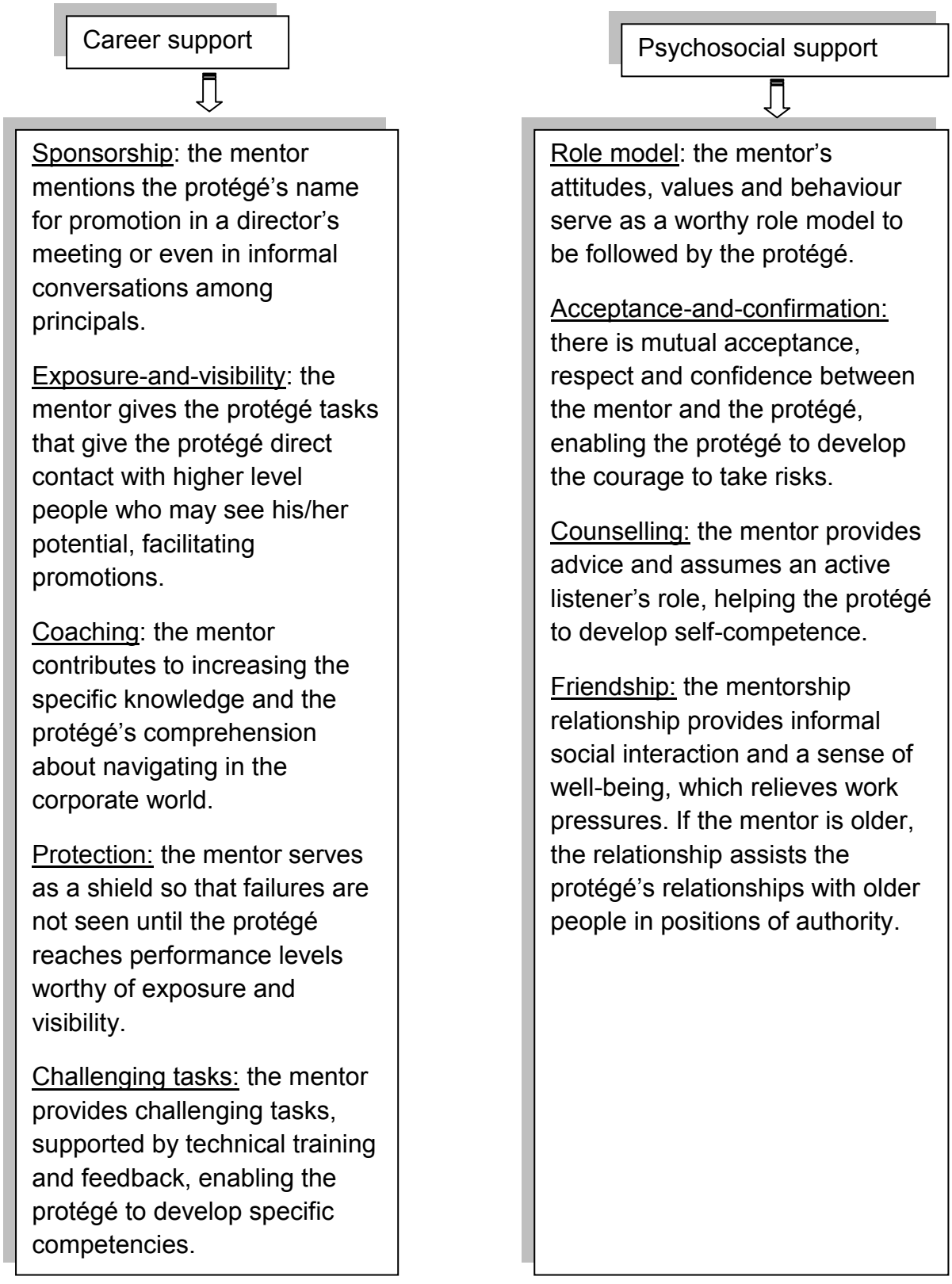
2.2.1 Mentoring

According to Bozeman and Feeney (2007), "mentoring is a process for the informal transmission of knowledge, social capital, and the psychosocial support perceived by the recipient as relevant to work, career, or professional development; mentoring entails informal communication, usually face-to-face and during a sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé)" (p. 731).

Regis, Falk, Dias and Bastos (2007) submitted that mentoring processes take place in incubator environments, which includes the provision of both career support and psychosocial support. From the seminal research conducted by Kram (1985) on the roles and functions of mentors in the corporate environment, the several social and psychosocial functions were identified and are illustrated in Figure 2 below.

Figure 2

Examples of Mentoring Functions in the Corporate Environment



Source: Adapted from Kram (1985)

Duggan (2010) argued that small business leadership, a significant driver of economic growth, can be enhanced by mentoring emerging business leaders. Van Auken, Stephens, Fry and Silva (2006) found that role models influence entrepreneurial intentions, and suggested that greater interaction between business owners and students in entrepreneurship programmes or workshops may contribute to the entrepreneurial intentions of such students.

The importance of mentorship is reflected in the Department of Trade and Industry's National SMME directory (Department of Trade and Industry, 2010a) which provides details for companies offering counselling and support services, advice on managing a business, and "harnessing the business expertise, skills and wisdom of senior business and professional people" (p. 59).

2.2.1.1 Career Support

Regis et al. (2007) agreed with Kram (1985) that the provision of career support by a mentor includes sponsorship, providing exposure and visibility, coaching and giving challenging tasks to help the protégé develop specific competencies. Regis et al. (2007) further argued that career support includes providing protégés or incubatees with access to the mentor's network and facilitating networking between the mentor's network and the protégé.

Zhang et al. (2008) submitted that networking is crucial for entrepreneurs. The aforementioned authors defined social capital as being "the sum of the actual and potential resources that individuals obtain from their direct and indirect ties in social networks" (p. 596) and which can assist entrepreneurs in obtaining capital for new ventures. This view was echoed by Klyver, Hindle and Meyer

(2008), who posited that "social networks (in diverse ways) provide entrepreneurs with a wide range of valuable resources not already in their possession and help them achieve their goals" (p. 332). The aforementioned authors were of the view that networks can provide resources such as information, access to finance, skills, knowledge and advice, and social legitimacy and credibility.

Lin, Li, Yin, Lu and Wang (2008) stated that social capital refers to resources embedded in a specific social structure, made accessible by actions. Networking offers incubatees advice, publicity, credibility, resources and opportunities. They argued that, on the basis of social capital theory, individuals work together better if they know and trust each other. However, the aforementioned authors noted that an entrepreneur's individual ties may not be relevant for the specific entrepreneurial venture in question.

Unger, Rauch, Frese and Rosenbusch (2011) stated that human capital includes education and work experience as well as knowledge and skills acquired by individuals in schooling and on-the-job training. The aforementioned authors found a strong relationship between human capital and entrepreneurial success, partly because human capital increases entrepreneurs' capabilities of discovering and exploiting business opportunities and assists in the acquisition of new skills and knowledge. Zhang et al. (2008) found that human capital (what the entrepreneur knows) affects both social capital (who the entrepreneur knows or the richness of his network) and social competence (how well the entrepreneur communicates), which influences network utilisation (who the entrepreneur chooses for purposes of networking or collaboration).

Davidsson and Honig (2003) found that social capital is strongly associated with the establishment of new firms, while Florin and Schulze (2003) found that social capital provides a new venture with “a durable source of competitive advantage” (p. 374). Adler and Kwon (2002) argued that social capital is the goodwill of others which is available to persons within a social network. From their research results, Scillitoe and Chakrabarti (2010) concluded that networking opportunities created by interactions with incubator management is the primary source of social capital for incubatees.

2.2.1.2 Psychosocial Support

Regis et al. (2007) explored the value of informal networks to incubatees, and proposed that support relationships could occur through a network of mentors. The aforementioned authors refer to the seminal work of Kram (1985), which include being a worthy role model, acceptance and confirmation of trust in the protégé’s abilities, counselling and friendship under the provision of psychosocial support as a mentoring function (Regis *et al.*, 2007).

According to Rice (2002), counselling interactions are direct interactions between the incubatee and incubator management which allows the dissemination of advice, knowledge and resources to incubatees, and informal, ad hoc counselling enhances trust and communication between the incubator manager and the incubatee. Rice (2002) found that effective counselling by an incubator manager includes not only the dissemination of knowledge to incubatees by the incubator manager with regard to, for example, negotiation techniques, but also as regards techniques such as role-playing, sitting in on

initial negotiation sessions and providing on-the-spot advice. The incubator manager should give continuous feedback to incubatees, allowing them to constantly improve their skills. Rice (2002) emphasised that incubator managers should manage in a proactive as opposed to a reactive manner which is aimed at developing the competencies, knowledge and resources of incubatees.

Scillitoe and Chakrabarti (2010) as well as Hackett and Dilts (2004) suggested that business assistance, which includes business planning, marketing, accessing business contacts, financing new ventures and learning about buyer preferences, is best enabled "through counselling interactions with incubator management" (p. 155). Scillitoe and Chakrabarti (2010) determined that business assistance in the form of incubatees learning about buyer preferences is best enabled through counselling interactions with incubator management, and that the strength of the ties between the incubator manager and an incubatee enhances the flow of information, as strong ties lead to more frequent interaction.

It is proposed that counselling can assist in developing another critical attribute required for entrepreneurship, namely social competence, defined by Zhang et al. (2008) as the ability to interact with strangers. Zhang et al. (2008) focused on an aspect of social competence, namely social boldness (the ability to approach and interact with complete strangers) and argued that entrepreneurs' social competence affect their ability to make use of networks. Social competence can be improved with social skills training and during working life (Baron & Markman, 2003).

2.3 Networking

Network-based research in entrepreneurship has been conducted as far back as 1985, when the widely-held view of entrepreneurs as isolated economic actors and entrepreneurship as a process distinct from other social phenomena began to change (Hoang & Antoncic, 2003; Klyver, Hindle & Meyer, 2008, Kram, 1985). Over the years, various authors have researched the role of networking in entrepreneurship (Borch & Arthur, 1995; Davidsson & Honig, 2003; Hackett & Dilts, 2004; Hansen, Chesbrough, Nohria & Sull, 2000; Hoang & Antoncic, 2003; Rice, 2002; Scillitoe & Chakrabarti, 2010; Uzzi, 1996).

In 1991, Weinberg et al. proposed that an incubator should "foster business connections" between incubatees and outside firms, government agencies and "other sources of commercial relevance" (Weinberg *et al.,* 1991, p. 151). In 2002, Rice found that "developing and managing a networking infrastructure is a critical function of the incubator" (p. 176) and Schwartz (2008) noted that access to business networks is one of the significant ways in which business incubators provide support to incubatees. Hansen et al. (2000) posited that the best incubators provide extensive business connections and the incubator manager facilitates access by incubatees to this network.

Furthermore, Rice (2002) argued that the provision of a networking infrastructure by an incubator assists incubatees to overcome liabilities such as lacking credibility and proof of a history of successful operations. The aforementioned author emphasised that if an incubator cannot directly provide resources in those areas where entrepreneurs have gaps, it must connect entrepreneurs through its network to parties who can assist the entrepreneur in

this regard. Lin et al. (2008) agreed that networking in fact means to provide resources in the areas where entrepreneurs have gaps.

In their overview of the evolution of network-based research in entrepreneurship, Hoang and Antoncic (2003) noted that entrepreneurs were progressively more embedded in social networks, while Klyver, Hindle and Meyer (2008) found that the existence of social networks influence entrepreneurial participation, irrespective of the culture of the relevant entrepreneurs. According to Hoang and Antoncic (2003), networks provide access to information and advice. The aforementioned authors argued that existing networks can lead to positive perceptions regarding the legitimacy and potential of an entrepreneurial venture, providing a sense of comfort to other potential resource holders and investors. Hoang and Young (2002) found that entrepreneurs use networks to gather information with regards to possible entrepreneurial opportunities, while Davidsson and Honig (2003) established that networking plays a significant role in contributing to the success of new ventures.

Regis et al. (2007) and Brush, Greene, Hart and Haller (2001) found that an entrepreneur's network plays a crucial role in creating opportunities, providing encouragement and emotional support as well as a platform for the exchange of experiences and knowledge. In addition to the aforementioned, the network provides entrepreneurs with exposure. This view is supported by Scillitoe and Chakrabarti (2010), who added that the incubator manager should provide incubatees with access to a network which can provide knowledge and resources which the incubatee may lack. Evald and Bager (2008) posited that entrepreneurs obtain new information and opportunities through networks and

that entrepreneurship is characterised by the "continuous reconfiguration of personal networks" (p. 352).

However, Zhang et al. (2008) argued that entrepreneurs' individual networks may sometimes be lacking and insufficient. Similarly, Rice (2002) found that in some instances, experts with whom the incubatees are put into contact are less enthusiastic than is desirable, given the lack of immediate financial reward. In addition to the aforementioned, incubatees may not have the necessary skills to take advantage of networking connections, or be unwilling to devote enough time to the networking process.

Rice (2002) proposed that networking opportunities will be enhanced where the incubator manager commits sufficient time to evaluate the commitment of the relevant know-how expert to address the specific needs of the incubatee. Networking capabilities will further be improved where the incubator manager spends sufficient time on developing incubatees' networking capabilities, facilitating the networking relationship between experts and incubatees. Scillitoe and Chakrabarti (2010) found that technical assistance, in the form of the incubatee learning technical know-how skills such as design and production skills, is best enabled through "networking interactions with incubator management" (p. 155).

Accordingly, it is submitted that it is part of the career development dimension of the incubator manager's mentoring role to establish and provide incubatees with access to effective networks from which they can benefit, and that the building of these connections and relationships are crucial to incubatees. Weinberg et al. (1991) were of the view that, like effective general managers, incubator

managers should establish various relationships in a variety of interpersonal networks, including contacts with a manager's subordinates, superiors and peers as well as persons outside the organisation. Rice (2002) posited that the incubator manager acts as an intermediary, connecting entrepreneurs to providers of business assistance. Weinberg et al. (1991) added that business incubators are "interorganisational phenomena" that require special managerial attention to achieve interorganisational cooperation, and Hoang and Antoncic (2003) agreed that entrepreneurs can gain access to a variety of resources through interorganisational relationships.

In addition to the above, Weinberg et al. (1991) explained that there is both an external and an internal interorganisational field relevant to interorganisational co-operation. The internal interorganisational field consists of internal relationships in the incubator, such as social and business relationships between the pool of incubatees and access to shared services such as financing. These relationships can build emergent networks between incubatees. According to Hoang and Antoncic (2003), interpersonal relationships provide entrepreneurs with access to resources. Bøllingtoft and Ulhøi (2005) reiterated that internal networks, where incubatees network with other incubatees, are very useful, easier than building external networks and support the idea of a networked business incubator where incubatees co-operate and borrow competencies from each other.

However, as the intention of this study is to evaluate the networking skills of incubator managers in particular, from the perspective of the incubatees, it is argued that external organisational networks are more apposite for purposes of this study. The external interorganisational field involves external elements of

import to the incubator, such as the general business community and consulting services (direct support networks) which may be used by incubatees. As proposed by Weinberg et al. (1991), the incubator manager should foster connections between incubatees and outside firms, government agencies and other entities which could be of commercial benefit to incubatees. In order to do this, the incubator manager should have an active and substantial network of general business contacts so that the incubator can ultimately create better external interorganisational linkages in the form of business networks.

Hansen et al. (2000) further emphasised that, in the better business incubators, networking is institutionalised (meaning that the incubator has developed mechanisms to foster networking) and incubatees have preferential access to partners in the network.

2.4 Measuring Effective Incubation

According to Bøllingtoft and Ulhøi (2005), despite various authors exploring the phenomenon of the business incubator (Hansen, Chesbrough, Nohria & Sull, 2001; Barrow, 2001), “the real efficiency of business incubators remains inconclusive” (p. 2). As regards methods to measure the success of business incubators, Shane (2009) pointed out that if the success of a business incubator is measured by the amount of start-ups it creates, one would have to obtain dependable statistics with regards to the number of jobs lost should new firms close down in their second, third or fourth years.

In South Africa, the STP was created on 1 April 2006 as a national programme integrating various small business enterprise interventions and programmes

provided by government into a single programme. The STP is responsible for business incubation and support services for small enterprises with the aim of stimulating economic growth and development through support for small enterprises in sectors ranging from biotechnology and agriculture to manufacturing and small scale mining (SEDA, 2010; STP, 2007).

The STP measures effective incubation in accordance with the criteria of growth, employment and equity (STP, 2010). Growth is measured in terms of the growth of the incubated network, which is, in turn, measured as the number of new SMMEs created through incubation, as well as the total turnover of the incubated ventures. Unfortunately, publicly available information as regards the growth of the incubated ventures was not available at the time of this study. Employment creation is measured as the number of jobs created pursuant to incubation, and equity is measured as the percentage of businesses supported by the STP which is owned by previously disadvantaged persons (STP, 2010).

