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# Business incubators and SMMEs performance in South Africa

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# Business incubators and SMMEs performance in South Africa


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**A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in Entrepreneurship and New Venture Creation**


**Wits Business School**


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# ABSTRACT

Developing SMMEs has become a growing phenomenon within emerging economies. This is because enterprise development is designed to achieve a positive socio-economic impact by encouraging and investing in entrepreneurship (Peters et al., 2004). Therefore, understanding the performance of business incubators, and how they enable SMMEs to contribute to economic development, is critical for policy makers who have an urgent mandate of growing the South African economy (Al-Mubaraki & Busler, 2011). This study argues that business development strategies that adopt a blanket approach towards supporting SMMEs operating in different sectors and levels may not be appropriate, given the dynamics of different ventures.

This study investigates and compares the effect of sector specific business incubators versus mixed sector business incubators in improving SMME performance to inform policy makers about the state of entrepreneurship of enterprises that engage with incubating organisations. The methodology used in this study was quantitative and cross sectional in nature. One hundred and five responses were received from SMMEs that graduated from a business incubator to assess how their performance has improved over time. The findings revealed that relationships do exist between sector specific business incubators and job creation as well as turnover, but this relationship is not significant. The findings also suggest that there was no significant statistical difference when comparing sector specific to mixed sector business incubators in job creation and turnover.

Business incubators should have specific touch points and interventions targeted at different levels of the entrepreneurial process, thus, working towards addressing the diverse needs and challenges pertinent to emerging businesses operating in different industries. The findings which emerged from this study provide a decent base to further explore how sector specific and mixed sector business incubators improve SMME performance.

**Keywords:** Economic Development; Job Creation; Survival Rates; Enterprise Development; Emerging Economy.

# DECLARATION

I, Faith Tembe, declare that this research report is my own work except as indicated in the references and acknowledgments. It is submitted in partial fulfillment of the requirements for the degree of Master of Management in the field of Entrepreneurship and New Venture Creation at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

---

Faith Tembe

Signed at ……

On the …….. day of ……..…… 2018.

# DEDICATION

**Philippians 4:13**

God makes all things possible, glory and honour to the most High God.

To my family, this thesis is also dedicated to you. Your love, support and prayers has fuelled me to accomplish every goal I have set out to do. I love you.

To my father, I am inspired by your hard work and your consistency, and I pray that God may continue to bless you and grant you every desire of your heart. To my mother, I know you made a lot of sacrifices for my brothers and me, your efforts do not go unnoticed. Thank you that we can always count on you, may you continue to shine and be used as a vessel of God.

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# CHAPTER 1

## 1.1 Introduction

At a global scale, cultivating SMME development and innovation has become a way of gaining a competitive advantage. Government officials and civil society leaders have widely recognised that enhanced entrepreneurial capabilities within communities can contribute towards driving economic growth, create employment and solve the issue of poverty (Dee et al., 2011). Similarly, in South Africa "entrepreneurship is seen as a solution to bridging the widening wealth gap and reducing the effects of poverty and historic inequality" (Kavhumbura, 2014, p. 20). However, South Africa is perceived to have low levels of entrepreneurial activity. Therefore, the potential for SMMEs to contribute meaningfully towards employment and economic growth poses a challenge (Ndabeni, 2008; GEM, 2017).

Post-1994, the government intentionally focused on creating an environment that would enable small, medium and micro enterprises to be sustainable and to thrive within the economy. As part of the overall government strategy for enabling an entrepreneurial base for economic transformation, business incubators were introduced as an intervention aimed at developing and mentoring newly established ventures through the hardships of forming a new enterprise. Business incubators were established to equip entrepreneurs with the necessary entrepreneurial skills needed for emerging businesses to realise growth (Ndabeni, 2008; DTI, 2005).

Business incubators have been recognised as a key innovative instrument that can be used to support and develop newly established start-ups (Brink & Cant, 2003). Equally, in South Africa, business incubators have been introduced as a key driver for instilling an entrepreneurial culture through the promulgation of the Broad-Based Black Economic Empowerment Act, within the enterprise development pillar of the policy (Republic of South Africa, 2004; DTI, 2015). Enterprise development can be viewed as the support given to entrepreneurs at differing levels of their business lifecycle to enable growth and business survival (Ndabeni, 2008;).

Moreover, business incubators are aimed at addressing early stage business failure which may result from various underlining factors, such as poor business strategy and inability to access finance. For example, an SMME may have a challenge of accessing finance due to the inability of meeting the minimum funding requirements or SMMEs may not be aware of the funding opportunities available to them (Masutha & Rogerson, 2014). Equally, a clear majority of SMMEs struggle with formulating business plans and effective strategies which outline business systems and processes (Dee et al., 2011).

Business incubators, globally, are perceived to have considerable potential for promoting social and economic development, just by supporting SMMEs and ensuring that they become competitive (Al-Mubaraki & Busler, 2011). An increasing number of government organisations in developing countries have introduced business incubators as a means of facilitating and promoting a culture of innovation. For example, China launched a business incubator in the early 1990s, which has contributed towards driving the country's strategic focus on generating rapid economic growth through investing in technological firms (Lalkaka, 2001).

Similarly, India has launched business incubators to drive government policies on science and technology (Lalkaka, 2001). Also in South Africa, the first incubator launched aimed at growing the technological ecosystem and was introduced by the national government. Moreover, due to the rapid expansion of business incubators, the phenomenon became an area of interest of study by many scholars in terms of investigating how these institutions contribute towards economic development while other scholars have investigated the geographical dispersion of business incubators across the country to assess whether the relevant SMMEs are being exposed to the necessary business development support. Findings from Masutha and Rogerson (2014) reveal that more than forty-seven business incubators launched across the country focus on driving sector focused interventions. Contrary to this, the initial business incubator launched in America was generic in nature and focused on supporting entrepreneurs from diverse sectors.

Subsequently, sector specific incubator programmes were established aimed at providing industry specific interventions appropriate to SMMEs enrolled in the business incubation programme (Isabelle, 2013).

In South Africa, inadequate studies have been conducted which focus on investigating the effect of different business incubator categories in improving the performance of incubated SMMEs. Central to this research is to address this gap identified in existing business incubation impact studies. Specifically, this study investigates and compares the effect of sector specific and mixed business incubators in improving SMMEs' performance (Kavhumbura 2014; Mokgoko, 2015).

## 1.2 Theoretical background to the study

According to Hackett and Dilts (2004a), business failure is central to the theoretical foundations of literature which underpin the impact studies of business incubator-incubation performance. "Business failure occurs when the competitive transactive space for the production and sale of goods and ideas fails to produce the desired outcome. Sources of market failure include externalities, imperfect information, monopoly power, and public goods." (Hackett & Dilts, 2004b, p. 41). This study its theoretical roots embedded in the high business failure rate that affects new business. Business failure theory also involves understanding the issues that may impede the growth of small business and that may contribute towards the premature failure of small businesses (Brink & Cant, 2003).

Several studies, and particularly within South Africa, reveal that there is an excessive business failure rate which ranges from 60 to 80% among SMMEs in their first two to five years of being in operation (Ndabeni, 2008; DTI, 2005; Dee et al., 2011). In addition, small businesses are more prone to failure than large businesses because of lack of access to sufficient resources. One of the other challenges that may cause business failure may be the inability of a small firm to transition from operating as an informal business to operating as a formal business and this could be attributable to various factors (Chen, 2002; Urban & Venter, 2015).

These factors may include, for example, operating in a poor business environment and individuals not having the right skills needed to grow and maintain a sustainable business. In addition, small businesses are more prone to failure than large businesses because of a lack of resources (Urban & Venter, 2015).