In the 2009/2010 financial year, 244 new SMMEs were established, 6778 jobs were created and of the SMMEs supported by the STP, 35% were women-owned and 91% were black-owned (STP, 2010). Although the number of new SMMEs established increased by 28% from 2006 to 2007 and by a further 77% in 2008, it decreased dramatically in the 2010 financial year with a mere 0.08% increase in the number of new SMMEs established since 2009. In addition to this, there was a sharp decrease of 73% in the number of jobs created from 2009 to 2010. Various annual reports point to difficulties with operational efficiencies and staff vacancies, and emphasise the importance of proper management systems being in place (STP, 2007; STP, 2008; STP, 2009; STP, 2010).

As regards criteria to measure growth, Delmar, Davidsson and Gartner (2008) found that high growth is a multi-dimensional concept and that growth can be measured in different ways, including relative and absolute sales growth, relative and absolute employee growth, organic versus acquisition growth and measuring the volatility of growth rates over a certain period. Schwartz (2008) emphasised that successful graduation from an incubator is no guarantee of the long-term survival of the new venture.

Campbell (1989) measured effective incubation as the contribution of incubators to economic growth, while Weinberg et al. (1991) criticised the measurement of effective incubation as the number of jobs and new firms which emanate from an incubator, and proposed that effective incubation should be measured with regard to the effectiveness of external and internal interorganisational networks of the incubator manager which is made available to incubatees.

For purposes of this study, effective incubation will be assessed with regard to the incubatees' growth in sales from date of incubation up to date of completion of the questionnaire (Annexure A). In light of the fact that this research focuses on incubatees and aims to obtain the incubatees' views as to whether the incubator managers' networks and networking skills contributed to the relevant incubatees' growth while in incubation based on growth in sales, the measures of employment creation and the achievement of equity targets will not be used to evaluate effective incubation for purposes of this research.

2.5 South African Government-Funded Business Incubators

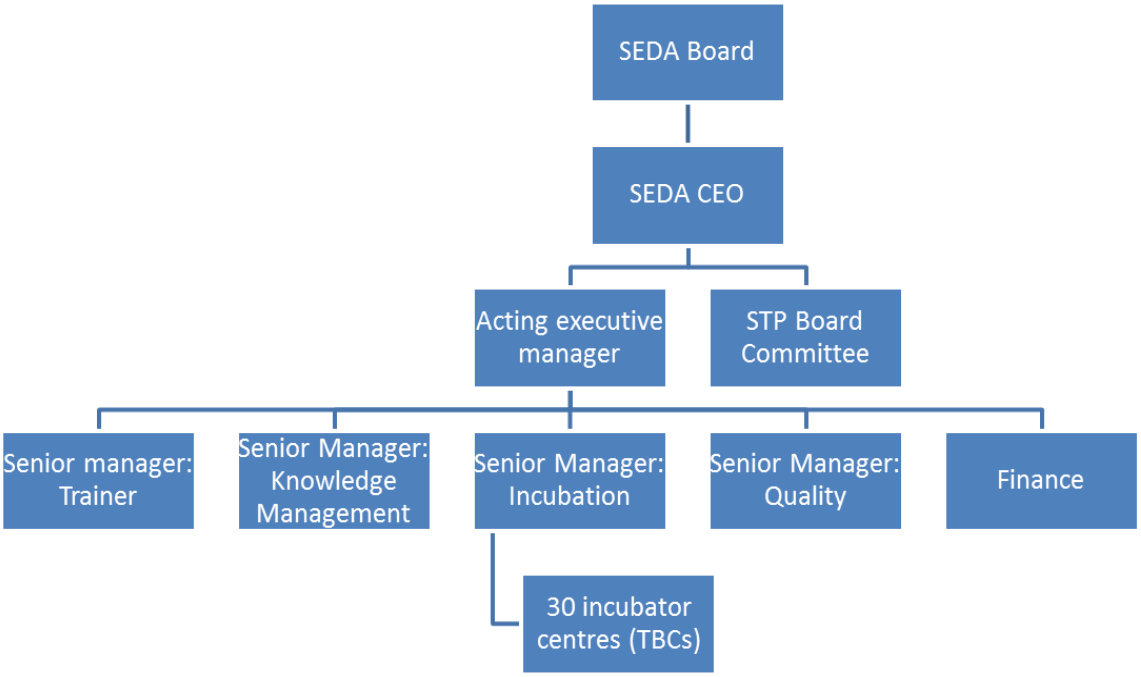
Business incubators provide business, financial and technical support as well as networks and expertise to ensure the success of a start-up venture (Wong *et al.*, 2005). These incubators are intended to promote the positive development and survivability of their incubatees (McAdam & Marlow, 2007) and nurture the establishment of new enterprises by providing resources, services and assistance to entrepreneurs (Bøllingtoft & Ulhøi, 2005). According to Bøllingtoft and Ulhøi (2005), there are various types of incubators, including not-for-profit, for-profit and university incubators.

This research will focus on not-for-profit, government-funded incubators. There are currently 30 not-for-profit government-funded incubators in South Africa supported by the STP.

According to the STP (2010), the STP receives funding from the SEDA, the Department of Trade and Industry and the National Treasury. The STP funds and supports 30 incubators in South Africa, with the aim of establishing sustainable small businesses (STP, 2010). The relevant incubator receives support from all the senior managers in the SEDA. Figure 3 below provides an overview of the STP organisational structure.

Figure 3

SEDA Technology Programme Organisational Structure



Adapted from STP (2010)

2.6 Conclusion

From the literature review, it is evident that networking skills form an important part of incubator managers' managerial and mentoring roles. Specifically, networking is important on two levels, namely the provision of access by incubator managers to incubatees, to the networks of these incubator managers, and the facilitation of collaboration between the networks of the incubator managers and incubatees. It is submitted that incubator managers provide incubatees with career support through the provision of access to their

networks, and with psychosocial support through the facilitation of collaboration between their networks and incubatees.

CHAPTER 3: RESEARCH PROPOSITIONS

As indicated in Chapter 1, the purpose of the research is to evaluate whether the networking skills of government-funded incubator managers, as perceived by incubatees, contribute to effective incubation.

Based on the literature review, it appears that networking plays an important role in entrepreneurship and incubation. Incubator managers can provide support to incubatees by providing access to networks and facilitating collaboration between their networks and incubatees. This provides incubatees with information, skills and resources which they may lack.

In light of the literature review, the research propositions below are submitted and form the basis of this research.

3.1 Research proposition 1: The external interoganisational networking skills of managers of government-funded incubators as perceived by the incubatees, measured as the provision of access to the networks of the incubator manager, contribute to effective incubation.

The aim of this proposition is firstly to determine incubatees' perception of the provision of access by their incubator managers to the networks of these managers, and secondly to evaluate whether the provision of such access contributes to effective incubation (measured as the growth in sales of the relevant incubated venture).

3.2 Research proposition 2: The external interorganisational networking skills of managers of government-funded incubators as perceived by incubatees, measured as the fostering of collaborative relationships between the incubatees and the networks of the incubator manager, contribute to effective incubation.

The aim of this proposition is, firstly, to determine incubatees' views of the facilitation of networking relationships between incubatees and the incubator managers' networks, and secondly, to determine if this facilitation of networking relationships contributes to effective incubation (measured as the growth in sales of the incubated venture).

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

4.1 Introduction

This chapter discusses the framework and motivation for the chosen research methodology and design. The unit of analysis, population and sample are defined and the research instrument, data collection process, data analysis and research limitations are discussed.

4.2 Motivation for Choice of Research Design

Research design is a framework for specifying the relationships among variables and outlines the procedures for every research activity (Blumberg, Cooper & Schindler, 2008). Descriptive studies are concerned with finding out whether variables move together, without establishing causation (Creswell, 2009) and usually involve deductive reasoning, namely the confirmation of propositions or hypotheses from theories (Echambadi *et al.*, 2006).

Traditionally, the two most common research methodologies employed as part of the research design are the quantitative and qualitative methodologies (Creswell, 2009). According to Strauss and Corbin (1990), qualitative research is "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (p. 17). Qualitative research is often used for exploratory studies where the objective is to clarify the research questions (Blumberg *et al.*, 2008) and can be used to better understand any phenomenon about which little is yet known (Strauss & Corbin,

1990). Quantitative research, on the other hand, is considered as “a means for testing objective theories by examining the relationship among variables” (Creswell, 2009, p. 233).

According to Neuman (2011), quantitative research addresses the issue of integrity by “relying on an objective technology – such as precise statements, standard techniques, numerical measures, statistics and replication” (p. 153). Creswell (2009) added that the relationship between and among variables is central to answering questions and hypotheses, which is usually done through surveys and experiments. According to Creswell (2009), a survey provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. From the sample results, the researcher then generalises or makes claims about the population.

In light of the literature discussed above, it is submitted that this research called for a quantitative, descriptive study, as the objective of this study was to establish whether there is a correlation between two variables – the networking skills of government-funded incubator managers and effective incubation. Although a qualitative study could have been useful to identify certain relevant themes as regards the networking skills of government-funded incubator managers and could have resulted in richer data, time and cost constraints militated against the use of qualitative research. The study was cross-sectional.

A questionnaire was used to gather primary data. Furthermore, secondary data sources were utilised, such as annual reports from the SEDA and the STP.

4.3 Unit of Analysis, Population and Sampling

4.3.1 Unit of Analysis

According to Trochim (2006), a unit of analysis is the main body that is being analysed in a study. The unit of analysis for this study was the current incubatees of the 30 government-funded incubators supported by the STP.

4.3.2 Population

Zikmund (2003) defines a population as a total collection of entities that share a common set of characteristics. This is echoed by Trochim (2006) who states that a population is the overall group that a study wishes to generalise to.

The initial population for this study was the 900 incubatees currently in incubation at the 30 government-funded incubators in South Africa. This population was selected as the aim of the research was to evaluate the contribution of the networking skills of government-funded incubator managers, as perceived by incubatees, to effective incubation.

The details of the abovementioned incubators are listed in the SEDA Annual Report (2010). The figure of 900 incubatees was obtained by contacting each incubator manager and requesting confirmation of the number of incubatees in incubation at the relevant incubator. Although the intention was to contact the incubatees directly to complete the questionnaires, it was later realised that it was extremely difficult to reach the incubatees directly, and that details of the current incubatees and assistance with the distribution of questionnaires would have to be obtained from the managers of the incubators.

After further queries with regard to the number of incubatees per incubator, it appeared that the initial figure of 900 was erroneous as it included incubatees who had graduated or left the incubator by the time of the study. Furthermore, incubatees of incubators where the incubator manager was unwilling to distribute the questionnaires to incubatees or provide the incubatees' contact details, or where the contact details provided by the aforementioned managers were erroneous, did not form part of the population, since these incubatees did not have access to the questionnaire.

In light of the above, the final population was redefined as the 565 incubatees who had access to the questionnaire, either as same was provided to them by their manager, through an online data collection tool where the questionnaire was made available (SurveyMonkey) or as provided to them by writer hereof.

4.3.3 Sampling

As regards the sampling method, Neuman (2011) submits that quantitative research tends to favour a pre-planned sampling approach based on mathematical theory and the use of probability sampling techniques, unlike qualitative research which tends to use nonprobability sampling techniques.

Probability-based survey sampling was used for purposes of this research. As regards the sampling frame, Trochim (2006) states that a sampling frame is the list of the accessible population from which the sample will be drawn. Although the sampling frame is closely related to the population, it may contain errors and omissions which results in the sampling frame differing from the theoretical population (Blumberg *et al.*, 2008).

As discussed in paragraph 4.3.2, it was the intention to obtain a sampling frame consisting of all 900 incubatees initially indicated by incubator managers as being currently in incubation at the STP. However, it subsequently appeared that the sampling frame differed from the population of incubatees in incubation at the time of the data collection (1 July to 30 August 2011).

The final population was redefined as the 565 incubatees who factually had access to the questionnaires. Responses were received from 104 of the 565 incubatees – 18.4% of the population of interest. In addition to this, it is interesting to note that the sample constituted 11.5% of what was believed to be the original population of 900 incubatees. As posited by Hackett and Dilts (2007), where the sample constitutes a large proportion of the population of interest, it contributes to the sample being generally representative of the population and enables inferences to be made regarding the population with a greater degree of confidence.

4.4 Research Instrument

4.4.1 The Questionnaire

According to Oakshott (2009), questionnaire design depends on the type of respondent, the method of data collection and the resources available.

The respondents for this research consisted of 565 incubatees in incubation at government-funded incubators supported by the STP who had access to the questionnaire. As these incubatees were located across the country, a survey allowed expanded geographic coverage for the research without an increase in

costs (Blumberg *et al.*, 2008). A short questionnaire (see annexure A) was used to simplify data collection and to enable incubator managers to provide the questionnaire in hard copy to their incubatees. The questionnaire could also be completed on SurveyMonkey for incubatees with internet access.

The survey made use of nominal, ordinal and ratio scales. Questions were formulated to be structured, direct and simple and to address the research propositions. Questions were ordered from general to specific and from easy to difficult, as suggested by Hofstee (2006).

Furthermore, a Likert-type scale, which is typically used to assess attitudes (Blumberg *et al.*, 2008) was used to obtain data on the range of experiences of incubatees in respect of the networking skills of incubator managers. The Likert-type scale was used to assess whether these managers enabled networking between members of their external network and incubatees. The 15 questions measuring various aspects of the perceptions of the respondents of their incubator managers' networking skills were measured on a scale from 1 to 4 (1 equalling "Strongly disagree", 2 "Disagree", 3 "Agree" and 4 "Strongly agree"). Ratio scales were used to measure the growth in sales of the relevant incubatee.

A pilot study was conducted by forwarding 10 questionnaires to four incubator managers for onward transmission to, and completion by, incubatees. These questionnaires were made available both in hard copy and on SurveyMonkey. The responses indicated that the respondents skipped certain questions on SurveyMonkey. This necessitated an amendment, preventing a respondent from proceeding to the next question before the previous question had been

completed. With the exception of the aforementioned amendment, the responses indicated that the questions were clear and that no further amendments to the questionnaire were necessary.

4.4.2 Validity

As regards validity of the research instrument, Neuman (2011) noted that validity refers to how well the conceptual definition of a construct and the actual empirical indicator fit together. Neuman (2011) was further of the view that a measurement instrument is valid for a particular purpose. Blumberg et al. (2008) added that validity pertains to whether the research instrument measures what its designer claims it does. Creswell (2009) was of the view that validity means that "one can draw meaningful and useful inferences from the scores on the instruments" (p. 149).

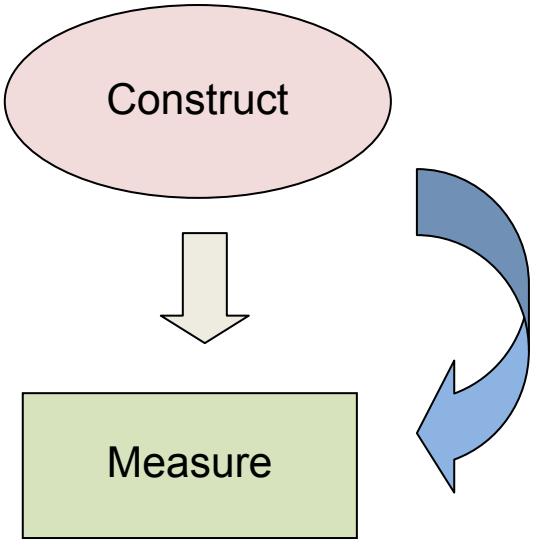
Neuman (2011) distinguished between face validity and construct validity.

4.4.2.1 Face Validity

Face validity means that the measurement instrument measures the relevant constructs in the research propositions (Neuman, 2011) as illustrated by Figure 4. In other words, a measurement instrument has face validity if, on the face of it, the research instrument appears to measure what it is intended to measure.

Figure 4

Face Validity of a Measurement Instrument



Source: Adapted from Neuman (2011)

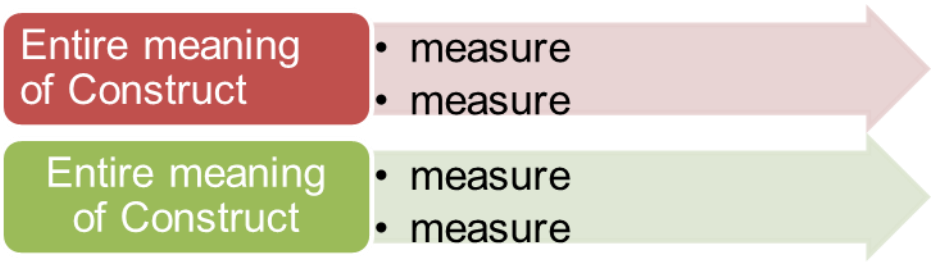
It is therefore submitted that the research instrument used for this study had face validity, in that it appeared to measure the constructs it was intended to measure, as set out in the research propositions.

4.4.2.2 Content Validity

Content validity means that the research instrument captures the entire meaning of the relevant constructs in the research questions, as illustrated by Figure 5 (Neuman, 2011).

Figure 5

Content Validity of a Measurement Instrument



Source: Adapted from Neuman (2011)

It is submitted that the measurement instrument used for this research had content validity, in that it provided sufficient coverage of the research questions.

4.4.3 Reliability

Reliability means that "the numerical results produced by an indicator do not vary because of characteristics of the measurement process or the measurement instrument itself" (Neuman, 2011, p. 189) and that the measurement instrument therefore supplies consistent results (Blumberg *et al.*, 2008). Neuman (2011) distinguishes between different types of reliability, including stability reliability, which means that the measurement instrument delivers the same results when applied in different time periods, and representative reliability, where the research instrument delivers the same results when applied to different groups.