Although, SMMEs owners are perceived to have an onerous responsibility toward starting and growing their enterprises, the business environment needs to be enabling. The government has an important role to play in creating and cultivating an enabling environment for SMMEs by improving policies and legislation which impedes the growth of small business (Ndabeni, 2008). That is why the South African government has introduced various policies to deal with challenges faced by small business. Enterprise development strategies targeted at promoting and increasing entrepreneurial activity have also been introduced (DTI, 2015). It is evident that to drive economic growth in developing countries, SMMEs need to be developed, business failure needs to be mitigated and environmental conditions need to enable SMMEs to grow and become competitive within the local and international markets (GEM, 2017).

Business incubators were introduced under the broader enterprise development strategy to assist small businesses by providing support services which address business changes (Scaramuzzi, 2002; Mutambi et al., 2010; Virtanen & Kiuru, 2013). Business incubator in this research study is conceptualised as an institution that aims at equipping SMMEs with the necessary skills needed to grow sustainable business and create jobs, by providing business development and training support services, creates linkages and networks, and provides infrastructure support services to SMMEs (Scaramuzzi, 2002; Mutambi et al., 2010; Virtanen & Kiuru, 2013).

Studies have proven that business incubators help emerging businesses improve business survival during the early stages of the enterprise lifecycle (Amezcua, 2010). For example, an experiment that was conducted in Germany, several SMMEs were placed in the business incubator training process while the control group had no training.

Post a six-month training, business success was measured and the group that received the training had shown improvement in terms of turnover, profit and increase in employment while the control group stayed the same (Amezcua, 2010). Therefore, in this study, business incubators are understood as a process which is geared towards equipping SMMEs with the appropriate capabilities needed for growth and job creation (Virtanen & Kiuru, 2013). Enterprise development within incubators is achieved through the provision of services such as connecting small businesses to potential financiers, business development and training support, linking entrepreneurs to relevant individuals as a means for creating access to market opportunities (Rogerson, 2004). Therefore, this study sought to establish the effect of sector specific versus mixed sector business incubators in improving SMME performance by understanding the post-incubation outcomes. Theories that help to set a framework for this study include incubator-incubation impact studies, resource based and economic development theories of entrepreneurship.

### 1.2.1 *Resource-Based Theory*

The resource based theory is crucial to understanding the manner in which businesses utilise and deploy resources. Penrose (1959) argues that firms are a combination of distinct resources and competencies and use these resources to effectively respond to opportunities. “There is a cumulative process of interaction between the market opportunities of the firm and the productive services available from its own resources and growth is essentially an evolutionary process which involves the accumulation of knowledge unique to the firm” (Penrose, 1960, p. 14). As management grows in experience, the more their capability grows on how other resources within the organisation could be used differently.

Business incubators may provide the relevant opportunities required to ensure improved SMME performance over time (Ntlamelle, 2015). Various support services such as office space, professional consultation and mentorship, business development training, access to finance, Wi-Fi, research and development and access

to markets are made available to small businesses in incubators (Visagie, 1997; (Scaramuzzi, 2002; Mutambi et al., 2010; Virtanen & Kiuru, 2013).

The ability of a business incubator to provide these services is crucial for reducing the high business failure rate prevalent when starting a new business. Business incubators are supposed to provide a safe and enabling environment in which small businesses can effectively operate (Hackett & Dilt, 2004a).

The type of resources that are offered to SMMEs with a business incubator environment is important in this study because the assumption is that different incubator typologies may produce different outcomes when compared. Research sought to understand which incubator model ultimately leads to favourable results in terms of turnover and job creation.

### 1.2.2 *Measuring Business Incubator Outcomes*

Disparity exists within literature on what constitutes “appropriate measures or metrics” for evaluating incubator performance (Scaramuzzi, 2002; Mutambi et al., 2010; Virtanen & Kiuru, 2013). Research suggests that performance measures are still inconsistent even though the majority of organisations have been introduced over the years into the broad incubator category (Scaramuzzi, 2002; Mutambi et al., 2010; Virtanen & Kiuru, 2013). This means no consistent performance measures have been adopted by the broad incubator family (Barbero, Casillas, & Ramos, 2014). In addition, there have been challenges in developing suitable business incubation performance measures by various researchers and practitioners.

The fundamental issue to point out relating to the establishment of performance measures has been the “alignment of quantifiable measures and the often-unanticipated consequences of quantification of business incubator performance, even those sharing a common setting” (Vanderstaeten et al., 2012, p. 1). In addition, different perspectives may be adopted in investigating the performance measurement of business incubators.

For example, a study conducted by Scaramuzzi (2002) investigated the performance of incubating institutions by comparing the incubation programmes support outcomes against another business incubation programme with a similar vision and mission. The study found that business incubation programmes were geared towards the achievement of economic development and the attainment of the B-BBEE enterprise development objectives (DTI, 2015).

Therefore, if incubation programmes are geared towards advancing the growth trajectory of SMMEs in order for them to contribute towards economic development, business incubators may need to be assessed on their capability to meet this objective. Al-Mubaraki and Busler (2011) highlighted the importance of incubation programmes in stimulating the economy in which they operate by contributing towards an increasing amount of sustainable small businesses (Colombo & Delmastro, 2000; Lalkaka, 2001; Adegbite, 2001).

Job creation, turnover, improved business survival rate, skills development and increased number of sustainable small businesses have been identified in economic development studies as key metrics to use when evaluating business performance (Colombo & Delmastro, 2000; Lalkaka, 2001; Adegbite, 2001).

This study focused on the “core hard measures” such as the job creation and increase in turnover as success measures when evaluating the performance of SMMes after they graduate from an incubator (Hackett & Dilts, 2004b). The conceptual framework adopted in this research suggests that a business incubator should not measure performance outcomes independently (Main, 1997). A number of metrics should be combined to measure the performance of SMMEs. Thus, job creation and increase in turnover was used when comparing the different incubator types after SMMEs graduate from an incubation process (Scaramuzzi, 2002; Mokogoko, 2015).

### 1.2.3 *Incubation strategy as a tool for economic development*

Globally, SMMEs are professed to be a viable solution to drive sustainable socio-economic development (Al-Mubaraki & Busler, 2011).

However, the global business landscape is highly competitive and innovative. Therefore, continuous entrepreneurial activity is key in gaining a competitive advantage. Challenges which SMMEs face are related to the unfavourable business environment wherein new start-ups must operate. The business environment is highly monopolised. That means that the same established businesses consistently get access to market opportunities which means that the market is not fairly accessible to all (McGiath, 1999; Gem, 2017).

There are a number of other issues that affect the development of small businesses. For example, getting access to credit and capital is a big problem for several SMMEs (McGiath, 1999). South African traditional lenders do not have a culture of lending to small businesses as they are deemed too risky (McGiath, 1999; DTI, 2015). Furthermore, the economic landscape within South Africa is also characterised by poor Infrastructure which also poses a major challenge for SMMEs. In order to foster a culture of innovation, small businesses need to have adequate infrastructure. This includes providing access to research and development to assist start-ups to convert innovative ideas into commercial and viable businesses.

Research has found that SMMEs in South Africa appear to be less innovative in comparison to SMMEs operating in developed countries (Lalkaka, 2001; GEM 2017). In developed countries, business incubators have been established to accelerate economic growth by supporting innovative business ideas more than traditional start-ups. Start-ups are also encouraged to fail and iterate while in emerging countries innovation may be stifled due to the fear of failure (Lalkaka, 2001; Olawale & Garwe, 2010; GEM 2017).

Another challenge that impedes growth within the SMME sector relates to a skills shortage. The majority of the small business owners operate businesses out of necessity and do not have the necessary skills on how to build sustainable businesses

(Olawale & Garwe, 2010). Limited skills and the low levels of entrepreneurial activity contribute to the slow economic growth (DTI, 2005).

Business incubators have been partly established to assist aspiring business owners with business development training to address this gap. Although an incubator is seen as vital to supporting SMMEs, they are not necessarily the only solution for the economic conditions and problems prevalent in the country (Hackett & Dilts, 2004b). SMME development and support needs to be configured to deal with varying business challenges which cause business failure (Patton, Marlowe & Hannon, 2000).

Therefore, to ensure business survival, certain business requirements need to be taken care of in a small business because SMMEs have the power to completely change the dynamics of the country's employment rate because they can drive innovation. It is suggested that, through business incubation, the growth of the economy may be realised by merely growing and supporting the SMME sector (Hackett & Dilts, 2004b).

## 1.3 . Context of the study

SMME development is an instrumental driver for economic growth. Thus, post the apartheid period, the development and promotion of SMMEs became the national governments priority (Timm, 2011). Various policies and interventions have been established to support SMMEs, as well as to drive equality and inclusion within South Africa. These policies were particularly designed to redress the ills of apartheid and to create opportunities for the previously disadvantaged groups.

In addition, policies have been introduced aimed at driving economic transformation through enterprise development. For example, the enterprise development pillar within B-BBEE is seen as a lever that the government uses to ensure that small businesses owned by "black people" get an equal chance of participating in the formal economy (Olawale & Garwe, 2010; GEM 2017; DTI, 2015).

The launch of such policies may imply that government recognises the potential of SMMEs in the economy. SMMEs have the potential of eradicating poverty, driving innovation and creating jobs. Therefore, government responsibility relates to creating a conducive atmosphere that will enable SMMEs to grow and thrive (Masutha & Rogerson, 2014). Research suggests that the business survival rate in South Africa is low. SMMEs start businesses, but do not progress to the next phase, implying that a majority do not contribute sufficiently to economic growth (GEM, 2017). However, business failure can also be attributed to economic conditions not being conducive to support the SMME sector (Masutha & Rogerson, 2014).

Therefore, business incubators have been introduced by the government and supported by various public organisations as vehicles intended to address the high business failure rate and job creation. However, researchers share different views about the impact of business incubators on SMME performance (Dee et al., 2011; Main 1997; Hackett & Dilts, 2004a).

Two fundamental arguments have transpired in literature relating to this. One perspective addresses the incubation programme itself in terms of number of SMMEs being incubated, rental space and cost and types of funding being made available to SMMEs. The other perspective addresses the post-graduate impact in terms of financial gains, employment creation, survival rates (Main, 1997). In addition, research has suggested that there are soft and hard measures which can be used to assess business incubation outcomes. The soft measures are seen as more subjective and relate to the perceptions whilst the hard measures relate to objective measure related to tangible results, for example, jobs created (Main, 1997).

Moreover, despite the growth in incubator programmes facilitated by various organisations, how they impact SMMEs is less explored. Particularly, inadequate studies comparing sector and mixed focused incubators in growing the SMME sector in South Africa have been conducted. This research investigates and compares different incubation typologies and how they contribute towards the economic objectives through supporting SMMEs. Assessing business incubation performance is crucial, given the significant role SMMEs are expected to play in the economy.

In line with this, Mokgoko (2015) has indicated there needs to be an assessment framework that could track and measure the performance of SMMEs who are part of an incubation process.

## 1.4 Problem statement

The concept of business incubation is a growing phenomenon within emerging economies. This is because enterprise development is designed to achieve a positive socio-economic impact by encouraging and investing in entrepreneurship whether it is newly built ventures or established organisations (Peters et al., 2004). However, providing generic support to SMMEs operating at different levels and diverse sectors may not necessarily be the best approach.

Therefore, understanding the performance of business incubators, and how they enable SMMEs to contribute to economic development is critical for policy makers who have an urgent mandate to grow the South African economy (Al-Mubaraki & Busler, 2011).

This study investigates and compares the effect of sector specific business incubators versus mixed sector business incubators in improving SMME performance to inform policy makers on the state of entrepreneurship from enterprises who engage with incubating organisations (Ntlamelle, 2015). Improved business performance in this study was measured by the increase in job creation and increase in turnover (Ntlamelle, 2015). This study only focused on SMMEs that have graduated from either sector specific or mixed business incubators, this is to inform relevant stakeholders on whether the business incubators established are aligned to the economic development strategic goals.

### *1.4.1 Main Problem*

To investigate and compare the effect of sector specific versus mixed sector business incubators in improving SMMEs performance measured in turnover and job creation in South Africa.

### *1.4.2 Sub-Problems*

[1] To investigate the effect of incubation type on turnover and job creation;

[2] To compare the effect of sector specific business incubators to mixed sector business incubators on turnover and job creation.

## 1.5 The purpose of the Study

The research aims to investigate and compare the effect of sector specific versus mixed sector incubators in improving SMMEs' performance. The research investigates the following research questions:

- What level of effect does the business incubation type have on SMME performance measured by turnover and job creation?
- How significant are the differences between the two business incubator groups (Sector Specific and Mixed Sector)?

## 1.6 Conceptual/theoretical definition of terms

**Business Incubator:** Business incubator in this research study is conceptualised as an institution that aims at equipping SMMEs with the necessary skills needed to grow sustainable businesses and create jobs, by providing business development and training support services, creating linkages and networks and providing infrastructure support services to SMMEs (Scaramuzzi, 2002; Mutambi et al., 2010; Virtanen & Kiuru, 2013).

**Small, Micro and Medium Enterprise (SMME):** The Department of Trade and Industry uses the following outline to describe small and micro businesses (DTI, 2005):

- Micro enterprises are described as entities that have a revenue comprised of less than R150 000 per annum.

  These businesses operate informally, and are usually not formally registered. The maximum number of individuals employed is five.
- Small enterprise can be described as entities that employ more than fifty individuals. These businesses are organised and managed better than micro enterprises. The maximum turnover which these businesses usually produce is between two million and twenty-five million Rand per annum (DTI, 2005)

## 1.7 Contribution of the study

Challenges that affect the South African economy relate to the high unemployment rate, high income inequality and persistent poverty. According to the 2017 GEM report Unemployment is at its highest level ever (27.6%), with an expanded rate of over 40% and youth unemployment at over 65%. Growing the South African economy has become an urgent agenda for policymakers. One of the key priorities has been to introduce initiatives aimed at fostering and creating an enabling business environment for SMMEs (GEM, 2017).

This research contributes towards building knowledge concerning incubator-incubation impact studies. Studies in the past have confirmed that SMMEs that go through an incubation process are more likely to create jobs, increase turnover and demonstrate good survival rates over time (Hackett & Dilts, 2004a, 2004b; Mokogoko, 2015). Mokgoko (2015) indicated that incubators play a major role in survival rates of newly formed enterprises. However, even though incubators are perceived as vital for economic development and job creation, South Africa still lags in achieving its economic objectives.

The business failure rate among South African start-ups is higher when compared to the business continuance scores of emerging businesses. This may suggest that the country is not moving forward in issues relating to enhancing entrepreneurial activity (McGiath, 1999; Gem, 2017). Moreover, substantial numbers of resources are invested into incubation programmes (Kavhumbura, 2014). Therefore, a comprehensive performance of business incubators as a catalyst for enterprise development is crucial and must be tracked. Various studies in the past have looked at the efficacy of business incubators, critical success factors of businesses and the post-incubation impact of business incubators between the private and public sectors (Masutha & Rogerson, 2014; Kavhumbura, 2014; Grigaitienė & Fominienė, 2016)

However, for post-incubation outcomes, little or no attention has been given to the effect of industry, specifically in comparing mixed and sector focused incubators in improving the performance of SMMEs that have been incubated and how they are fulfilling economic objectives in South Africa (Mokgoko, 2015). Therefore, the significance of the study rested on assessing the improvement of business performance after the SMMEs' incubation phase by measuring job creation and turnover.

This study investigates and compares the effect of sector specific and mixed sector business incubators by assessing the performance outcomes after graduating from the business incubator (Mokgoko, 2015). The South African government has prioritised SMMEs as key role players in economic development. Therefore, it is important that institutions funding business incubators (government and private entities) have at their disposal, accurate data relating to the performance outcomes of business incubators so that any new business incubators being introduced are influenced by performance data (Bergek & Norrman, 2008).

"The important role of business incubation as a useful strategy to accelerate growth and development of small and medium-sized enterprises (SMMEs) has been widely acknowledged in the economic and entrepreneurship literature" (Kavhumbura,2014, p. 50).