According to Neuman (2011), "it is rare to have perfect reliability" (p. 190). However, reliability can be improved with certain methods, including clearly conceptualising all constructs in the measurement instrument and using a pilot

version of the measurement instrument first. The aforementioned measures were used in this study to improve reliability.

Furthermore, it is submitted that the results produced by the measurement instrument had stability reliability, in that it will produce the same results when applied in different time periods, retesting the same group of people. However, it may have lacked representative reliability in that it may not produce the same answers across all possible subpopulations of the sample in a further study utilising the same research questions.

4.5 Bias

According to Burton-Jones (2009), research methods influence construct measurements and this influence, or method bias, can lead to false conclusions. The aforementioned authors stated that the research method comprises of three elements – the rater (the person asked to rate a trait), the instrument (the device used to score the trait) and the procedure or process the rater follows in using the instrument to record a score. Although there are many different types of bias (Burton-Jones, 2009), it is submitted that non-response bias and social desirability bias may have been present in this research.

There was non-response bias as some incubatees were not interested in completing the questionnaires. However, attempts were made to reduce the influence of non-response bias by consistent follow-up e-mails and calls to increase responses, as proposed by Blumberg et al. (2008). In addition to the aforementioned, social desirability bias may have influenced results. According to Blumberg et al. (2008), this bias is present where respondents do not provide

truthful answers due to the respondents' perception that certain answers will be more socially acceptable. Social desirability bias could have been present in instances where the incubator managers provided the incubatees with the questionnaires. This was necessitated by the fact that some incubatees could not be reached as they did not have internet access or fax machines, and the manager had to personally provide them with the questionnaires. This may have in turn influenced incubatees to provide more favourable responses as regards the networking skills of incubator managers, although incubator managers were requested to inform incubatees that the responses would be treated as anonymous and to encourage incubatees to provide honest responses.

Furthermore, in some instances the incubator managers collected the questionnaires, which may have influenced the incubatees to provide more positive responses as they could have been concerned that the managers may read their answers. As the incubator managers requested incubatees to forward the completed questionnaires directly to the researcher, it was not possible to determine how many questionnaires were forwarded by incubator managers themselves.

As proposed by Hackett and Dilts (2007), attempts were made to reduce the likelihood of social desirability bias by emphasising in written and verbal communication to incubatees that all answers would be treated as confidential and that accurate answers would greatly assist to evaluate the extent to which networking skills of government-funded incubators contribute to effective incubation.

4.6 Data Collection

Data collection commenced immediately after ethical clearance was obtained for the research from the Research and Ethics Committee of the Gordon Institute of Business Science (GIBS).

The relevant government-funded incubator managers were contacted telephonically and informed of the purpose of the research. A consent letter from GIBS was mailed to these incubator managers, and consent was obtained to proceed with the research, which would require completion of questionnaires by incubatees.

In order to determine whether the questionnaire was clear and easily understandable by the incubatees, a pilot study was conducted by forwarding 10 questionnaires to four incubator managers. The questionnaires were made available on SurveyMonkey and in MSWord format for incubatees with no internet access. The incubator managers agreed to print questionnaires for incubatees without internet access and provide these incubatees with copies for completion. The incubator managers or the incubatees then returned the completed questionnaires by mail or fax.

Following the pilot study, the questionnaire was made available to the remaining incubator managers of the 30 government-funded business incubators listed in the SEDA Annual Report (SEDA, 2010) with a similar request to forward these questionnaires to their incubatees for completion. The questionnaire was again provided in MSWord and made available on SurveyMonkey.

The incubator managers and incubatees were requested to provide responses by a certain date. By this date, not enough responses had been received,

necessitating weekly follow-up calls. The questionnaires were also faxed to some of the incubator managers where the incubators were struggling with internet access. In addition to this, cell phone numbers, e-mail addresses and fax numbers of the incubatees were obtained, with consent from the incubator managers. After incubatees were contacted telephonically and forwarded short text messages as reminders to complete the questionnaires, the response rate improved.

4.7 Data Analysis

In light of the fact that this research aims to consider the possible relationship between two variables, bivariate statistics were used to establish either covariance or statistical independence (Neuman, 2011). Scatterplots, cross-tabulation and measures of association were used to evaluate whether a relationship existed between the networking skills of government-funded incubator managers and effective incubation.

Geographical data, such as location of the incubatee (nominal data), biographical data such as age (ratio data) and gender (nominal data) of the incubatee as well as company profile data, such as years in incubation (ratio data), were analysed with regard to the mean or mode (Neuman, 2011). Univariate methods such as frequency tables (for nominal data, where the mode can be seen) and descriptive methods (for ratio data) indicated the mean, standard deviation and standard error. Appropriate graphs were used for nominal data. This provided useful information regarding the profile of the typical incubatee in a government-funded incubator, as the perceptions of this

incubatee as regards the networking skills of his or her manager is relevant for purposes of this research.

A nominal scale was used in the questionnaire to obtain data as regards the extent of the incubator manager's network, while a Likert-type scale was used to reflect a range of experiences of incubatees regarding the networking skills of their particular managers. The Likert-type scale was used to assess constructs in both research propositions, namely the incubatees' perceptions of the provision of access to the networks of their incubator managers, and the incubatees' perception of the fostering of collaborative relationships between the incubatees and the networks of the incubator manager. Ratio scales were used to measure the growth in sales of the relevant incubatee.

As regards measures of association, correlation coefficients were utilised. The purpose of a correlation coefficient is to show to what extent two variables "covary or go together" (Neuman, 2011, p. 363). Various bivariate statistical tests were performed to analyse correlation or interdependence, including Pearson's correlation, Spearman's rank correlation coefficient and chi-square.

4.8 Research Limitations

The following limitations are relevant to the study:

- The difficulties as regards to access to the sampling frame originally contemplated, namely the 900 incubatees currently in incubation at government-funded incubators under the auspices of the SEDA.

- The fact that the only way to access incubatees for purposes of a quantitative study was to work through the relevant incubator managers, as only the details of the managers were listed in the SEDA Annual Report (2010).

- The fact that some incubator managers failed to distribute the questionnaire to all and / or any of their incubatees or did not want to disclose the details of the incubatees.

- The degree of unwillingness of those incubatees who received questionnaires to participate.

- The geographic dispersion of incubatees, and the fact that some managers reported that it was difficult to reach incubatees as these incubatees only reported to the incubator intermittently.

4.9 Summary

In summary, the research methodology, research instruments and data analysis techniques set out in Table 2 were used to deal with each specific research question.

Table 2

Summary of Research Methodology

	Research Proposition	**Research design and methodology**	**Research instrument**	**Data analysis**
1	The external interoganisational networking skills of managers of government-funded incubators, measured as the	Quantitative and descriptive	Questionnaire	• Mean • Mode • Standard Deviation • Scatterplots • Cross-tabulation

	provision of access to the networks of the incubator manager as perceived by the incubatees, contribute to effective incubation.			• Spearman's rank correlation coefficient • Pearson's correlation coefficient • Chi-square • Regression analysis
2	The external interorganisational networking of managers of government-funded incubators, measured as the fostering of collaborative relationships between the incubatees and the networks of the incubator manager as perceived by the incubatees, contribute to effective incubation.	Quantitative and descriptive	Questionnaire	• Mean • Mode • Standard Deviation • Scatterplots • Cross-tabulation • Spearman's rank correlation coefficient • Pearson's correlation coefficient • Chi-square • Regression analysis

CHAPTER 5: RESULTS

5.1 Introduction

This chapter summarises the results from the quantitative research as obtained by means of a survey. The aim of the questionnaire used for the survey was to measure the contribution of the networking skills of incubator managers, as perceived by incubatees, to effective incubation.

For purposes of this research, networking skills was defined as both the provision of access by incubator managers to incubatees to the networks of incubator managers as well as the facilitation of collaboration by incubator managers between the incubator managers' networks and incubatees. Effective incubation was measured as the growth in sales of an incubated venture.

The time period for the study was 1 July 2011 to 30 August 2011, and the population during this time period consisted of 565 respondents. Responses were received from 104 respondents, constituting 18.4% of the population. The sample can therefore be deemed to being generally representative of the population as it constituted a large proportion of the population of interest (Hackett and Dilts, 2007).

The findings revealed some interesting facts regarding the respondents' perceptions of the networking skills of their managers as well as whether these networking skills ultimately contributed to effective incubation of respondents.

The results are discussed under the following headings:

- Typical respondent profile by age, gender, education, industry, period in the incubator, years of entrepreneurial and business experience and growth in turnover while incubated.
- Respondents' perceptions of interoganisational networking skills of government-funded incubator managers.

5.2 Typical Respondent Profile

5.2.1 Age Distribution of Respondents

The ages of the respondents ranged from 20 to 66 years of age with an average age of 34.4 years (see Table 3).

Table 3

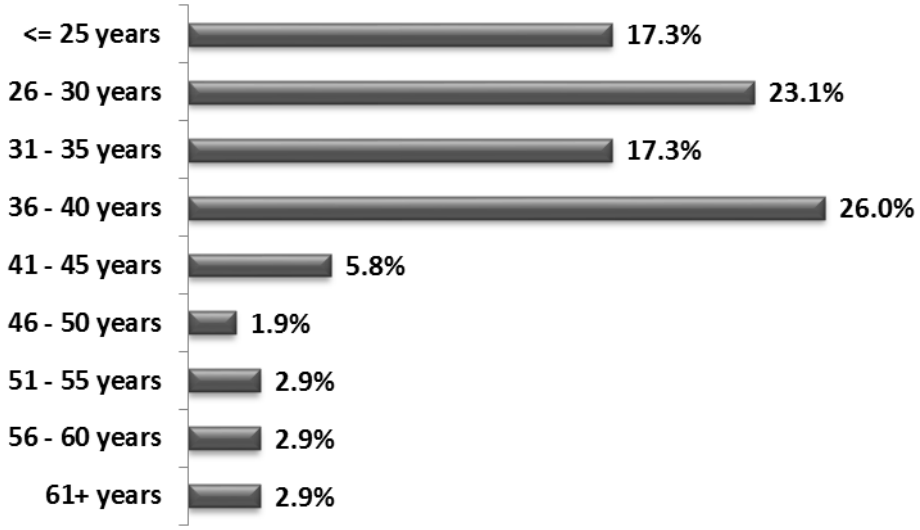
Distribution by Age

	Mean	Minimum	Maximum	Standard Deviation	Standard Error of Mean
Age of Respondent	34.4	20.0	66.0	9.9	1.0

Furthermore, the majority of the respondents (a total percentage of 83.7%) were under the age of 41 (Figure 6). More than a quarter (26%) of the respondents was between the ages of 36 and 40 years, followed by 26 to 30 year olds (23.1%).

Figure 6

Age Distribution of Respondents

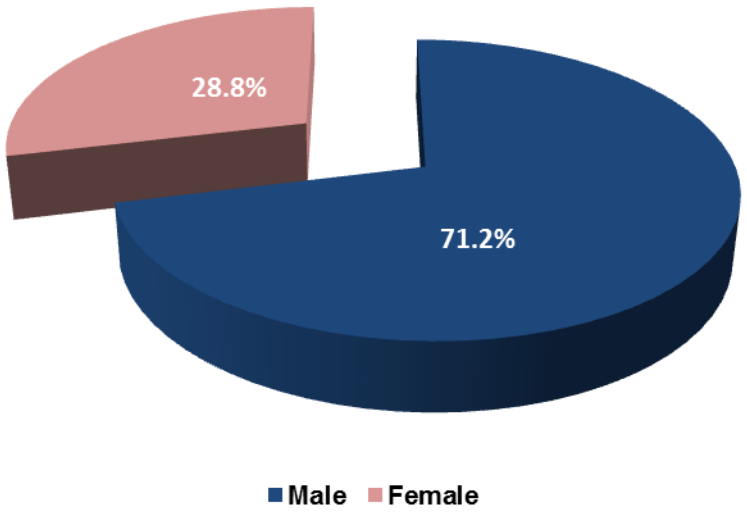


5.2.2 Gender Distribution of Respondents

The results indicate that 71.2% of the respondents were male, while only 28.8% were female (see Figure 7).

Figure 7

Gender Distribution of Respondents

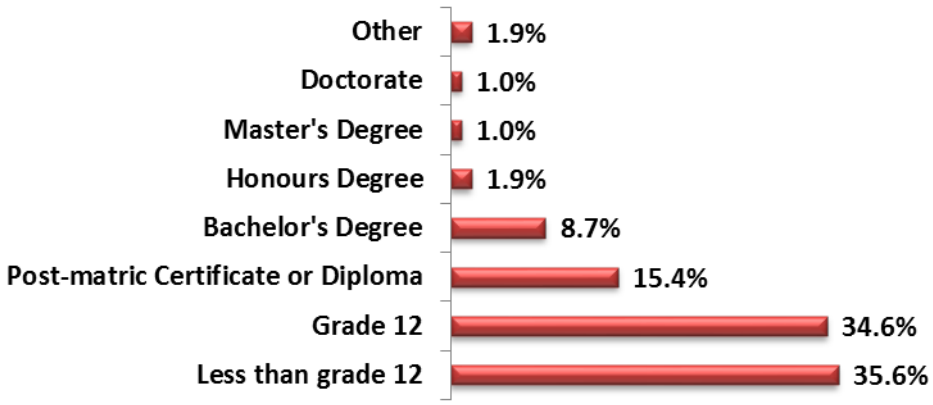


5.2.3 Distribution by Education

The highest educational level of nearly three quarters (70.2%) of the respondents was indicated as “less than Grade 12” or “Grade 12”, as appears in Figure 8. More than a third (35.6%) of the respondents did not even have a Grade 12. While 15.4% of the respondents had a post-matric certificate or diploma, only 12.6% had tertiary education, ranging from a bachelor’s degree to a doctoral degree.

Figure 8

Distribution of Educational Levels of Respondents

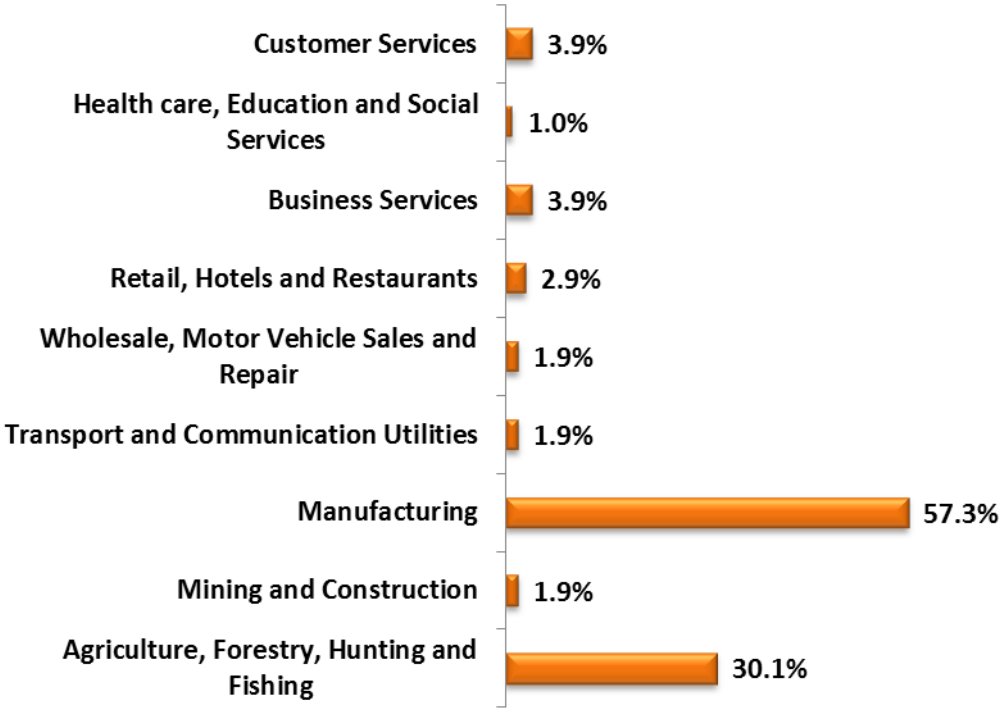


5.2.4 Distribution by Industry

More than half of the respondents (57.3%) indicated that their businesses were in the manufacturing industry (see Figure 9), while nearly a third of the businesses of the respondents (30.1%) were in agriculture, forestry, hunting and fishing. The businesses of the remaining 12.7% of respondents were spread over the other seven industry sectors.

Figure 9

Industries in Which Respondents are Currently Active



As can be seen from Table 4, 74.2% of the respondents in the agriculture, forestry, hunting and fishing industry did not even have a Grade 12 qualification, while the education levels in the manufacturing industry were substantially higher with 45.8% of respondents having obtained a Grade 12, 22% a certificate or diploma and a further 10.2% a degree. The numbers of respondents in the rest of the industry sectors were so few that a discussion of level of qualification would be meaningless.