Therefore, this information can be used to help decision makers such as government and public institutions that facilitate business incubation practices, enterprise development policy makers, SMMEs, as well as small business incubation practitioners in developing countries. Conclusions from the study may help relevant stakeholders to focus on the business incubator programmes which may improve SMMEs performance over time.

## 1.8 Study Outline

In investigating the effect of sector specific business incubators compared to mixed sector business incubators, Chapter 1 introduced the purpose of the research, research questions, objectives, constructs utilised and the significance of the study.

Chapter 2 focuses on providing a comprehensive literature review which directs hypothesis formulation. The review also focuses on addressing the sub-problems which relate to understanding the intended value of business incubators and understanding the outcomes of SMMEs from incubating organisations.

Subsequent to understanding the theoretical perspectives which guide the study, the research methodology process is outlined in Chapter 3. The research design, as well as approach and statistical methods, is outlined

In Chapter 4, the research analyses the results from data collection; this chapter also contains results pertaining to demographics, descriptive statistics regression, correlation and t-test conducted to measure the formulated hypothesis.

Chapter 5 - this chapter gauges and discusses the results of the research, making use of the literature reviewed and the hypotheses formulated.

Chapter 6 provides relevant conclusions and recommendations on the effect of business incubators in improving SMMEs' performance.

# CHAPTER 2: LITERATURE REVIEW

## 2.1 Introduction

Numerous countries around the world promote business incubator institutions as an opportunity to stimulate an economy by creating jobs through cultivating high-technology enterprises and supporting traditional SMMEs. For example, most business incubators that have been launched in Korea and the United States of America (USA) have the objective of stimulating the economy and enhancing global competitiveness (Lalkaka, 2001). Within South Africa, business incubators have the same objective, however, the phenomenon is still a growing concept. Isenberg (2010) suggests that the core mandate of a business incubator is to provide favourable settings that enable the growth of SMMEs. Business incubators have been categorised into different types and are widely referred to as innovation, technology and business institutes designed to support small businesses (Isenberg, 2010).

Ultimately, regardless of how an incubator is categorised, business incubation involves adopting a dynamic process required for supporting emerging small businesses during periods of uncertainty (Buys & Mbewana, 2007; Ndabeni, 2008). The core of why business incubators exist, relates to reducing business failure inherent in starting a new business. These organisations package services which are intended for effectively addressing the challenges faced by SMMEs. These challenges may include lack of access to pertinent information relating to how an SMME can access start-up capital, as well as how to effectively run a formal business (Campbell, 1989).

Therefore, research suggests that the major contribution of incubators is the potential they have towards improving the survival rates of new businesses. that is, business incubators are seen as an effective enterprise development tool (Buys & Mbewana, 2007; Ndabeni, 2008).

This chapter reviews the literature on the notion of business incubator organisations in an emerging economy context to understand how they contribute towards economic development. This section investigates existing literature on business incubators, particularly drawing from incubator-incubation impact studies. In addition to that, the researcher further investigates and articulates the theoretical constructs presented in this paper. Extensive literature is explored to provide a comprehensive review targeted at addressing the following research objectives:

[1] To investigate the effect of incubation type on turnover and job creation,

[2] To compare the effect of sector-specific business incubators against mixed sector business incubators on turnover and job creation

This section first articulates the South African economic landscape and the intentions of enterprise development which drives the implementation of business incubation. There follows a review centred around the business incubator's origins with specific emphasis on defining the construct, and understanding its intended value. Thereafter, the research unpacks assessment measures of business incubators as a means of improving the performance of SMMEs in South Africa.

## 2.2 Enterprise development as a response to economic growth

The South African landscape is characterised by various economic, political and social ills, including the staggering unemployment rate whilst the inequality in income dispersion is increasing and there are low levels of entrepreneurial activity. In addition to that, the economy is characterised with general frustrations by the public relating to services delivery as well as poor educational standards' conditions when compared with other countries (Olawale & Garwe, 2010; OECD, 2017).

Entrepreneurship and innovation are perceived as key instruments needed to uplift stifled economies, especially within emerging economies. "Small, medium and micro enterprises represent an important vehicle to address the challenges of job creation, economic growth and equity in our country" (Herrington et al., 2010, p. 12).

This trend is recognised globally, where SMMEs are recognised to have the potential of driving economic and social development in emerging countries. In South Africa, SMMEs contribute between fifty and sixty per cent towards the Gross Domestic Product and the labour force respectively (GEM, 2017). The NSB uses various categories to describe SMMEs at different levels, for example, the number of individuals employed by the enterprise, the magnitude of the enterprise being measured by annual turnover are some ways in which SMMEs are categorised (Smit & Watkins, 2012).

Research also shows enterprises in South Africa are predominately operating in the micro and survival category. Business growth among these enterprises is minimal. Also, these enterprises may not be able to meet the economic objective of creating employment (Rogerson, 2004; GEM. 2017). Consequently, micro entities should create the largest number of new jobs. However, important to note is that micro entities signify the lowest fragment of the economy as a whole (Rogerson, 2004; Olawale & Garwe, 2010).

Moreover, SMMEs encounter several challenges that affect the enhancement of entrepreneurial development (Agupusi, 2007; Ndabeni, 2008). As cited in literature, the challenges SMMEs face include factors related to access to appropriate and professional skills; inability to access markets and unstable economic conditions (Smit & Watkins, 2012). Research suggests that SMMEs in South Africa are not sufficiently equipped to manage and operate sustainable businesses due to the lack of adequate training and education (Smit & Watkins, 2012). “A lack of managerial expertise and training, together with a lack of business experience and a poor organizational culture, are major impediments to the establishment of successful SMMEs in South Africa” (Smit & Watkins, 2012, p. 12).

Additionally, government programmes and interventions established to assist towards enterprise development have shown insufficient impact in providing the necessary assistance for SMMEs to enable accelerated growth (Timm, 2011).

This highlights the importance of contextualising business development initiatives and legislation which may be applicable in enhancing the local communities, meaning business development support initiatives need to be re-engineered to match the needs of the particular context in which SMME's operate.

The blanket approach to enterprise development may not be effective. Thus, using strategies, interventions and policies that have been successfully applied in a particular context need careful consideration when they have to be established in a different environment (Timm, 2011). This point echoes a recommendation suggested by researchers which states that SMMEs go through different journeys, and support needs to be tailored to address the challenges different entities faces within their industries and levels of operation (Agupusi, 2007; Ndabeni, 2008).

In addition, it is important to understand the elements that can contribute to improved SMME performance within the South African context to ensure that appropriate strategies are framed (Rogerson, 2001). From 1995–2003, the government set out objectives to drive the development and growth of the SMMEs sector (Rogerson, 2004).

Through the DTI, the small business growth plan was developed, intended to promote entrepreneurship through campaigns, leadership training and awards. The strategy is targeted towards empowering and strengthening the small business landscape by developing flexible regulations, and easy access to capital and enhanced commercial related assistance. The strategy also aims to promote skills training, enhancement of technology transfer as well as the commercialisation of incubation (Rogerson, 2004).

The objective of this strategy is to ensure that the growth of small business contributes towards economic transformation within South Africa. Moreover, research conducted by the OECD (2017) suggests that there are five key factors essential in the promotion of enterprise development.

This includes access to finance; enabling business environment; promotion of technology; skills development and capabilities; and access to markets. Figure 1 demonstrates examples of instrumental tools developed to support SMMEs.

**Tools established by DTI with examples**

**Strategy outlines**

- Combined and integrated plan to support SMMEs
- Economic Development strategies to combat poverty and drive inclusion

**Legislature/ Regulations and administrative procedures**

- National Small Business Act
- Co-operatives Act
- Companies Act
- Company regulations
- Tax regulations
- Intellectual-property regulations
- Procurement regulations
- Trade administration

**Targeted projects**

- Business incubation
- Technology related projects

**Training and capacity building**

- Expert-Driven Developing
- Sector-Focused Interventions
- Business Development Training

***Figure 1: Instrumental tools developed to support and promote the growth of SMMEs (Department of Trade and Industry, 2005, p. 13-14)***

Moreover, under the Broad-Based Black Economic Empowerment Policy, enterprise development and supplier development has been introduced to drive economic transformation and increase the participation of black people in the formal economy. The enterprise development policy influences private and government institutions to procure services and products from black owned businesses to redress inequality challenges brought about by apartheid (DTI, 2015).