Table 4

Education of Respondents in Specific Industries

Sector	Less than Grade 12	Grade 12	Certificate/ Diploma	Bachelor's Degree or higher	TOTAL
Agriculture, Forestry, Hunting and Fishing	23	4	2	2	31
	74.2%	12.9%	6.5%	6.5%	
Mining and Construction	0	1	0	1	2
	.0%	50.0%	.0%	50.0%	
Manufacturing	13	27	13	6	59
	22.0%	45.8%	22.0%	10.2%	
Transport and Communication Utilities	0	2	0	0	2
	.0%	100.0%	.0%	.0%	
Wholesale, Motor Vehicle Sales and Repair	0	2	0	0	2
	.0%	100.0%	.0%	.0%	
Retail, Hotels and Restaurants	0	1	2	0	3
	.0%	33.3%	66.7%	.0%	
Business Services	0	1	0	3	4
	.0%	25.0%	.0%	75.0%	
Health care, Education and Social Services	0	1	0	0	1
	.0%	100.0%	.0%	.0%	
Customer Services	1	1	0	2	4
	25.0%	25.0%	.0%	50.0%	
TOTAL	37	37	16	13	103

5.2.5 Period in the Incubator

Almost half of the respondents (47.1%) were newcomers in the incubators., having been there for less than a year, with three quarters (75%) reporting having been in incubation for up to 3 years. Of the respondents, 25% have been in the incubator for more than three years.

A Chi-square test of independence indicated that there is a highly significant relationship (at the 0,1% level of significance) between the gender of a respondent and how long s/he has been in the incubator ($\chi^2(5)=30.621$, $p<.001$). Specifically, 50% of females have been in the incubator for 3 to 4 years while only 6.8% of the male respondents have been in the incubator that long (see Table 5).

Table 5

Period in the Incubator by Gender

Period	Male		Female		TOTAL	
<= 1 years	37	50.0%	12	40.0%	49	47.1%
1 - 2 years	21	28.4%	0	.0%	21	20.2%
2 - 3 years	6	8.1%	2	6.7%	8	7.7%
3 - 4 years	5	6.8%	15	50.0%	20	19.2%
4 - 5 years	3	4.1%	1	3.3%	4	3.8%
5 - 6 years	0	.0%	0	.0%	0	.0%
6+ years	2	2.7%	0	.0%	2	1.9%
TOTAL	74	100.0%	30	100.0%	104	100.0%

5.2.6 Respondents' Years of Entrepreneurial and Business experience

Table 6 illustrates that the largest percentage of respondents (24%) had personal entrepreneurial experience (managing their own businesses) of between 1 and 2 years, and the lowest percentage (only 1% of respondents) reported personal entrepreneurial experience of between 6 and 8 years.

Table 6

Personal Entrepreneurial Experience

Q6: Personal entrepreneurial experience (managing own business)	Frequency	Percentage
0 years	24	23.1
0.1 - 2 years	25	24.0
2.1 - 4 years	22	21.2
4.1 - 6 years	19	18.3
6.1 - 8 years	1	1.0
8.1 - 10 years	4	3.8
> 10 years	9	8.7
Total	104	100.0

Nearly half of the respondents (47.2%) have had between 2 and 6 years of business experience (defined as working for themselves or working for others), while 18.2% had less than 2 years of business experience (see Table 7). More than a third (34.7%) of respondents has had more than 6 years of business experience.

Table 7

Business Experience

Q7: Total business experience (working for self and others)	Frequency	Percent
0 years	4	3.8
0.1 - 2 years	15	14.4
2.1 - 4 years	27	26.0
4.1 - 6 years	22	21.2
6.1 - 8 years	11	10.6
8.1 - 10 years	3	2.9
>10 years	22	21.2
Total	104	100.0

5.2.7 Growth in Turnover since Joining the Incubator

5.2.7.1 Turnover

On average, the respondents experienced a sales growth of 30% since their acceptance into the incubator (see Table 8).

Table 8

Business Sales Growth since Acceptance into Incubator

	Mean	Minimum	Maximum	Standard Deviation	Standard Error of Mean
Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	30.1	.0	100.0	30.0	3.0

Although the largest proportion (23.3%) of respondents indicated that their businesses grew by more than 50% while in incubation (Figure 10), most businesses (94.2%) had a turnover of less than R1 million (Figure 11). Thus, the growth was primarily from a low base. As many as 20.4% of the respondents reported zero growth in business sales since they joined the incubator, while 15.5% reported growth between 15% and 20%.

Figure 10

Growth in Turnover since Acceptance into Incubator

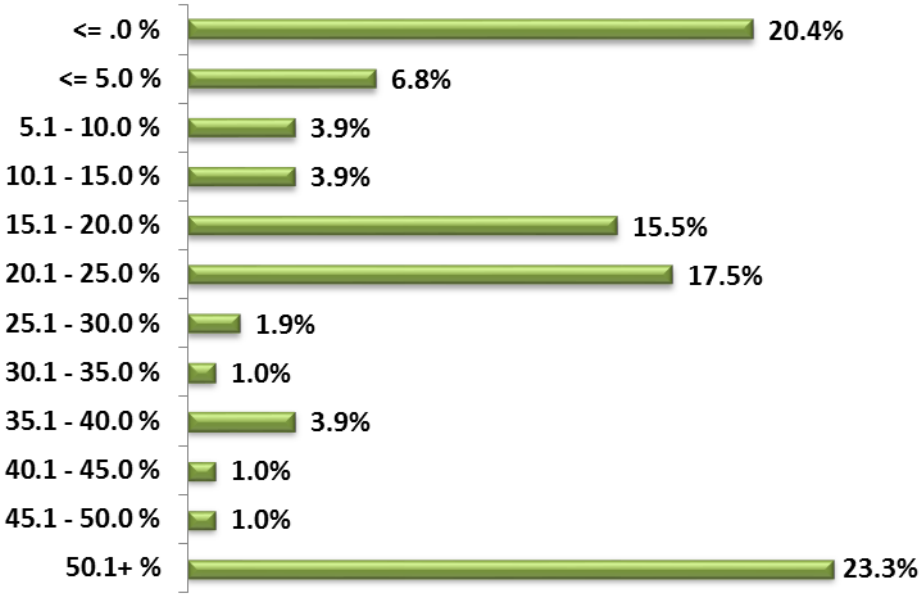
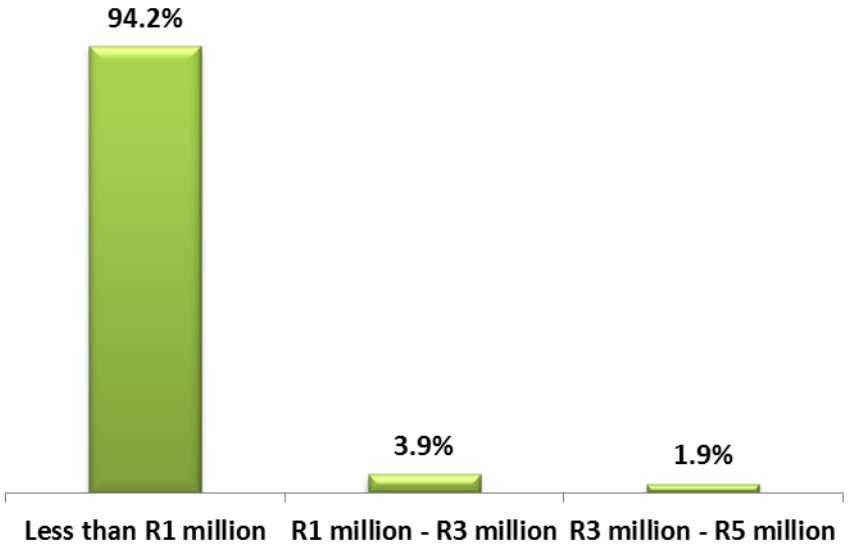


Figure 11

Annual Turnover of Incubated Ventures per Year

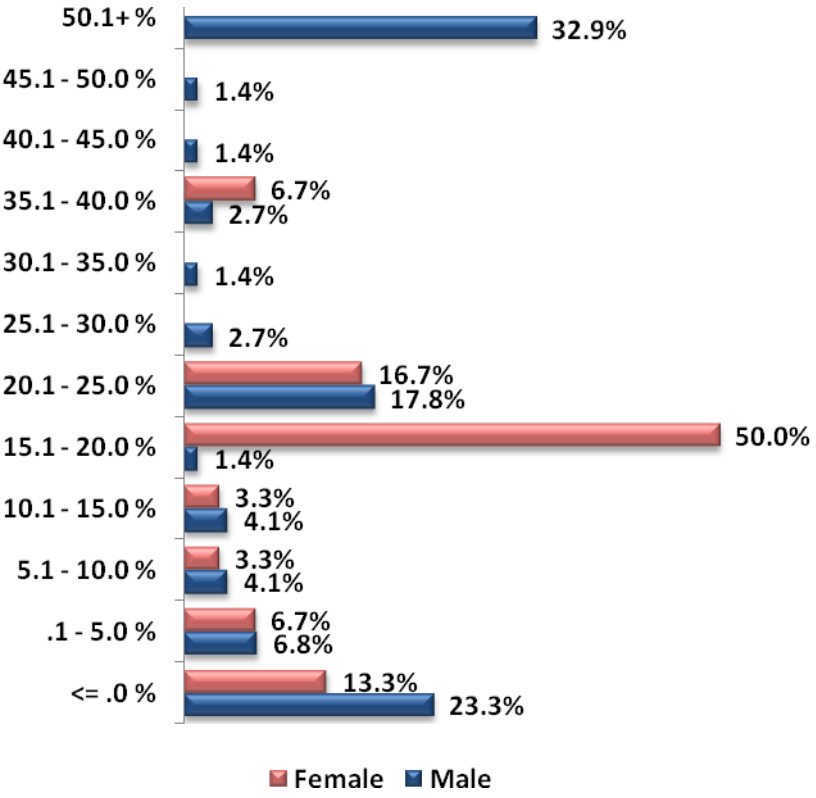


5.2.7.2 The Relationship between Gender and Turnover

As indicated by Figure 12, there are more males than females in incubation. With regard to the distribution of growth in turnover by gender, 50% of all the females in the sample reported a mere 15% to 20% increase in turnover, while almost one third of the male respondents (32.9%) reported a sales growth of more than 50%.

Figure 12

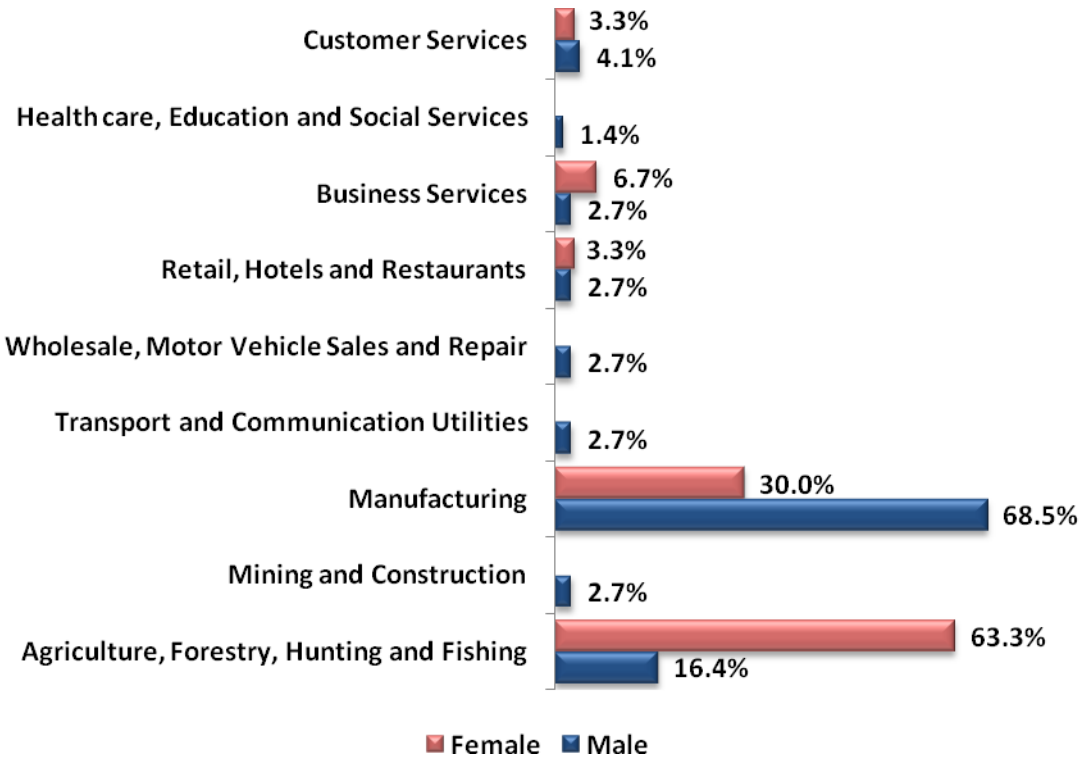
Distribution of Turnover by Gender



An analysis of the number of males and females per sector indicate that the manufacturing industry is dominated by males (68.5%) while the agriculture, hunting forestry and fishing industry consists of mostly female respondents (63.3%) – see Figure 13.

Figure 13

Gender Distribution by Industry



The mean sales growth for males was higher than for females (35.6% for males and females 16.9% for females (see Table 9).

Table 9

Sales Growth by Gender: Mean Scores

Question	Gender	Number	Mean	Standard Deviation	Standard Error Mean
Sales growth (approximate %) since having been accepted into the incubator	Male	73	35.459	33.6057	3.9333
	Female	30	16.900	9.9701	1.8203

In order to ensure that non-normality of the data did not influence the results, a Mann-Whitney U test was performed. The mean ranks by gender supported the findings above as indicated in Table 9 (see Table 10).

Table 10

Sales Growth by Gender: Mean Ranks

Question 25	Gender	Number	Mean Rank	Sum of Ranks
Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	Male	73	55.91	4081.50
	Female	30	42.48	1274.50
	Total	103		

5.2.7.3 The Relationship between Time Spent in Incubation in Specific Industries and Turnover

As regards a possible correlation between the time spent in incubation in a specific industry and sales growth, only the agriculture and manufacturing industries reported enough responses to warrant the calculation of a correlation in this regard. There seemed to be no correlation between the time spent in incubation in the agriculture sector and growth in sales (Pearson correlation = -0.070 in Table 11) and almost no correlation between the time spent in incubation in the manufacturing sector and growth in sales (Pearson correlation = 0.156 in Table 12).

Table 11

Agriculture: Pearson Correlation between Number of Years in the Incubator and Sales Growth

		How many years have you been in the incubator?	Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)
How many years have you been in the incubator?	Pearson Correlation	1	
	Significance (2-tailed)		
	N	31	
Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	Pearson Correlation	**-.070**	1
	Significance (2-tailed)	.708	
	N	31	31

Table 12

Manufacturing - Pearson Correlation between Number of Years in the Incubator and Sales Growth

		How many years have you been in the incubator?	Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)
How many years have you been in the incubator?	Pearson Correlation	1	
	Significance (2-tailed)		
	N	59	
Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	Pearson Correlation	**.156**	1
	Significance (2-tailed)	.241	
	N	58	58

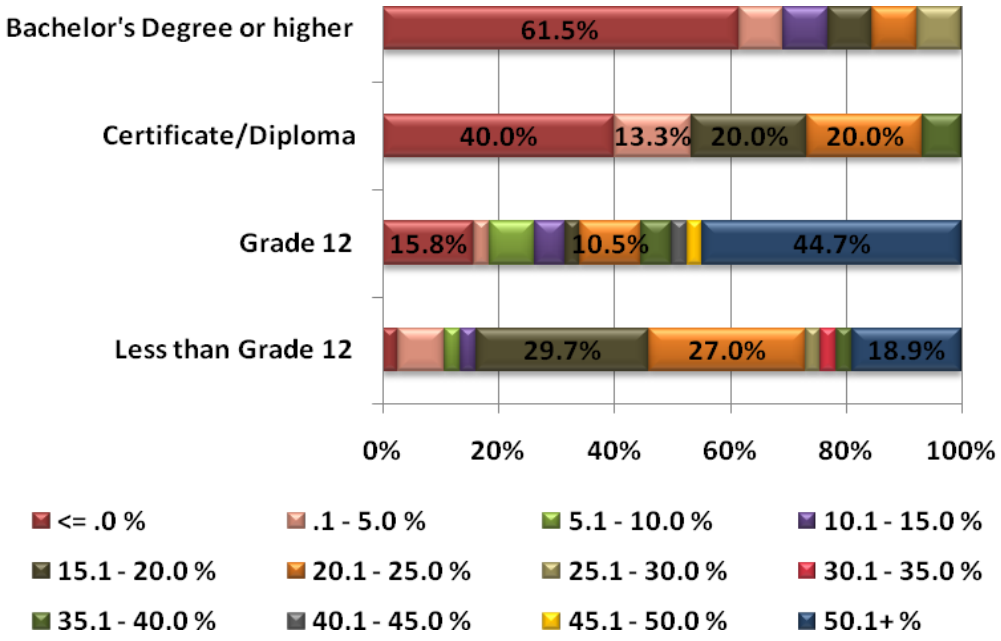
5.2.7.4 The Relationship between Education and Turnover

Owing to the many categories for sales growth, it was not feasible to do a categorical test for the effect of educational level on sales growth. Since using a continuous variable in statistical testing equates to more statistical power, it was decided to use the growth variable as an interval scale dependent variable in a non-parametric test to ascertain whether there is an effect of educational level on reported sales growth.

More than 60% of respondents with a bachelor's degree reported no increase in turnover since they joined the incubator, while more than half (56.7%) of those with less than Gr 12 reporting an increase in turnover of 15% to 25%. Interestingly, the lower qualified respondents (with less than grade 12) reported more growth in sales than the higher qualified respondents (with a bachelor's degree or higher). This is illustrated by Figure 14a.

Figure 14a

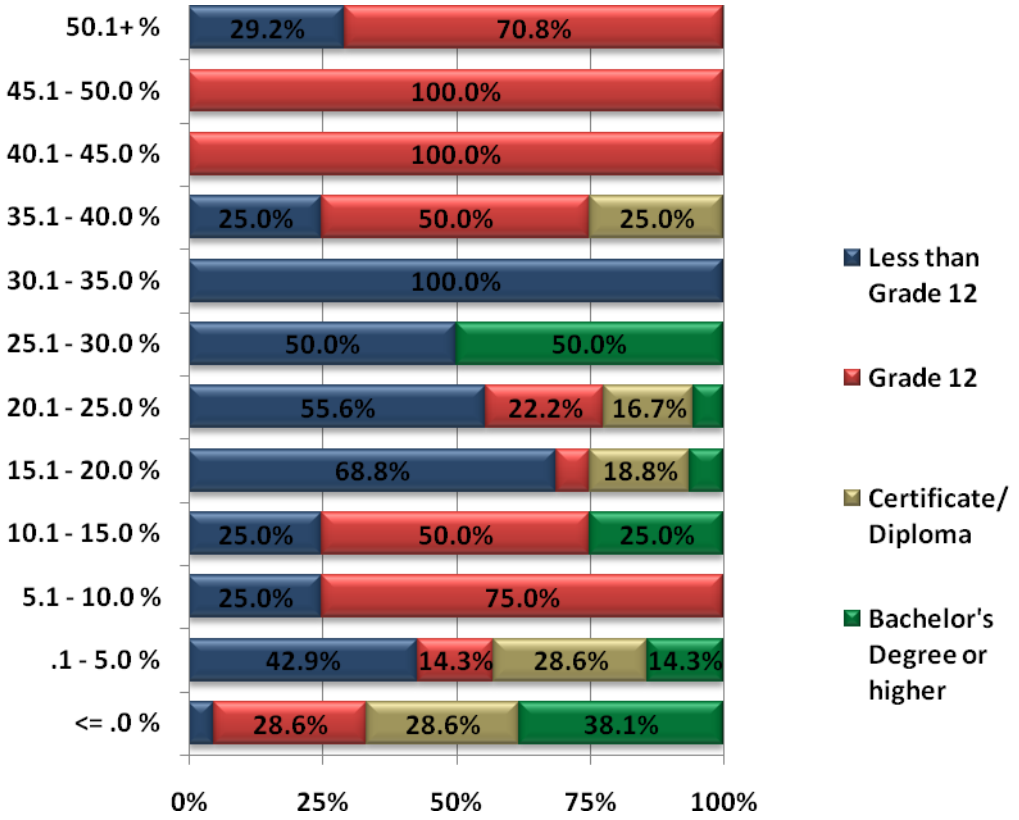
Growth in Turnover by Educational Level



Only respondents with a qualification of Grade 12 and less reported turnover growth of more than 50% since joining the incubator. Of those respondents who reported a 0% growth in turnover since they joined the incubator, the largest proportion (38.1%) had a bachelor's degree or higher, followed by equal proportions (28.6%) of respondents with a certificate/diploma or a grade 12 qualification (see Figure 14b).

Figure 14b

Growth in Turnover by Educational Level



5.2.8 Summary of Typical Profile of the Respondents

Based on the largest proportion in each categorical variable and the mean values for the scale variables, the results indicate that the typical incubatee as represented by the respondents was 36 to 40 years old, male and had an education of Grade 12 or less. The typical incubatee was active in manufacturing, had been in the incubator for less than 1 year, and had between 2 and 4 years of personal entrepreneurial and business experience. This incubatee had experienced more than 50% sales growth since joining the

incubator and his business reported a turnover of less than R1 million per annum.

5.3 Respondents' Perceptions of the Access-Providing and Collaboration-Facilitating Networking Skills of Incubator Managers

5.3.1 Research Propositions

The aim of this research was to evaluate whether the external interorganisational networking skills of government-funded incubators, as perceived by the respondents, contribute to effective incubation. The networking skills of managers were measured as both the provision of access to their networks, to the respondents, as well as the facilitation of collaboration between their networks and the respondents.

The research propositions and the relevant questions which addressed each research proposition are set out in Table 13.

Table 13

Research Propositions

Propositions	Questions
1. The external interoganisational networking skills of government-funded incubator managers, measured as the provision of access to the networks of the incubator manager, as perceived by the incubatees, contribute to effective incubation.	Q9-13
2. The external interorganisational networking skills of government-funded incubators managers, measured as the fostering of collaborative relationships between incubatees and the networks of the incubator manager, as perceived by the incubatees, contribute to effective incubation	Q14-23

From Table 14 it appears that the responses to all 15 questions were predominantly positive as regards incubatees' perceptions of the networking skills of government-funded incubator managers. Overall, the highest levels of total agreement (the total of responses indicating "Agree" or "Strongly Agree") was in respect of question 21 – 83.6% of respondents agreed or strongly agreed that technical assistance was provided to them through interactions with incubator managers and their networks.

The next strongest levels of agreement were in respect of question 13, where 79.2% of respondents indicated "Agree" or "Strongly Agree" as regards the statement that their managers introduced them to persons who had the time and were willing to assist incubatees with their businesses.

The most combined disagreement (which included responses indicating "Disagree" and "Strongly Disagree"), was in respect of question 12, as regards the introduction of the respondents to potential investors by their incubator managers – 41.5% of respondents disagreed or strongly disagreed with this statement.

Table 14

Respondents' Perceptions of Incubator Managers

Respondent's perceptions of incubator managers	Strongly disagree	Disagree	Agree	Strongly agree	TOTAL (Mean)
Access-providing networking skills					
Q9 My manager introduced me to professionals (accountants, lawyers, marketing specialists, etc) who could assist me with my business	11	12	44	31	98
	11.2%	12.2%	44.9%	31.6%	(2.97)
Q10 My manager introduced me to support firms in similar industries which could assist me with my business	6	17	46	30	99
	6.1%	17.2%	46.5%	30.3%	(3.01)
Q11 My manager introduced me to persons in government who assist small businesses and new ventures	6	21	35	39	101
	5.9%	20.8%	34.7%	38.6%	(3.06)
Q12 My manager introduced me and my	6	35	29	29	99

business to potential investors	6.1%	35.4%	29.3%	29.3%	(2.82)
Collaboration-facilitating networking skills					
Q13 My manager introduces me to persons who has the time and is willing to assist my business	5 5.2%	15 15.6%	41 42.7%	35 36.5%	96 (3.10)
Q14 My manager arranges for possible business partners to visit my incubator to liaise with myself and fellow business owners in the incubator	6 6.5%	24 25.8%	31 33.3%	32 34.4%	93 (2.96)
Q15 My manager actively supports my relationship with possible business partners, for example by following up as regards advice and assistance provided by these business partners	11 11.0%	18 18.0%	35 35.0%	36 36.0%	100 (2.96)
Q16 My manager gives me advice as to how to sell my business idea to potential business partners	8 8.4%	22 23.2%	27 28.4%	38 40.0%	95 (3.00)
Q17 My manager gives me advice as to how to sell my business idea to potential investors	8 8.3%	18 18.8%	36 37.5%	34 35.4%	96 (3.00)
Q18 My manager has enabled me to build a strong network of customers for my business	6 5.8%	17 16.5%	46 44.7%	34 33.0%	103 (3.05)
Q19 Through interactions with my manager and my manager's network, I receive information relevant to my business	8 7.8%	13 12.6%	42 40.8%	40 38.8%	103 (3.11)
Q20 The people my manager introduces me to, has helped me in the areas of my business where I didn't have the necessary knowledge or skills	5 5.1%	19 19.2%	40 40.4%	35 35.4%	99 (3.06)
Q21 Through interactions with my manager and my manager's network, I receive technical assistance for my business, for example design and production assistance, etc	7 7.2%	9 9.3%	34 35.1%	47 48.5%	97 (3.25)
Q22 Through interactions with my manager and my manager's network, I receive legal assistance for my business, for example helping me to protect my business idea through patents and / or copyright protection, drawing up contracts, etc	12 13.0%	18 19.6%	52 56.5%	10 10.9%	92 (2.65)
Q23 I feel confident that when I leave the incubator, I will know enough people in my industry to assist me in my business	9 9.5%	14 14.7%	37 38.9%	35 36.8%	95 (3.03)

5.3.1.1 Research Proposition 1

The first research proposition aimed to evaluate how the provision of access to the networks of the incubator manager, as perceived by the respondents, contributes to effective incubation.

Figure 15 depicts the respondents' perceptions of their incubator managers' provision of access to their networks, to these respondents. As mentioned in paragraph 5.3.1, out of the five questions measuring the access-providing skills

of government-funded incubator managers, the largest total disagreement (almost 35%) was in respect of question 12, namely that managers introduced respondents to potential investors. However, 60% of respondents still agreed or strongly agreed that managers introduced them to potential investors.

As regards questions 9 to 11 and 13, over 70% of respondents agreed or strongly agreed that their managers introduced them to professionals (Q9), support firms in similar industries (Q11), persons in government (Q12) and persons with the time and willingness to assist the respondents (Q13) respectively. Overall, the mean perceptions of respondents regarding incubator managers providing access to these managers' networks to the respndents, were positive.

Figure 15

Respondents' Perceptions of Provision of Access to Networks of Incubator Managers

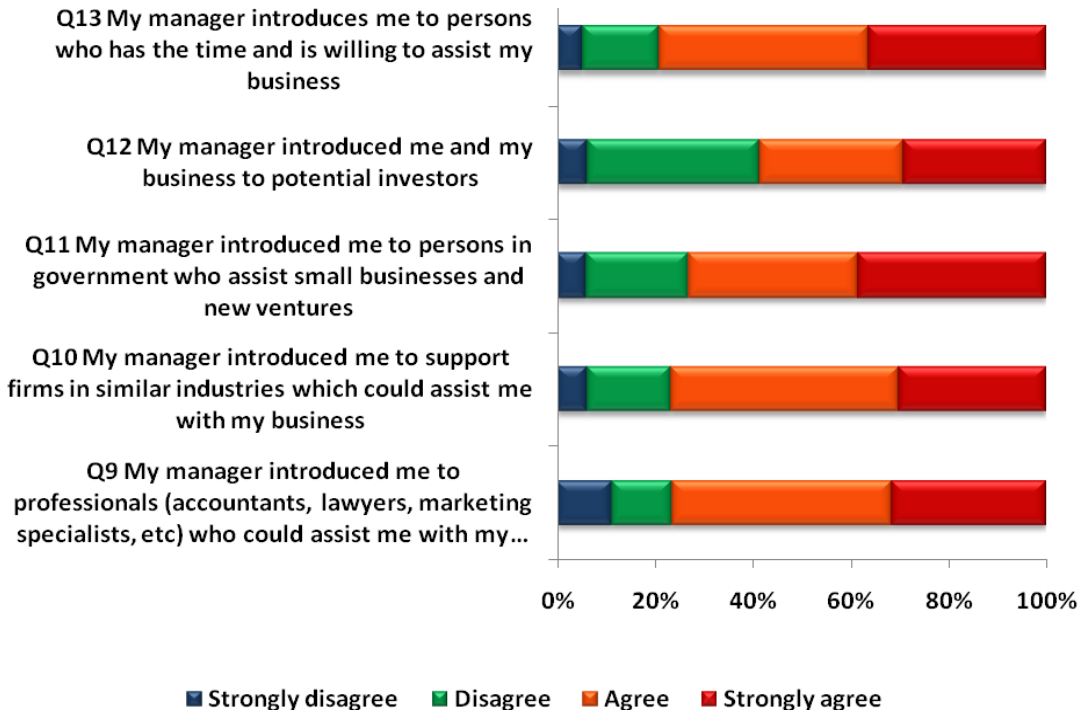


Figure 16 illustrates the mean perceptions of the respondents regarding access to the networks of their incubator managers. These average scores should be interpreted relative to the measurement scale of 1 to 4, thus a mean of 3.10 is above the centre of the scale (2.5) and higher values are associated with higher levels of agreement.

All the scores are above the centre of the scale - an indication that, on average, there is a positive perception by respondents of the access-providing skills of their managers.

Figure 16

Respondents' Mean Perceptions of Access to Networks of Incubator Manager

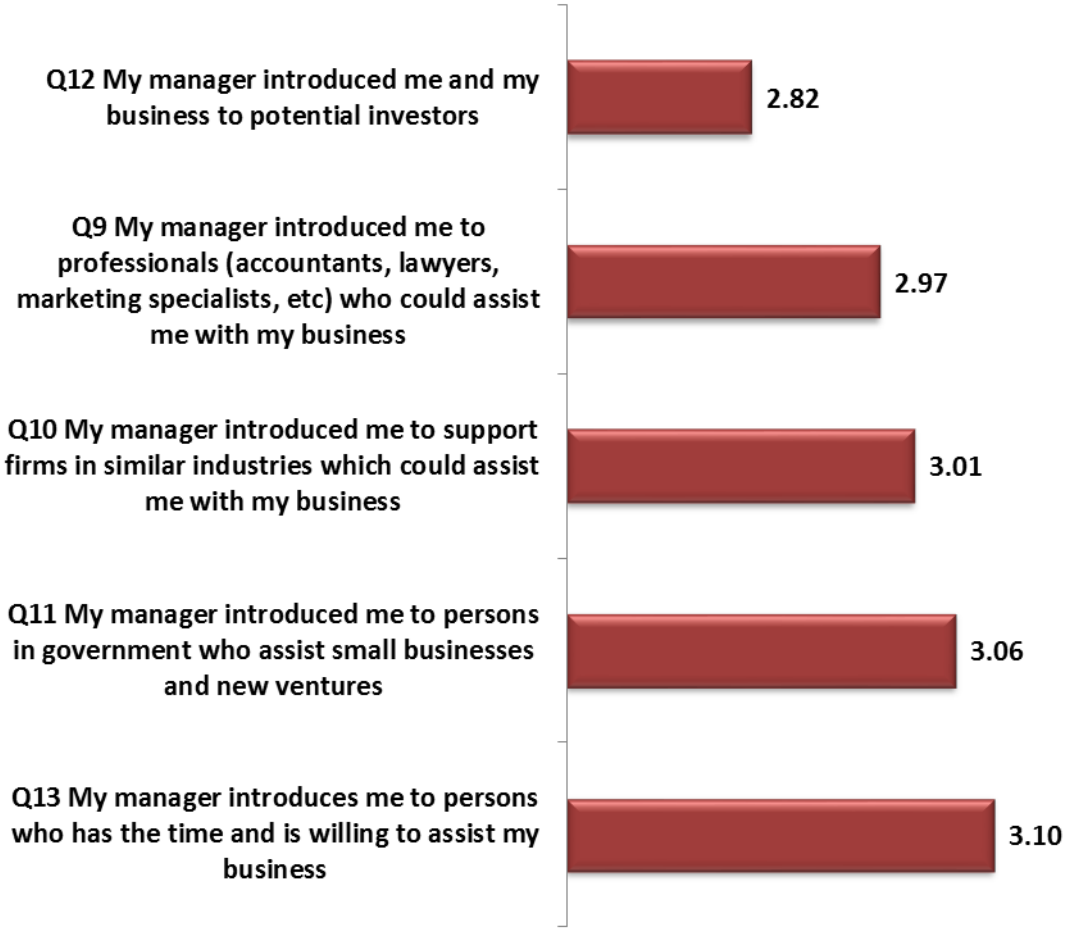


Table 15 displays the correlations, both Pearson and the non-parametric Spearman, between the reported increase in turnover experienced since the

respondent was accepted into the incubator and the responses to the five questions that focused on measuring the extent to which the respondents perceived their incubator manager to provide access to the networks of the said incubator managers.

Table 15

Pearson and Spearman Correlations of Turnover Growth with the Perceived Access Providing Skills of the Incubator Managers

Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)			
	Pearson Correlation	Spearman's rho	N
Q9 My manager introduced me to professionals (accountants, lawyers, marketing specialists, etc) who could assist me with my business	.499**	.447**	97
Q10 My manager introduced me to support firms in similar industries which could assist me with my business	.581**	.579**	98
Q11 My manager introduced me to persons in government who assist small businesses and new ventures	.476**	.431**	100
Q12 My manager introduced me and my business to potential investors	.584**	.509**	98
Q13 My manager introduces me to persons who has the time and is willing to assist my business	.502**	.415**	95

**. Correlation is significant at the 0.01 level (2-tailed).

A regression analysis was performed between the dependent variable (sales growth) and the independent variable (perceived access-providing networking skill). The results are listed in Table 16 to Table 19.