The policy also influences established organisations to provide both financial and non-financial support to newly established firms. For example, the newly formed venture may acquire training from a potential client as well as a loan to start providing services

to the potential client. The potential client may choose to also provide grant funding (Republic of South Africa, 2004; DTI, 2015; Urban & Venter, 2015).

Although B-BBEE is influencing the increase of black-owned businesses doing business with large corporations, the department has also devised an integrated strategy of supporting the establishment of sustainable businesses. The DTI suggested that there needs to be a focus on a holistic approach to promoting enterprise development. This includes:

- Increases the access to financial support services, such as venture capital and grants.
- Promote and increase the supply business support services, such as incubation programmes, mentorship and technical support services to small businesses. This includes skills development and leadership training.
- Create access to market opportunities for small businesses.
- Decrease regulatory constraints that hinder small business growth, e.g. simplifying the process of starting a business, and regulatory requirements thereof (DTI, 2005).

A diverse number of interventions and programmes have been launched by the national government that are targeted towards supporting small enterprises (Agupusi, 2007). The department has supported the establishment of a “Small Enterprises and Development Agency” and a “Small Enterprise Finance Agency” (Agupusi, 2007). Both these organisations facilitate the rollout of business incubators across the country; they establish business development programmes relevant to small businesses, contribute towards the capacitation of small businesses and provide access to capital where necessary (DTI, 2005).

## 2.3 Historical journey of business incubators

Joseph Mancuso in 1959 initiated the first business incubator, Batavia Industrial Centre, in America (Al-Mubaraki and Wong, 2011). Out of economic necessity, Mancuso introduced a privately-owned hub for profit generating reasons which allowed entrepreneurs to rent the space and utilise the resources available using a shared cost model (Burger, 1999, cited in Al-Mubaraki & Wong, 2011).

Due to the high business failure rate, Mancuso established this expense-sharing model to address the entrepreneurs' needs and challenges in the hope that they would succeed and be able to pay for rent. The idea gained popularity as more people started to recognise the potential impact this approach may have towards alleviating poverty within societies (Al-Mubaraki & Wong, 2011).

According to a study conducted by Bhabra-Remedius and Cornelius (2003), the literature on the fundamental principles of business incubators began to materialise during the 1980s. However, it was not until the 1980s that an official business incubator organisation was introduced (Al-Mubaraki & Wong, 2011). This was a university-based incubator focused on assisting students, faculty and community members who wanted to start a business. Thereafter, during the recession period during the early 1980s, more modern incubators started to emerge, due to large companies laying off workers which resulted in high unemployment rates (Clark & Minor, 2000, cited in Almubaraki et al., 2010).

According to Chirambo (2014, p. 15), this may indicate "that the distinct feature of Business Incubation in the 1980s was its reactive nature. It appears to have been essentially a response to an unexpected economic downturn which desperately required innovative means to sustain or create new job opportunities". As the concept of business incubation evolved, the more it became recognised as a tool needed to uplift the economy from stagnation by reusing old construction buildings as a means of profit generating and for the support of small businesses to create new jobs (Al-Mubaraki & Wong, 2011).

When looking contextually at South Africa, during 1995, the government through the development corporation agency launched "hives of industry" (Rogerson, 2004). This concept was seen as a fundamental tool required to bridge gaps which existed between large and small firms.

Through this process, large firms were encouraged to engage with small businesses by proving mentorship and access to market opportunities. It was only during the early 2000s when the business incubator phenomenon gained popularity through a

government intervention called Godisa. Godisa was intended to achieve goals laid out to support small businesses (Buys & Mbewana, 2007). The Godisa intervention was crucial because it was an opportunity to test and pilot a model which could be applicable to growing start-ups in South Africa (Buys & Mbewana, 2007). Since then, a variety of business incubators have been established, sponsored by the national government, However, the private institutions also became interested in supporting small businesses.

Findings suggest that the main objective of business incubators established by the public sector are concerned with widening economic participation, closing the skills gap as well as creating job opportunities. By contrast, most private sector incubators focus on increasing turnover and profit margins for the small businesses (Masutha & Rogerson, 2014).

However, the main challenge of setting up business incubators relates to extensive financial and human capital requirements and, due to the lack of sufficient resources by the government, there have been debates about how to best scale the business incubator model (Timm, 2011). This challenge is common among emerging economies; other challenges relat to finding the right human capital to manage incubation spaces, a weak entrepreneurial ecosystem and lack of access to the relevant networks required to boost the small business through seed capital. Moreover, there is a fear of failure culture, stifled and bureaucratic regulations and laws that create an unfavourable environment to do business (Stefanović, Devedžić, & Eric, 2008).

Therefore, the DTI, through the Incubation Support Programme (ISP), has engaged in collaborative efforts to drive private-public partnerships to ensure that incubators contribute towards sufficiently developing small businesses which will ultimately move the economy forward (DTI, 2012). However, the fundamental question to ask still relates to whether the expansion of business incubators by the public and private sector will be able to contribute towards increasing the number of ventures which will ultimately contribute positively to growing the economy and producing more jobs over time (Timm, 2011).

Currently, the government operates approximately 57 business incubators through SEDA. The number of incubators has significantly increased from just 29 business incubators since 2010. These business incubators are predominately sector focused and operating within different provinces across the country (Ndabeni, 2008; Timm, 2011). It can be suggested that the introduction of business incubators demonstrates that the country is committed to creating a conducive environment for SMMEs.

It may also mean that policy makers and government recognise that creating a conducive business environment may affect the success of small entities and therefore impact the local economy (Buys & Mbewana, 2007).

The Godisa incubator model that was developed, formed a backbone for many incubators which were launched in South Africa. Research done on this programme found that “access to technology expertise and facilities; the availability of funding; quality of entrepreneurs; stakeholder support; a supportive government framework; competent and motivated management; financial sustainability; and networking showed positive significant relationships with incubator success within the South African context” (Kavhumbura, 2014, p. 100).

Although the Godisa incubator was designed to be an anchor for how to operate a business incubator, various other business incubators emerged at the backbone of this programme, using differing strategies (Buys & Mbewana, 2007). Some business incubators are non-profit in nature and seek to contribute to economic development while other incubators are sponsored by the public sector as a way to create jobs by supporting small businesses and university-based facilities seeking to assist with the commercialisation of scholarly research products (Campbell & Temali, 1984; Udell, 1990).

Ndabeni (2008) identifies two distinct categories of incubators -*Technology Based institutions* and *Business Incubators* that aim to focus on the high-technology and SMME sectors. Moreover, the most cited business incubator goals are job creation and economic growth, which are in alignment with the government’s key priorities put forward in the National Development Plan (Republic of South Africa, 2013).

The next section addresses the intended value of business incubators in detail, as well as the metrics used to evaluate the post-incubation phase based on the economic objectives mandate.

## 2.4 Business Incubators

“Business incubators nurture the development of entrepreneurial companies, helping them survive and grow during the start-up period when they are most vulnerable. Their programs provide client companies with business support services and resources tailored to young firms. The most common goals of incubation programs are creating jobs in a community, enhancing a community’s entrepreneurial climate, retaining businesses in a community, building or accelerating growth in a local industry and diversifying local economies” (National Business Incubation Association, 2010, p. 31). On the other hand, business incubation may be described as “a range of business development processes that are employed to support the growth of small, new start-up and young business ventures” (Voisey, Gornall, Jones & Thomas, 2006, p. 455).