Assumptions were tested by examining the normal probability plot of the residuals and a scatter diagram of residuals versus predicted residuals. Normality, linearity and homoscedasticity were found to be within acceptable limits for adherence to these assumptions. In addition, box plots revealed no evidence of outliers.

Regression analysis revealed that the model significantly predicted sales growth, $F(1,96) = 70.63$, $p<.001$ (Table 17). R^2 for the model was .424 and the adjusted R^2 was .418 (Table 16). Table 18 displays the unstandardised regression coefficient (B), intercept, and standardised regression coefficient (β) for the independent variable.

In terms of the relationship between the access-providing networking skill and sales growth variables, the independent variable ($t=8.40$, $p<.001$) significantly predicted sales growth at the 0.1% significance level (see Table 19 for mean and standard deviation) and contributed 42.4% in shared variability.

Table 16

Model Summary

Model	R	R Square	Adjusted R Square	Standard error of the estimate
1	.651[a]	.424	.418	2.86434

a. Predictors: (Constant), Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)

b. Dependent Variable: Perceived access-providing networking skill of incubator managers (scale 0 to 16)

Table 17

ANOVA

Model		Sum of Squares	Degrees of freedom	Mean Square	F value	Significance
1	Regression	579.474	1	579.474	70.629	.000[a]
	Residual	787.628	96	8.204		
	Total	1367.102	97			

a. Predictors: (Constant), Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)

b. Dependent Variable: Perceived access-providing networking skill of incubator managers (scale 0 to 16)

Table 18

Regression Coefficients

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95.0% confidence interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	8.250	.414		19.942	.000	7.429	9.071
	Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	.080	.010	.651	8.404	.000	.061	.099

a. Dependent Variable: Perceived access-providing networking skill of incubator managers (scale 0 to 16)

Table 19

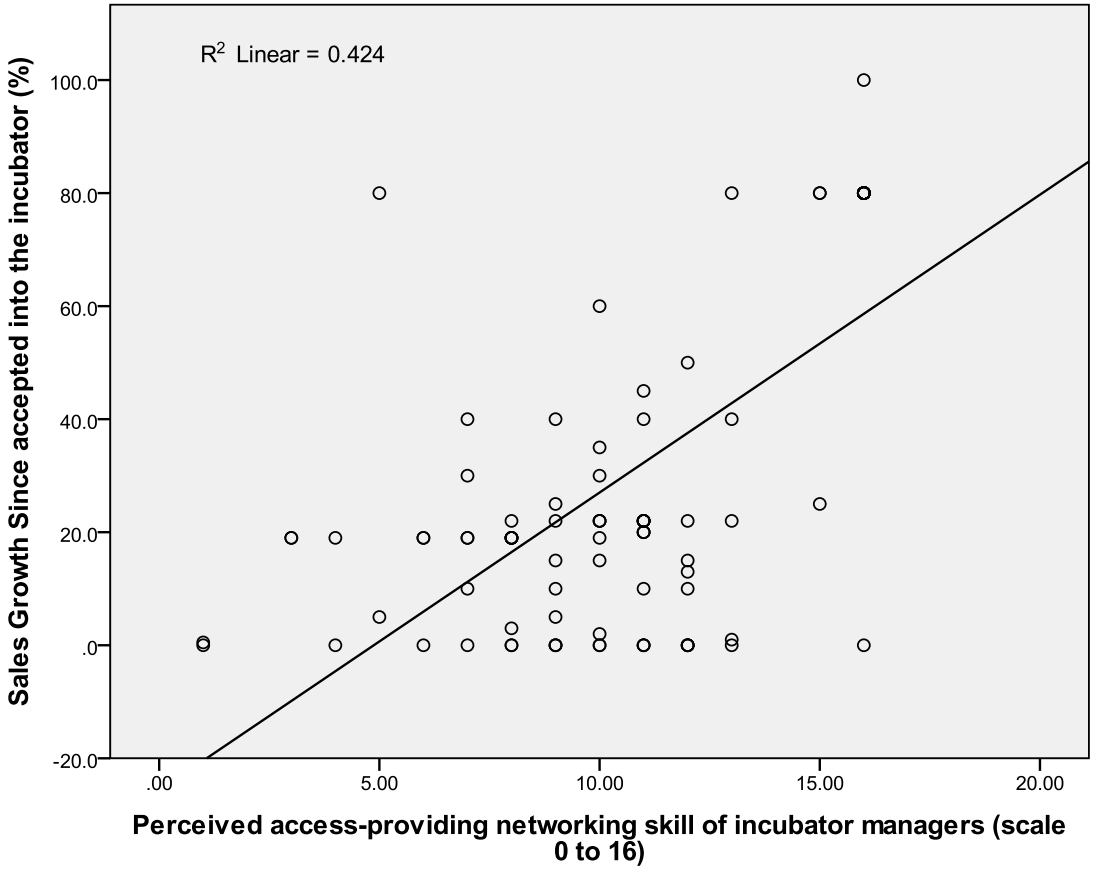
Mean and Standard Deviation

	Mean	Standard. Deviation	N
Perceived access-providing networking skill of incubator managers (scale 0 to 16)	10.7347	3.75418	98
Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	30.893	30.3867	98

The reported percentage sales growth since having been accepted into the incubator is positively correlated to how the respondents perceive the access-providing networking skill of their managers, $r(98)=.651$, $p<.001$. This positive relationship is illustrated in Figure 17, where it is also evident that the one variable explains 42.4% of the variance in the other (R^2 Linear = 0.424).

Figure 17

Sales Growth by Access-Providing Networking Skill



5.4.2 Research proposition 2 – Collaboration-Facilitating Skills of Incubator Manager

The second research proposition aimed to evaluate whether the fostering of collaborative relationships between respondents and the networks of the incubator manager, as perceived by the respondents, contributes to effective incubation. Questions 14-23 of the questionnaire related to this research proposition.

Figure 18 depicts the proportions of how respondents scored their incubator managers with respect to the facilitation of collaboration between the incubator manager's networks and the respondents.

Figure 18

Respondents' Perceptions of the Collaboration-Facilitating Skills of Their Managers

Figure 19 illustrates the mean perceptions of facilitation of the collaboration between the manager's network and the respondents. On average, the respondents indicated a positive view of the collaboration-facilitating skills of their managers.

Figure 19

Mean Perceptions of Collaboration-Facilitating Skills of Managers

Table 20 displays the correlations, both Pearson and the non-parametric Spearman, between the reported increase in turnover experienced since the incubatee was accepted into the incubator and the responses to the 10 questions that were employed with the aim of determining some measure of the extent to which the respondents believe that their incubator manager have fostered collaborative relationships between the them and the networks of their incubator managers. Both the Spearman and the Pearson tests showed significant correlations at the 1% level for each of the 10 items.

Table 20

Pearson and Spearman correlations of turnover growth with the perceived collaboration fostering skills of the incubator managers

Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)			
	Pearson Correlation	Spearman's rho	N
Q14 My manager arranges for possible business partners to visit my incubator to liaise with myself and fellow business owners in the incubator	.521**	.453**	92
Q15 My manager actively supports my relationship with possible business partners, for example by following up as regards advice and assistance provided by these business partners	.529**	.483**	99
Q16 My manager gives me advice as to how to sell my business idea to potential business partners	.539**	.503**	94
Q17 My manager gives me advice as to how to sell my business idea to potential investors	.500**	.474**	95
Q18 My manager has enabled me to build a strong network of customers for my business	.522**	.499**	102
Q19 Through interactions with my manager and my manager's network, I receive information relevant to my business	.362**	.368**	102
Q20 The people my manager introduces me to, has helped me in the areas of my business where I didn't have the necessary knowledge or skills	.621**	.608**	98

Q21 Through interactions with my manager and my manager's network, I receive technical assistance for my business, for example design and production assistance, etc	.436**	.440**	96
Q22 Through interactions with my manager and my manager's network, I receive legal assistance for my business, for example helping me to protect my business idea through patents and / or copyright protection, drawing up contracts, etc	.335**	.378**	91
Q23 I feel confident that when I leave the incubator, I will know enough people in my industry to assist me in my business	.537**	.508**	94

**. Correlation is significant at the 0.01 level (2-tailed).

Table 21 illustrates a correlation significant at the 1% level of significance in respect of the percentage of growth (that serves as a measure for effective incubation) and the calculated perceived incubator managers' relationship-fostering networking skills index.

Table 21

Growth in Turnover and Perceived Collaboration-Facilitating Networking Skills of Incubator Managers

	Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	Perceived collaboration-facilitating networking skill of incubator managers (scale 0 to 16)
Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	1	
Perceived access-providing networking skill of incubator managers (scale 0 to 16)	.668**	1

**. Correlation is significant at the 0.01 level (2-tailed).

A simple regression analysis was performed between the dependent variable (sales growth) and the independent variable (perceived relationship-fostering networking skill). The results are listed in Table 22 to 25.

Assumptions were tested by examining the normal probability plot of the residuals and a scatter diagram of residuals versus predicted residuals. Normality, linearity or homoscedasticity were found to be within acceptable limits for adherence to these assumptions. In addition, box plots revealed no evidence of outliers.

Regression analysis revealed that the model significantly predicted sales growth $F(1,93)=75.02$, $p<.001$ (Table 23). R^2 for the model was .446 and the adjusted R^2 was .441 (Table 22). Table 24 displays the unstandardised regression coefficient (B), intercept, and standardised regression coefficient (β) for the independent variable.

In terms of the relationship between the relationship-fostering networking skill and sales growth variables, the independent variable ($t=8.66$, $p<.001$) significantly predicted sales growth (see Table 25 for mean and standard deviation) and contributed 44.6% in shared variability.

Table 22

Model Summary

Model	R	R Square	Adjusted R Square	Standard error of the estimate
1	.668[a]	.446	.441	5.70982

a. Predictors: (Constant), Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)

b. Dependent Variable: Perceived relationship-fostering networking skill of incubator managers (scale 0 to 32)

Table 23

ANOVA

Model		Sum of Squares	Degrees of freedom	Mean Square	F value	Significance *(p)*
1	Regression	2445.759	1	2445.759	75.019	.000[a]
	Residual	3031.989	93	32.602		
	Total	5477.747	94			

a. Predictors: (Constant), Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)

b. Dependent Variable: Perceived relationship-fostering networking skill of incubator managers (scale 0 to 32)

Table 24

Regression Coefficients

Model		Unstandardised Coefficients		Standardised Coefficients	t	Significance *(p)*	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	16.031	.844		18.993	.000	14.355	17.707
	Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	.167	.019	.668	8.661	.000	.129	.206

a. Dependent Variable: Perceived relationship-fostering networking skill of incubator managers (scale 0 to 32)

Table 25

Mean and Standard Deviation

	Mean	Standard deviation	N
Perceived relationship-fostering networking skill of incubator managers (scale 0 to 32)	21.2947	7.63373	95
Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (%)	31.468	30.4963	95

The reported percentage sales growth since having been accepted into the incubator was positively correlated with how the respondents perceive the relationship-fostering networking skill of their managers at the 1% level of significance, $r(95)=.668$, $p<.001$. This positive relationship is illustrated in Figure 20 from where it is also evident that the one variable explains 42.4% of the variance in the other (R^2 Linear = 0.424).

Figure 20

Regression: Collaboration-Facilitating Networking Skill

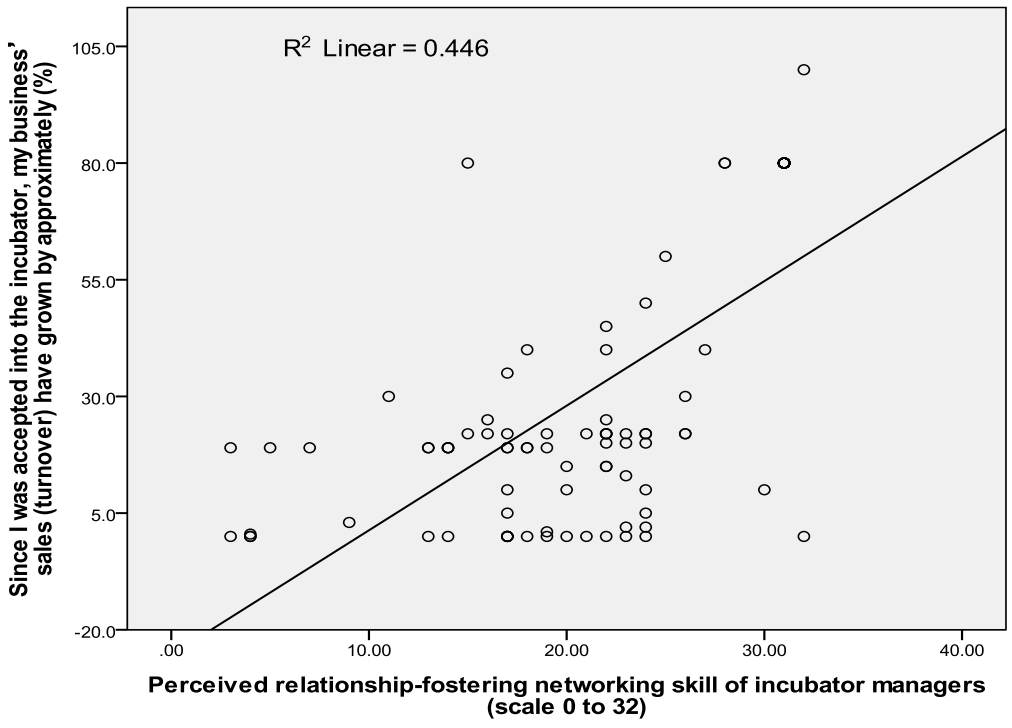


Table 26

Pearson and Spearman Correlations of Turnover Growth with the Perceived Collaboration-Facilitating Skills of the Incubator Managers

Question number	Pearson Correlation	Spearman's rho
Q9 My manager introduced me to professionals (accountants, lawyers, marketing specialists, etc) who could assist me with my business	.499**	.447**
Q10 My manager introduced me to support firms in similar industries which could assist me with my business	.581**	.579**
Q11 My manager introduced me to persons in government who assist small businesses and new ventures	.476**	.431**
Q12 My manager introduced me and my business to potential investors	.584**	.509**
Q13 My manager introduces me to persons who has the time and is willing to assist my business	.502**	.415**
Q14 My manager arranges for possible business partners to visit my incubator to liaise with myself and fellow business owners in the incubator	.521**	.453**
Q15 My manager actively supports my relationship with possible business partners, for example by following up as regards advice and assistance provided by these business partners	.529**	.483**
Q16 My manager gives me advice as to how to sell my business idea to potential business partners	.539**	.503**
Q17 My manager gives me advice as to how to sell my business idea to potential investors	.500**	.474**
Q18 My manager has enabled me to build a strong network of customers for my business	.522**	.499**
Q19 Through interactions with my manager and my manager's network, I receive information relevant to my business	.362**	.368**
Q20 The people my manager introduces me to, has helped me in the areas of my business where I didn't have the necessary knowledge or skills	.621**	.608**
Q21 Through interactions with my manager and my manager's network, I receive technical assistance for my business, for example design and production assistance, etc	.436**	.440**
Q22 Through interactions with my manager and my manager's network, I receive legal assistance for my business, for example helping me to protect my business idea through patents and / or copyright protection, drawing up contracts, etc	.335**	.378**

Q23 I feel confident that when I leave the incubator, I will know enough people in my industry to assist me in my business	.537**	.508**

**. Correlation is significant at the 0.01 level (2-tailed).

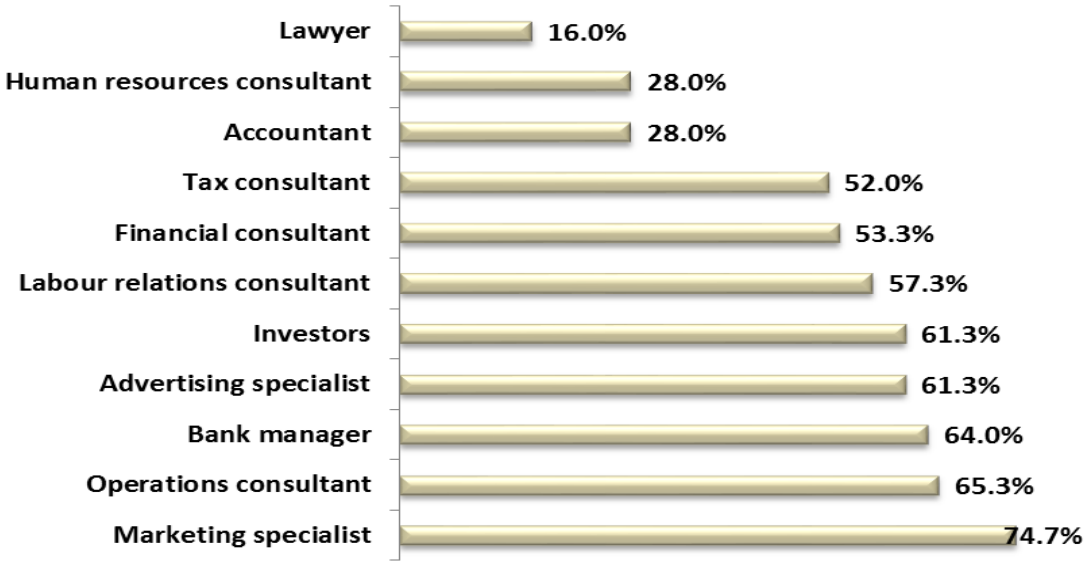
5.4 Business Contacts

The questionnaire included a question as to which professionals the respondents will have contact with, once they graduate from the incubator (Question 24). This was a separate question as it was aimed at the position once the respondent had left the incubator.