A business incubator as per Scillitoe and Chakrabarti’s (2010) perspective, is seen as an overarching term used to define the various heterogeneous groups of organisations. Ntlamelle (2015) argues that the business incubator construct should be understood as a vehicle which effectively drives enterprise development.

In line with this, this study defines a business incubator as an institution that aims at equipping SMMEs with the necessary skills needed to grow sustainable businesses and create jobs, by providing business development and training support services; it creates linkages and networks and provides infrastructure support services to SMMEs (Scaramuzzi, 2002; Mutambi et al., 2010; Virtanen & Kiuru, 2013).

Business incubators are meant to provide SMMEs with business development support intended at improving the business survival rate of small businesses (Hackett & Dilts, 2004b). Business development services accessible to SMMEs in incubating institutions include linking SMMEs with relevant parties and networks, training and development, and potential access to market (Rogerson, 2004).

Business incubation services have been categorised into three sections in this study. The assumption is that business incubators offer a bare minimum of infrastructure support services, business support services and mediation support services, in both sector and mixed focused business incubators and these are reviewed in detail.

### 2.4.1 Support services from business incubators

#### *2.4.1.1 Business support services*

Business incubators have been established to address the lack of entrepreneurial training and development, which is said to be a challenge for individuals who want to set up businesses. Business incubators aim to close the gap by providing small businesses with access to professional business services required to help SMMEs to formalise their operations.

Business support services also include providing coaching and mentoring capabilities to assist SMMEs to practically develop and manage the strategic objectives of the firm and to handle any daily operation requirements (Grigorian et al., 2012, cited in Mokgoko, 2015). The modules which could be typically covered in a business development or coaching and mentoring session, include compiling a business proposal and plan, devising a digital and marketing strategy, managing finances, project plan and implementation, people and conflict management, dealing with compliance and legal requirements, etc. (Grigorian et al., 2012, cited in Mokgoko, 2015).

### *2.4.2 Mediation Support*

Central to the business incubator theory of reducing business failure rate (Dee et al., 2012) is that “Business failure occurs when the competitive transactive space for the production and sale of goods and ideas fails to produce the desired outcome. Sources of market failure include externalities, imperfect information, monopoly power and public goods.” (Hackett & Dilts, 2004b, p. 41). Thus, business incubators are meant to provide a favourable business environment for small businesses to get them market ready.

A business incubator may be involved in playing an intermediary role between the protected incubator space created and the reality prevalent in the external environment which may cause failure of the emerging venture (Grigorian et al., 2012, cited in Mokgoko, 2015). “Protected incubator space” means, the entrepreneur is exposed to opportunities and networks which they would not be normally exposed to if they were not part of the incubation process (Mokgoko, 2015).

### *2.4.3 Infrastructure support*

Business incubators have also been established to assist SMME with the poor infrastructure issues prevalent in the country (Main, 1997). Business incubators provide SMMEs with office space which can be used for free or at a low cost. The other benefits which SMMEs to which may be exposed include access to WIFI connectivity and any office space infrastructure required to efficiently handle day-to-day business operations (Grigorian et al., 2012, cited in Mokgoko, 2015).

Ultimately, business incubators seek to stimulate the development of an enterprise through cost reduction for the SMMEs. For example, the SMMEs’ resource and information costs are reduced, because of the business incubation support services (Peters et al., 2004).

Consequently, business incubators provide SMMEs with business knowledge, infrastructure, mentorship and networking opportunities which protect the newly formed venture from the harsh external environment (Hackett & Dilts, 2004b). Moreover, business incubation support services vary from one incubator to the next, which adds to the definitional challenges of the concept (Hackett & Dilts, 2004b).

The study seeks to understand, given the provision of a range of incubation services to SMMEs, whether this leads to improved performance over time within the investigated incubation typologies. Therefore, business incubators are perceived as institutions that provide an enabling environment for start-ups to improve in performance over time by significantly reducing the start-up costs of launching a new business while they assist with increasing the capacity for the small business to compete. Moreover, SMMEs who are accepted as part of an incubation process for a certain period should have goals which must be achieved. Once the SMME has reached those goals in terms of business performance, they graduate from the business incubator process. In South Africa, there are various other institutions that have been established as such business development service providers and scientific-technology parks to assist entrepreneurs. Figure 2 illustrates how business incubation is positioned in relation to these two institutions.

| | BDSP | BI | TCs |
|---|---|---|---|
| **Target Business** | All types | Only emerging business with growth potential | New and Validated Business Models |
| **Key Features** | Ad- Hoc<br>Demand driven assistance<br>Broad Business Development | Emphasis on co-location and encourage networking between entrepreneurs<br>Ongoing support and demand driven assistance<br>Intensive strategy and operational business support/training | Emphasis on research and development<br>Office space<br>Networking opportunities |
| **Revenue** | Government, donor subsidies, fee for services | Public entities benefactor grants, fee for services, rental, royalties, investor equity | Public entities benefactor grants, fee for services, rental, royalties, investor equity |
| **Business Model** | Non-profit/profit making | | |

***Figure 2: Other Institutions which support SMMEs and foster an entrepreneurial culture (Khalil, & Olafsen, 2010, p71)***

## 2.5 Performance Measurement of Business Incubators

Business performance is essential to research related to management practices. The construct has been assessed and theorised using various ways in different studies (Venkatraman, 1985; Venkatraman & Ramanujam, 1996). On one hand, strategic management literature has categorised business performance into three elements such as sales growth, net income growth, and return on Investment. With the volume of literature relating to business performance increasing, there seems to be a disparity which still exists on how the construct is conceptualised.

However, business performance has become predominately focused on financial performance indicators, such as, sales level, sales growth, profitability and stock price (Venkatraman, 1985; Venkatraman & Ramanujam, 1996). This view is in line with the widespread literature of business strategies which are targeted at improving the economic value of a company. On the other hand, the evaluation literature has conceptualised performance to be associated with goal achievement This suggests that a performance activity needs to be related to achieving a particular goal (Venkatraman, 1985; Venkatraman & Ramanujam, 1996).

Therefore, if business incubator performance is to be assessed, performance needs to be linked to a pre-defined objective associated with the business incubator. Furthermore, although researchers have tried to create a single assessment model targeted at evaluating business incubator performance, there still seems to be a disparity and no clear consensus as to what constitutes an appropriate measure of incubator performance (Dee et al., 2011). This means no consistent performance measures have been adopted by the broad incubator family (Barbero, Casillas, & Ramos, 2003).

In addition, there have been challenges in developing suitable business incubation performance measures by various researchers and practitioners due to the growing market interest in the business incubator phenomenon.

Consequently, a study conducted by Allen and McCluskey (1990) attempted to develop a suitable measure for assessing business incubators. This study looked at 127 business incubators and found that: occupancy, jobs created and firms graduated were consistent metrics used to measure incubator success. In addition to these, Phillips (2002) suggested that sales, the total number of registered patents and applications, as well as survival rate, were found to be appropriate measures for performance when comparing different incubator types in the US (Colombo & Delmastro, 2002; OECD, 1997). This outlines some of the performance metrics that have been developed to evaluate incubator success.

Furthermore, within South Africa, the need for devising an assessment framework to understand the efficacy of business incubators has gained in popularity over the years (McMullan, Chrisman & Vesper, 2001, cited in Vanderstraeten et al., 2012). Evidently, the performance of incubators in relation to stimulating the economy is still in its infancy (Vanderstraeten et al., 2012).

The fundamental issue to point out relating to the establishment of performance measures has been the “alignment of quantifiable measures and the often-unanticipated consequences of quantification of business incubator performance, even those sharing a common setting” (Vanderstaeten et al., 2012, p. 1). Incubation performance measurement may be approached from a number of perspectives. For example, Scaramuzzi (2002) investigated business incubation programme performance by comparing business support services offered by one business incubator against another business incubator with a similar vision and mission. The study found that business incubation programmes were geared towards the achievement of economic development and the attainment of the B-BBEE enterprise development objectives. Therefore, for the advancement of the economy, business development programmes need to be measured based on creating sustainable SMMEs that can ultimately contribute towards improving the economic and social challenges (Colombo & Delmastro, 2000).

Al-Mubaraki and Busler (2011) highlighted the importance of incubation programmes in stimulating the economy within which they operate because SMMEs are recognised as key to economic growth.

Therefore, the economic development approaches have gained popularity for measuring the effect of business incubation programmes globally. Moreover, a substantial amount of research has been conducted, analysing some of the success or failure stories by underlining their conclusions on economic development metrics that include jobs created, sales growth and contributions to tax. These studies include studies based in Italy by Colombo and Delmastro (2000), Brazil by Lalkaka (2001) and Nigeria by Adegbite (2001).

In this study, the outcomes of the post-graduated enterprises are measured in order to investigate and compare the effect of sector specific as well as mixed sector incubators in improving SMMEs performance. This study focuses on the “core hard measures” such as the job creation and increase in turnover post-graduation phase (Main, 1997; Hackett & Dilts, 2004b).

Main (1997) proposes an integrated assessment tool used within university-based technology incubators (UBTIs) to measure effectiveness and performance. The assessment tool draws extensively from the business incubation empirical research, involving universities driving business development and technology mandate, and the traditional methodologies applicable to organisational assessment. Furthermore, the Main Framework outlines three dimensions applicable to different incubator models: These include;

1. **Management policies and their effectiveness:** The degree to which the policies that govern the incubator are aligned to the incubation outcome goals.
2. **Services and their Value-Add:** The degree in which the SMMEs perceive the services offered by the incubator as valuable

3. **Performance Outcomes:** Performance outcomes relate to whether the goals set out by the incubator are actually achieved. Performance outcomes may include the growth prospect of the programme, business survival of the SMME and measured growth over time and any other spin-offs or effects which emerge as positive. Figure 3 shows how effectiveness can be measured, based on incubator objectives, the incubation process or incubator outcomes.

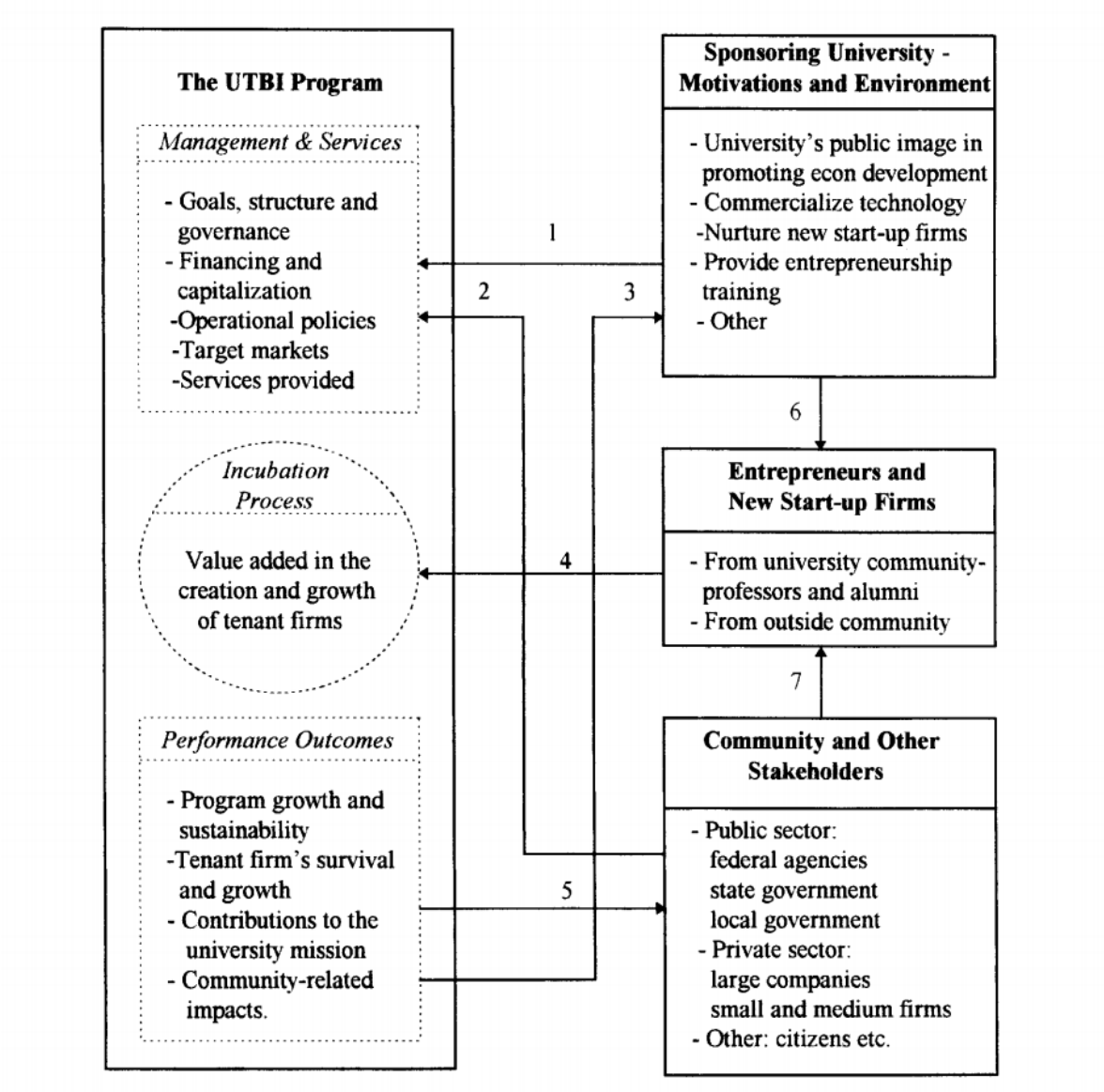



***Figure 3: Conceptual model for assessing and managing the performance of UTBIs (Mian, 1997)***

The criteria used to assess the performance of a business incubator should take into account the above-mentioned dimensions. The dimensions need to be viewed holistically to ensure the sustainability of the programme over time (Mian, 1997). This study focuses on the third variable, namely performance outcomes measured by increase in turnover and jobs created.

Ultimately, the outcomes of going through a business incubator programme should lead to an improved turnover and job creation as per the economic development theory prevalent in the South African context. Consequently, according to Main (1997), although this study will not be assessing all the above-mentioned dimensions, it is important to measure the incubators' performance based on all the abovementioned components. Due to the time constraint of this research, the performance outcome dimensions is the only component on which the study focuses in order to assess the effect of business incubation programmes for SMMEs after graduation phase. The assumption is that different incubation typologies being investigated in this research study have an economic objective (create jobs and build sustainable businesses which increase turnover over time) as a key measure for success. This study excludes metrics related to patents, rental costs and exporting costs (Main, 1997). The next section discusses these metrics briefly.

### *2.5.1 Metrics Background Discussion*

The early business incubator assessment frameworks were targeted towards assessing financial outcomes, as well as firms' efficiency. The latter construct was measured by improved product development innovations and improved market penetration over time. Research suggests that non-monetary metrics were developed because obtaining financial information from small enterprises was a challenge. Non-financial measures were then established which formed a baseline for forming a suitable assessment framework (Bhabra-Remedius & Cornelius, 2003). Further research suggested that job creation, business survival and research capabilities are key variables for evaluating incubator efficacy.

#### *2.5.1.1 Increase in Turnover*

Firm performance is the most common indicator many incubators use to measure post-incubation outcome. Therefore, it may be useful to provide an understanding of what constitutes firm performance. Strategic management has developed various ways of describing financial performance of a firm (Venkatraman & Ramanujam, 1986). The simplest way of conceptualising the performance of a firm relates to assessing the financial and economic goals of a company (Venkatraman & Ramanujam, 1986).

This includes comparing the company's financial indicators such as turnover growth, profit margins and return on investment over time (Covin & Slevin,1991). This study measures financial performance in terms of proliferation in turnover, post the SMME graduation from an incubator. Increase in turnover in this research is defined as the SMMEs' capability to increase the amount of value generated from operating their business from the time they enter the business incubation process to the point where they operate independently after the incubation phase (Mokgoko, 2015).