The 104 respondents made 421 selections, which translated to 5.6 selections per respondent on average. Marketing specialists were selected by almost three quarters of the respondents. Other professionals who were indicated by more than 60% of the respondents were operations consultants (65.3%), bank managers (64%), advertising specialists (61.3%) and investors (61.3%). Lawyers were indicated by the smallest proportion of the respondents (16%) (Figure 21). On average, each respondent selected 5.6 professional contacts that they will have after leaving the incubator.

Figure 21

Professional Contacts after Leaving the Incubator



5.5 Conclusion

The results of the statistical analysis pointed to a correlation significant at the 1% level of significance between both the access-providing and collaboration-facilitating networking skills of government-funded incubator managers, as perceived by the respondents, and effective incubation. In Chapter 6, the findings will be considered in terms of the research propositions and the relevant literature.

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction

This chapter summarises the results of the quantitative research. Although various factors which contribute to the success of business incubation have been explored in previous literature (Autio & Klofsten, 1998; Finer & Holberton, 2002; Smilor et al., 1989; Wright et al, 2007), networking has been specifically identified as a critical component of successful business incubation (Buys & Mbewana, 2007; Lewis, 2001). However, previous authors have not evaluated the extent to which networking skills of incubator managers as perceived by incubatees, contribute to effective incubation (Finer & Holberton, 2007; Gartner *et al.*, 1999; Wong *et al.,* 2005; Wu *et al.* 2008), although both Drucker (2001) and Lewis (2001) emphasised that the manager is a critical factor in the success of an incubator.

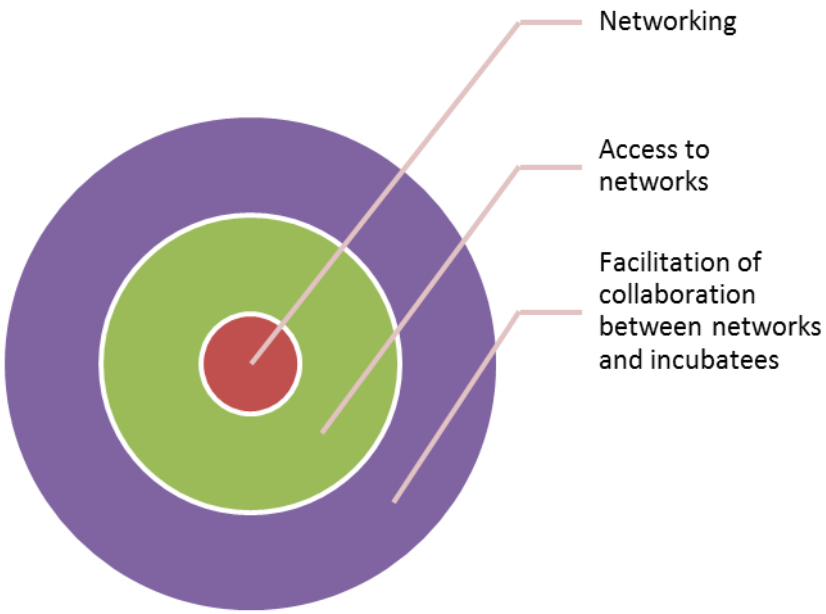
The objective of the questionnaires was to obtain an understanding of the networking skills of government-funded incubator managers (as perceived by incubatees) and how these skills contribute to effective incubation.

For purposes of analysis, the rating questions in the Likert-scale questionnaire were divided according to the research propositions addressed in Table 13. The 15 questions (questions 9 to 23) measuring various aspects of the perceptions that the respondents have of their incubator managers' networking skills, were measured on a scale from 1 to 4 with 1=Strongly disagree, 2=Disagree, 3=Agree and 4=Strongly agree.

The dimensions of the networking skills of government-funded incubator managers which were measured are illustrated in Figure 22.

Figure 22

Networking skills



6.2 Access to Networks

6.2.1 Discussion of Results

This research proposition posited that the external interoganisational networking skills of government-funded incubator managers, measured as the provision of access to the networks of the incubator manager, as perceived by the incubatees, contribute to effective incubation. Effective incubation was measured as growth in turnover of the incubated venture.

The various ways in which incubator managers could provide access to their networks to incubatees are set out in Figure 23.

Figure 23

Access-Providing Networking Skills

The results indicated a correlation, significant at the 1% level of significance, between the effectiveness of the incubation and the perception of the incubatees regarding the ability of the incubator manager to provide access to his or her networks.

The abovementioned result is in line with the proposition by Hansen et al. (2000) that the best incubators provide extensive business connections and that

the incubator manager facilitates access by incubatees to his network. Hansen et al. (2000) pointed out that networking is institutionalised in the better incubators, in the sense that the incubator has developed mechanisms to foster networking. The results also support the proposition by Weinberg et al. (1991) that business incubators require special managerial attention to maximise networking opportunities, and that the incubator manager should have extensive business connections from which the incubatee can benefit.

The highest level of total agreement as regards the access-providing networking skills of government-funded incubator managers was that incubator managers introduced incubatees to persons with the time and willingness to assist incubatees - 79.2% of respondents agreed or strongly agreed with this statement. This supports the contention by Rice (2002) that networking opportunities will be enhanced where the incubator manager ensures that the relevant expert has the time and is willing to assist the relevant incubatee – especially as an incubatee's individual ties may sometimes be lacking, as pointed out by Lin et al. (2008) and Zhang et al. (2008). In addition to the aforementioned, Scillitoe and Chakrabarti (2010) emphasised the importance of access to the incubator manager's network.

The second highest level of total agreement (76.8%) was as regards the statement that incubator managers introduced incubatees to support firms in similar industries which could assist incubatees with their businesses. This supports the findings by Hoang and Antoncic (2003) and Bøllingtoft and Ulhøi (2005) that internal networks where incubatees network with other incubatees can be a useful source of competencies.

Furthermore, the results of this research indicated that over 70% of respondents agreed or strongly agreed that their managers introduced them to professionals who could assist them with their businesses and persons in government who assist small businesses (76.5% and 73.3% respectively). These professionals included persons such as accountants, attorneys, banker managers and marketing specialists. The results regarding introduction to professionals is supported by high levels of agreement that incubatees will know enough people to assist them when they graduate from the incubator. As regards assistance from persons in government, this could be explained by the fact that the STP is a government initiative and that there is an increased focus by the Department of Trade and Industry on supporting small businesses (Department of Trade and Industry, 2010a).

The highest level of disagreement was that incubator managers introduced incubatees to potential investors – 41.5% of respondents either disagreed or strongly disagreed with this statement. This lack of access to potential investors could potentially be ascribed to incubator managers not having access to potential investors as part of their network or because investors are cautious of investing in an unproven business, as posited by Hoang & Antoncic, 2003. However, as argued by Rice (2002), it is precisely the provision of a networking infrastructure which can assist incubatees to overcome the difficulties associated with an unproven business, such as lack of a successful history of operations.

Furthermore, an incubator manager should provide resources in areas where incubatees have gaps (Lin *et al.*, 2008), and it is argued that access to potential investors is such a resource. Hoang and Antoncic (2003) agreed that networks

can provide a source of comfort to potential resource holders and investors and lead to positive perceptions regarding a new venture, while Zhang et al. (2008) as well as Klyver et al. (2008) posited that social networks can assist entrepreneurs in obtaining capital for new ventures. However, as discussed above, it may be that incubator managers do not themselves have access to many investors, which complicates the provision of such access to incubatees and may explain the high level of disagreement regarding the provision of access to investors to incubatees.

6.2.2 Conclusion

Although the results showed, on average, a positive perception of the access-providing networking skills of government-funded incubator managers, the results should be seen in context. The majority of incubatees have a qualification of less than Grade 12 and they may therefore not have had much experience of networking skills. Accordingly, they may have rated their managers more positively than was justified, owing to low expectations.

Furthermore, the results indicated a correlation significant at the 1% level of significance between the access-providing networking skills of incubator managers and effective incubation, measured as the growth in sales of the incubated venture. This is supported by Davidsson and Honig (2003), who found that networking plays a significant role in contributing to the success of new ventures.

6.3 Facilitation of Collaboration

6.3.1 Discussion of Results

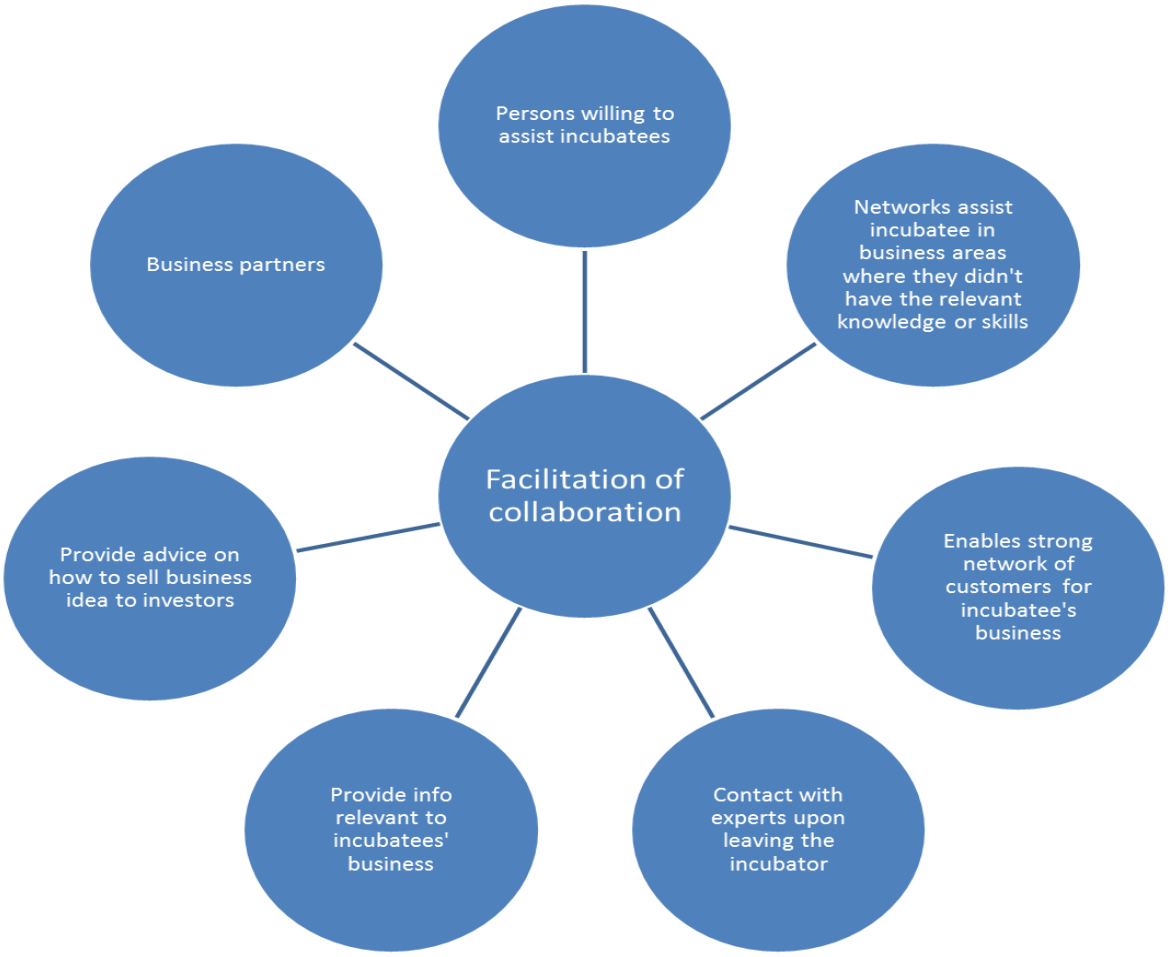
The second proposition posited that the external interorganisational networking skills of government-funded incubators managers, measured as the fostering of collaborative relationships between incubatees and the networks of the incubator manager, as perceived by the incubatees, contribute to effective incubation, measured in percentage growth in turnover.

The statistical testing indicated a correlation, significant at the 1% level of significance between the effectiveness of the incubation and the fostering of collaborative relationships between the incubators and the networks of their incubator managers, as perceived by incubatees.

The various ways in which incubator managers could facilitate collaboration between their networks and incubatees are illustrated in Figure 24.

Figure 24

Facilitation of Collaboration



The mean perceptions of incubatees with regards to the facilitation of collaboration by incubator managers between the networks of the incubator managers and incubatees were positive, with the majority of incubatees

indicating active facilitation of collaboration between the networks of their manager and the incubatees.

The above findings are in line with the proposition by Weinberg et al. (1991) that the fostering of business connections between incubatees and "sources of commercial relevance" should be encouraged within an incubator. The results indicated that, in particular, the facilitation of technical assistance to incubatees was rated highly (83.6% of respondents agreed or strongly agreed with this statement). This is supported by the finding by Scillitoe and Shabarti (2010) that networking interaction with incubator management is the best enabler of teaching the incubatee technical and learning know-how skills. As most respondents were in agriculture and manufacturing, the perceptions regarding the provision of technical assistance (which could have been viewed as any assistance to aid production or the manufacture of materials) seemed to make sense.

The second highest levels of agreement were that incubatees receive information relevant to their businesses through interactions with their managers and their managers' networks – 77.7% of respondents agreed or strongly agreed with this statement. This seems to support the contention that incubator managers are experienced in the industry which is the focus area of the relevant incubator. There were further high levels of total agreement (75.8%) that interaction with the incubator manager helped incubatees in areas of their businesses where they did not have the relevant knowledge or skills. Incubatees also agreed or strongly agreed that they would know enough people in their industries to assist them upon leaving the incubator (75.7% total agreement). This makes sense in light of the high levels of agreement as

regards the access-providing networking skills of managers discussed in paragraph 6.2 above. The results indicated high levels of agreement with the statement that when incubatees leave the incubator, they will know enough persons to assist them with their new ventures. This is supported by the contention of Weinberg et al. (1991), that an incubator should "foster business connections" between incubatees and outside firms, government agencies and "other sources of commercial relevance" (p. 151), as well as the emphasis by Schwartz (2008) and Rice (2002) on the value of proactive incubator management. It is submitted that the results indicate pro-active incubator management as proposed by the aforementioned authors.

Furthermore, the positive response to the statement regarding business contacts the incubatee will have upon leaving the incubator supports the contention that incubators should create opportunities for incubatees to develop relationships (Duff, 1994; Regis *et al.*, 2007). The results further support the finding by Rice (2002) that the managers' know-how network, which includes bankers, attorneys, accountants, marketing specialists and investors, is a valuable resource and that the manager needs to proactively drive the flow of this resource to incubatees.

Further to enabling contact with professionals and networks to which the incubatee will have access after leaving the incubator, marketing specialists were selected by almost three quarters of the respondents, which could be an indication that the incubator managers knew the importance of access to such professionals.

There were slightly lower levels of total agreement that managers provide incubatees with advice as to how to sell their businesses to potential investors and that they follow up with incubatees as regards advice provided to incubatees by members of the incubator managers' network (72.9% and 71% of respondents agreed with these statements respectively). As discussed, access to investors is problematic, which could explain the lower levels of agreement in this regard.

There were also lower levels of agreement that managers provide advice to incubatees as to how to sell their business idea to potential business partners (68.4%). In this regard, Rice (2002) posited that effective counselling by an incubator manager includes the teaching negotiation techniques, and Zhang et al. (2008) argued that social boldness (the ability to approach and interact with complete strangers) affect entrepreneurs' ability to make use of networks. It is submitted that incubator managers could focus more on these aspects of their collaboration-facilitating networking skills.

The highest percentage of disagreement was in respect of the statement that the incubator manager facilitated collaboration between incubatees and legal experts (67.4%). According to Baker (2007), "the types of entrepreneurs typically targeted by business incubators usually are those with the most difficulty in hiring competent legal assistance" (p. 510). In addition to the aforementioned, lawyers tend to be less amenable to providing free advice. As a result, some incubators share the costs of the lawyer with the relevant incubatee, should the incubatee request legal advice. (De Klerk, L, incubator manager, Timbali incubator, September 29, 2011).

The increasing volume of new legislation, difficulties to keep up with statutory and legal changes and the prohibitive cost of legal advice was also pointed out as a concern by young entrepreneurs (Herrington, Kew & Kew, 2011).

6.3.3 Conclusion

On average, the results showed a positive perception of the collaboration-facilitating networking skills of government-funded incubator managers. However, as was the case with perceptions regarding the access-providing networking skills of the aforementioned managers, it should be kept in mind that the majority of incubatees may not have experienced networking skills and may have rated their managers more positively than was justified.

Furthermore, the results indicated a correlation, significant at the 1% level of significance between the collaboration-facilitating networking skills of incubator managers and effective incubation, measured as the growth in sales of the incubated venture. This is supported by Rice (2002) who posited that networking capabilities are enhanced by the facilitation of collaboration between members of the incubator manager's network and incubatees.

6.4 Findings relating to the demographic profile of incubatees

6.4.1 Age distribution of incubatees

The incubatees ranged from 34 to 66 years, with an average age of 34.4. The largest age group was 36 to 40 year olds (26%), followed by 26 to 30 year olds (23.1%). This could be due to the fact that incubatees may have been employed in other positions before they decided to start their own businesses. It could

also be due to the fact that these entrepreneurs have worked and built up some experience, business networks and financial reserves while employed, and then identified a need in the market which prompted them to start their own businesses (J. Sawers, World Bank, personal communication, September 29, 2011).

6.4.2 Gender distribution of incubatees

The results indicated that 71.2% of the respondents were male, while 28.8% were female. This was probably because more than half of the respondents (57%) were in agriculture, traditionally viewed as male-dominated work. It could also be the case because women may stay home to raise children, and may therefore be less inclined to join incubators than their male counterparts. Furthermore, of the SSMEs supported by the STP in 2010, only 35% were owned by females and 65% were owned by males (STP, 2010).

In addition to the above, according to Herrington et al. (2010), Global Entrepreneurship Monitor (GEM) reports from 2001 to date have consistently shown that men in South Africa are 1.5 to 1.6 times more likely to be involved in early-stage entrepreneurial activity than women, although there has been an increase in women-owned businesses in 2010.

Males reported a higher sales growth than females (the mean sales growth for males was 35.6% and for females, 16.9%) This was despite that fact that females remained in incubation longer than their male counterparts. In fact, there was almost no correlation between the time spent in incubation in sectors

where most of the respondents were active (the manufacturing and agriculture, forestry, hunting and fishing sectors) and growth in sales.

Furthermore, as regards female incubatees operating in traditionally male-dominated industries, there may be a bias against female incubatees in these industries which may lead to less people supporting their businesses. According to O'Neill and Viljoen (2001), female entrepreneurs face numerous barriers, such as lack of access to finance, lack of collateral to obtain loans, lack of support from families, lack of acceptance from the community, male prejudice, lack of management skills and poor access to information and advice. Witbooi and Ukpere (2011) and O'Neill and Viljoen (2001) argued in favour of the abolition of gender division of labour which constrains women's entrepreneurial activities.

6.4.3 Education levels of incubatees

The highest educational level of nearly three quarters (70.2%) of the respondents was Grade 12 or less. This could be as the majority of the incubatees are in the manufacturing and agriculture, forestry, hunting and fishing industries, where a high educational qualification is not necessarily an entry requirement. While 15.4% of the respondents had a post-matric certificate or diploma, only 12.6% had tertiary education ranging from a bachelor's degree to a doctoral degree. The low level of education of the incubatees may have contributed to the positive perception of the networking skills of the incubator managers, as these incubatees may not have had previous exposure to networking skills.

More than 50% of incubatees with a qualification of less than Grade 12 reported an increase in turnover of 15% to 25%, while more than 60% of respondents with a qualification higher than a bachelor's degree reported no increase in turnover. It may be argued that incubatees without matric would probably report a faster growth pattern as they may be growing a business from a zero base. Shortages of skills have also been pointed out by the Department of Trade and Industry as a constraint on the manufacturing industry (Department of Trade and Industry, 2010b) and poor levels of education has been emphasised as a constraint on entrepreneurship by the 2010 GEM report (Herrington *et al.*, 2010).

Incubatees with higher levels of education may focus more on business services and telecommunications, and less on industries such as agriculture, forestries and fishing. In fact, the largest proportions of incubatees who currently operate in business services (75%) and customer services (50.0%) have at least a bachelor's degree. All the incubatees who currently operate in health care, education and social services, wholesale, motor vehicle sales and repair and transport and communication utilities have a Grade 12 qualification. Of those incubatees who currently operate in retail, hotels and restaurants, 66.7% have a certificate or a diploma. In addition to the aforementioned, the distribution of educational qualifications may be related to entry requirements in specific sectors. However, it must be noted that the number of respondents represented in these sectors are extremely low and therefore the large proportions should be interpreted with caution.

6.4.4 Period in Incubation

Almost half of the respondents were newcomers in the incubators, with less than one year in incubation. This could be the case because of the recent increased focus by government on entrepreneurship and the promotion of SMMEs as critical contributors to economic development and job creation (Department of Trade and Industry, 2010a). In addition to the aforementioned, the 2010 GEM report indicated that the effects of the global recession reduced the number of entrepreneurs who believed there were opportunities to start a new business, and it may be that this trend is showing signs of abating in 2011 as more incubatees enrol in incubators.

It could also be explained by the possibility that incubator support is more focused at the early stages of incubation, and incubatees may derive the most benefit from incubation during the first two years after which they may feel they have learned enough to start their own businesses. This could be explored in future research.

6.4.5 Personal Entrepreneurial and Business Experience

The largest percentage of respondents (24%) had between 1 and 2 years personal entrepreneurial experience (managing their own businesses) and the lowest percentage (only 1% of respondents) had between 6 and 8 years of personal entrepreneurial experience. Nearly half of respondents (47.2%) had 2 to 6 years business experience and a lesser percentage (34.7%) had over 6 years business experience.

It is submitted that the largest need for incubation would be for incubatees with little or no personal entrepreneurial and business experience, as these

respondents would benefit substantially from the expertise and networks of the incubator manager and incubation. This may explain the abovementioned results.

6.4.6 Growth in Turnover

Effective incubation was measured as the growth in turnover of the relevant incubated business during incubation. The results indicated that 20.4% of the respondents reported no growth in turnover since they joined the incubator, while 23.3% reported growth of more than 50%. As almost 95% of the respondents reported an annual turnover of less than R1 million, the growth could also be high as it is calculated from a low base. Furthermore, the respondents' businesses may have earned no revenue when they entered the incubator.

6.5 Conclusion

In summary, the results supported the literature as regards the importance of networking skills in incubation, specifically the networking skills of government-funded incubator managers. The results indicated a correlation significant at the 1% level of significance between both the access-providing and collaboration-facilitating networking skills of incubator managers and effective incubation.

As regards access-providing networking skills, the provision of access by incubator managers to persons willing to assist the incubatee was perceived especially positively by incubatees. With regard to collaboration-facilitating skills, the provision of technical assistance to incubatees was rated highly by incubatees and supported the literature as regards networking providing

incubatees with resources and expertise which they may lack. However, access to investors and legal assistance were areas where incubatees perceived less access and collaboration being provided by incubator managers.

It should be noted that the results should only be generalised to the population of 565 incubatees. However, even generalisation of the results to this population could be compromised due to non-response and social desirability bias.

CHAPTER 7: CONCLUSION

7.1 Introduction

Chapter 1 set out the research problem and motivation for the research, while Chapter 2 discussed the relevant theory and literature. In light of the literature review, research propositions were formulated in Chapter 3 and the research methodology was set out in Chapter 4. Chapter 5 reported the results of the research, while Chapter 6 discussed these results in light of the research propositions and the literature review.

This aim of this chapter is to draw conclusions from the statistical findings. Recommendations will be made to stakeholders on the basis of these findings, and possible topics for future research will be explored.

A brief review of the research is set out hereunder.

7.2 Review of Research

The main purpose of the research was to determine whether the external interorganisational networking skills of managers of government-funded incubators, as perceived by incubatees, contribute to effective incubation. Although previous literature supported networking as one of the factors which contributes to effective incubation, it did not specifically explore the networking skills of government-funded incubators from the point of view of the incubatees,

and how these networking skills contribute to effective incubation (measured as the growth in sales of the relevant incubated venture).

The research was quantitative and descriptive, with the object of establishing whether there is a correlation between two variables – the networking skills of government-funded incubator managers as perceived by incubatees, and effective incubation. Survey questionnaires were utilised to gather data. The final population consisted of 565 incubatees currently in incubation at 30 government-funded incubators in South Africa who had access to the questionnaire and responses were obtained from 104 of these incubatees.

The questionnaires were collected and analysed by means of various statistical tests. Univariate statistics, including frequency tables and descriptive data, provided useful information to establish the typical incubatee profile. Bivariate statistics were used to establish either covariance or statistical independence. Scatterplots, cross-tabulation and measures of association assisted to evaluate whether there is a correlation between the networking skills of government-funded incubator managers and effective incubation.

7.3 Research Findings

It is submitted that the results of the research provided valuable insights as to the networking skills of the managers of government-funded incubators, as perceived by incubatees, and the correlation between these networking skills and effective incubation.

A summary of the research findings is set out below.

7.3.1 Research Proposition 1

This research proposition aimed to determine whether the external interoganisational networking skills of managers of government-funded incubators, as perceived by the incubatees, measured as the provision of access to the networks of the incubator manager, contribute to effective incubation.

The key findings were the following:

- On average, incubatees reported a positive perception of the access-providing networking skills of their incubator managers.
- There is a correlation, significant at the 1% level of significance, between the access-providing networking skills of government-funded incubator managers and effective incubation.

7.3.2 Research Proposition 2

The research proposition aimed to determine whether the external interoganisational networking skills of managers of government-funded incubators, as perceived by the incubatees, measured as the facilitation of collaboration between the networks of these incubator managers and the incubatees, contribute to effective incubation.

The key findings were the following:

- On average, incubatees reported a positive perception of the collaboration-facilitating networking skills of their incubator managers.

- There is a correlation, significant at the 1% level of significance, between the networking skills of government-funded incubator managers and effective incubation.

7.4 Recommendations to Stakeholders

The following recommendations are made in light of the results of this research:

- Appointment of incubator managers should favour managers with well-developed networking skills.
- Incubator managers' performance should be measured against the introduction of incubatees to incubator managers' networks, and facilitation of collaboration between these networks and incubatees.
- Incubator managers should be assisted in the task of introducing potential investors to incubatees.
- A scheme could be devised whereby law students provide free legal advice to incubatees as part of a social initiative.

7.5 Recommendations for Future Research

The following topics are suggested for possible future research:

- Similar research as regards the networking skills of incubator managers in private and for-profit incubators.
- Similar research as regards the networking skills of managers in other industries.

- An evaluation of the term “effective incubation” from the point of view of government, including a comparison with how effective incubation is measured in other countries.

- A comprehensive analysis of the effect of age and gender on effective incubation and the perceptions of incubatees of the networking skills of their managers.

- Research as to why respondents with lower levels of education report higher growth in turnover than incubatees with higher levels of education.

- Research as to why females report lower growth in turnover while in incubation than males.

- Research as regards the correlation between the networking skills of incubator managers and the sustainability of incubated ventures post-graduation.

7.6 Concluding Remarks

In the researcher’s view, networking is a crucial skill for both incubator managers and incubatees. The contribution of this research is to assist in promoting effective incubation by highlighting the correlation, significant at the 1% level of significance, between the networking skills of government-funded incubator managers and effective incubation. As pointed out by Sun, Ni and Leung (2007), one of the critical success factors of incubator programmes is the networking advantages the incubator offers. This was observed by writer hereof during a visit to the West Coast of the United States of America and specifically

Silicon Valley, which illustrated a strong focus on networking and collaboration. It is further submitted that the development of the networking skills of the incubator managers of government-funded incubators will promote the growth and sustainability of incubated ventures in South Africa, and contribute to entrepreneurship.

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Annexure A

SAMPLE QUESTIONNAIRE

Dear Participant

I am conducting research to assess the importance of networking skills in the incubator environment. Your assistance is needed to obtain a realistic and objective evaluation.

Your response will be kept strictly confidential and your identity and the name of your incubator manager will not be disclosed. All the data will be aggregated.

Would you please complete a short questionnaire (about 15-20 minutes) which will help me to assess the networking skills of your incubator manager and how it has helped you with your new venture? For most of the questions you merely have to select the appropriate answer.

By completing this questionnaire, you indicate that your participation in this research is voluntary. You are free to withdraw your participation at any stage without any consequences.

If you have any concerns, please contact me or my supervisor. Our details are indicated below. We promise to treat all participants with dignity and your views will be treated with respect.

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Section A – Demographic Information

1 What is your gender?

Male	
Female	

2 What is your age in completed years? E.g. if you are 28 and 7 months, please indicate your age as 28.

Age	

3 What is your home language?

Afrikaans	
English	
Ndebele	
Pedi	
Sotho	
Seswati	
Tsonga	
Tswana	
Venda	
Xhosa	
Zulu	
Other (please indicate)	

4 What is your highest formal educational qualification? (choose one)

Lower than grade 12	
Grade 12	
Post-matric certificate or diploma	

Bachelors Degree	
Masters Degree	
Doctorate	
Other (please specify)	

Section B: Your business and experience

5 How many years have you been in the incubator? (insert number of years):

Number of years	

6 How many years of personal entrepreneurial experience (managing your own business) do you have? (If you have under a year experience, please indicate one. If you have more than a year experience, please indicate in completed years, e.g. 5 years and 7 months is 5 years' experience).

Years of personal entrepreneurial experience	

7 In total, how many years of business experience do you have, working for others or working for yourself?

Total years of business experience	

8 Indicate in which of the following industries your business currently operates and specify the nature of your business.

Industries (ISIC categories)	
1. Agriculture, Forestry, Hunting and Fishing Specify:	
2. Mining and Construction Specify:	
3. Manufacturing Specify:	
4. Transport and Communication Utilities Specify:	
5. Wholesale, Motor vehicle sales and Repair	

Specify:	
6. Retail, Hotels and Restaurants Specify:	
7. Business Services Specify:	
8. Health Care, Education and Social Services Specify:	
9. Customer Services Specify:	

Section C: Your incubator manager

Please indicate the extent to which you agree with the following statements by selecting ONE of the options below. For example, if you agree with a statement, only mark "agree" with a cross (X).

9 My manager introduced me to professionals (accountants, lawyers, marketing specialists, etc) who could assist me with my business.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

10 My manager introduced me to support firms in similar industries which could assist me with my business.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

11 My manager introduced me to persons in government who assist small businesses and new ventures.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

12 My manager introduced me and my business to potential investors.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

13 My manager introduces me to persons who has the time and is willing to assist my business.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

14 My manager arranges for possible business partners to visit my incubator to liaise with myself and fellow business owners in the incubator.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

15 My manager actively supports my relationship with possible business partners, for example by following up as regards advice and assistance provided by these business partners.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

16 My manager gives me advice as to how to sell my business idea to potential business partners.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

17 My manager gives me advice as to how to sell my business idea to potential investors.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

18 My manager has enabled me to build a strong network of customers for my business.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

19 Through interactions with my manager and my manager's network, I receive information relevant to my business.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

20 The people my manager introduces me to, has helped me in the areas of my business where I didn't have the necessary knowledge or skills.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

21 Through interactions with my manager and my manager's network, I receive technical assistance for my business, for example design and production assistance, etc.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

22 Through interactions with my manager and my manager's network, I receive legal assistance for my business, for example helping me to protect my business idea through patents and / or copyright protection, drawing up contracts, etc.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

23 I feel confident that when I leave the incubator, I will know enough people in my industry to assist me in my business.

Strongly disagree	Disagree	Agree	Strongly agree	Don't know

Section D: Business contacts and sales

24 When I leave the incubator, I have contacts with the following professional people to support me:

Lawyer	
Accountant	
Bank manager	
Advertising specialist	
Marketing specialist	
Operations consultant	

Tax consultant	
Labour relations consultant	
Financial consultant	
Human resources consultant	
Investors	
Other (please name)	

25 Since I was accepted into the incubator, my business' sales (turnover) have grown by approximately (give the percentage):

Percentage (%)	

26 The sales volume (turnover) of my business per year is [please select one option]

Less than R1 million	
R1 million to R3 million	
R3 million to R5 million	
R5 million to R10 million	
R10 million to R50 million	
R50 million to R100 million	
R100 million to R200 million	
More than R200 million	

Annexure B

CONSISTENCY MATRIX

Research propositions	Literature review	Data collection tool	Analysis
Research proposition 1 The external interorganisational networking skills of managers of government-funded incubators, measured as the extent of the managers' external networks, contribute to effective incubation	) Bøllingtoft & Ulhøi (2005) Brush *et al.* (2001) Buys and Mbewana (2007) Hansen *et al* (2000) Hoang & Antoncic (2003) Klyver *et al.* (2008) Lin *et al.* (2008) Wu et al. (2008) Zhang *et al* (2008) Zhang et al. (2008)	Questionnaire	• Mean • Mode • Standard Deviation • Scatterplots • Cross-tabulation • Spearman's rank correlation coefficient • Pearson's correlation coefficient • Chi-square • Regression analysis
Research proposition 2 The external interorganisational networking skills of managers of government-funded incubators, measured as the extent of the managers' external networks, contribute to effective incubation	Baker (2007) Davidson and Duff (1994Honig (2003) Evald and Bager (2005) Hackett and Dilts (2004) Kram (1985) Lewis (2001) Regis et al. (2007) Rice (2002) Scillitoe & Chakrabarti (2010) Schwartz (2008) McAdam and Marlow (2007) Unger at al. (2011) Weinberg *et al.*	Questionnaire	• Mean • Mode • Standard Deviation • Scatterplots • Cross-tabulation • Spearman's rank correlation coefficient • Pearson's correlation coefficient • Chi-square • Regression analysis

	(1991)		