Improved turnover has been significantly related with being part of an incubation process in studies conducted by Main, Virtanen and Kiuru (1997; 2013). Thus, this metric is deemed as an applicable metric to use in assessing firm performance after the SMMEs graduate from the incubator. Research suggest that firms that participate in incubation programmes have a higher chance of surviving and growing revenue as they have access to various business support services, access to market and networking opportunities which an SMME business owner may not have if they were not involved in an incubation programme. Ultimately, business incubators are meant to provide SMMEs with the necessary support aimed at improving business failure rate (Hackett & Dilts, 2004b).

### 2.5.1.2 Job Creation

The growth of business incubators may be attributable to the potential jobs created by SMMEs that graduate from business incubators. This measure has been widely adopted by a variety of researchers as an appropriate measure for assessing incubator performance (Colombo & Delmastro, 2000; Lalkaka, 2001; Adegbite, 2001; Bergek & Norrman; 2008, Dee et al., 2011). Other researchers argue otherwise, given the complexities and the uniqueness of each firm's lifecycle during the initial phases of establishing the business (Dee et al., 2011).

For example, during the early stages, the start-up may go for a lean model to maintain low costs and may postpone the hiring process (Dee et al., 2011). Also, each firm may go through different challenges and may not be able to create jobs. However, contrary to this view, Virtanen and Kiuru (2013) found. in their study. that small businesses which participated in the study produced thirty per cent new jobs after graduating from the incubator. Job creation is an economic objective given the ambitious target of 11 million jobs to be created by SMMEs by 2030, as set out by the government (DTI, 2005).

#### *2.5.1.3 Survival Rates*

The theoretical foundation of incubator-incubation studies is rooted in business failure arguments. The intended objective of a business incubator relates to equipping SMMEs with the relevant skills and providing them with the necessary support so that they can survive and become self-sustaining. One of the fundamental objectives of an incubator is to improve the business survival rate (Hackett & Dilts, 2004b; Main, 1997; Virtanen & Kiruru 2013). Businesses may fail if they do not have appropriate cash flow management due to the inability to generate sales. Forty-two months has been considered as the average period it takes for a business to reach the sustainability phase (Amezcua, 2010). The time constraint is a challenge and therefore the researcher was not able to collect longitudinal data which may validate the survival rate variable.

The researcher mainly measures whether SMMEs post-incubation either discontinue or continue with the existing business. Amezcua (2010) suggested that failure rate should not be used as a metric to measure improved firm performance during the incubation process. This is partly because, based on the favourable business conditions offered by the business incubators, this may provide a flawed view of the external business conditions which come with operating a business outside the protected business incubator spaces. Additionally, the business survival rate may be an appropriate measure for future research, given the economic landscape and challenges faced by small businesses (Mokgoko, 2015).

Therefore, various business incubators and business development institutions have been introduced, as cited in literature, to assist the SMME sector. This study sought to understand how SMMEs from sector specific and mixed business incubators perform, based on just job creation turnover. The next section unpacks literature on different incubators in order to formulate an hypothesis.

## 2.6 Mixed versus Sector Specific Business Incubators

Within South Africa, the government's main objective in launching business incubators relates to promoting the sectors set out by the NDP which are meant to contribute towards growing the economy. For example, manufacturing and tourism are seen as key sectors for economic growth (The Republic of South Africa, 2012). Business incubators have been identified as a key strategy to inculcate entrepreneurship and innovation in the identified priority sectors (Herrington, Kew, & Kew, 2010).

Thus, business incubators have been identified as vehicles to stimulate venture growth in the country (Hackett & Dilts, 2004a; Hackett & Dilts, 2004b; Main, 1997; Virtanen & Kiruru 2013). However, incubators may be different in the type of services they offer and the type of SMMEs they support may be from different sectors.

For example, you may find a chemistry sector focused incubator which may drive chemistry innovations, while manufacturing may provide support relevant to this sector (Isenberg, 2010).

Further distinctions can be made between mixed business incubators and sector business incubators. Typically, sector or niche business incubators will have a technological, developmental or research focus (Scaramuzzi, 2002). Mixed sector business incubators select businesses based on basic commercial criteria from SMME across various sectors (Buys & Mbewana, 2007; Al-Mubaraki, Wong, Siew Fan, 2011). Sector specific business incubators may offer different services. For example, science and technology incubators have a mandate to address all three gaps related to funding, research and access to information.

They may assist early stage start-ups with access to networks, physical infrastructure, management support, shared research and secretarial services as well as to financing needs and business development (Al-Mubaraki & Wong, 2011). This trend is recognised both internationally, as well as locally. The aim in sector focused business incubators is to assist with further product development and the commercialisation of innovative ideas under the same roof.

Mixed incubators may not place as much emphasis on research and development or on in-depth sector focused knowledge transfer (Al-Mubaraki & Wong, 2011). For example, as noted by Scaramuzzi (2002), technology business incubators (TBIs) focus on high-technology sectors and the growth of firms involved in emerging technologies. The TBIs have a primary objective of accelerating commercial viability of technology innovations, as well as promoting the growth of technology-based businesses. Therefore, based on these distinctions of business incubators offerings and how different types of business incubators support SMMEs, research suggests that the results that the different types of incubators' produce may be different (Al-Mubaraki & Wong, 2011; Khalid, Gilbert & Huq, 2014).

Standard across various business incubators should be generic business development training, mentorship, business advice consultation and information aimed at improving the performance of SMMEs.

Therefore, “Incubators should provide services not limited to access affordable working space, equipment, business networks and finance” according to Isabelle (2013, p. 20). It is crucial for a business incubator to provide at least four or more packaged solutions to businesses being incubated. “If an incubator offers less than four of these services it means that they lack too many elements to be considered an incubator” (Isabelle, 2013, p. 20).

Thus, in assessing the business incubator performance, it is important to take into account the incubator type (Plosila & Allen,1985). Within South Africa, limited studies have been conducted of what the effect is on post-graduated SMMEs from both sector specific and the mixed sector business incubators. Although, some research has proved that incubated businesses contribute improving business survival and employment (Hackett & Dilts, 2004b).

How business incubators contribute towards improving performance is less explored when the sector specific vs the mixed sector business incubators are compared. The evaluation of business incubators is crucial, especially in the context of enhancing the economic landscape through job creation, economic growth and poverty alleviation (Mokgoko, 2015).

The research responds to the following research questions: What level of effect does sector specific business incubators have on SMME performance? How significant are the differences between the two business incubator groups (Sector Specific and Mixed Sector)? This was achieved by understanding the type of programmes offered at incubators and understanding the effect of sector specific incubators versus mixed sector business incubators on the SMMEs performance.

Therefore, in investigating and comparing the effect of business incubators on SMMEs performance after graduation, this study aims to address test the following hypotheses:

*Hypothesis 1: There is a significant positive relationship between incubation type and improved SMMEs' performance measured in turnover and job creation*

*Hypothesis 2 There is a significant difference between sector specific and mixed sector incubation in improving SMMEs' performance measured by job creation and turnover.*

## 2.7 Conclusion of Literature Review

This literature review demonstrated how numerous countries around the globe promote business incubator institutions as an opportunity to stimulate an economy. Literature of enterprise development was identified as a vital tool for stimulating the South African economy. Ultimately, business incubators seek to stimulate the development of an enterprise through cost reduction for the SMMEs by providing various business development services. However, literature suggested that incubators may differ in terms of the type of services they offer, and this difference, according to research, may impact the success of incubated firms.

The review further unpacked the various programmes government has initiated to redress the post-apartheid challenge. Furthermore, the history of business incubators was reviewed and analysed. Lastly, the adopted assessment framework was reviewed together with metrics which were used in this study to analyse SMME performance. This research investigates and compares the effect of business incubator programmes in the sector specific in comparison to the mixed specific incubators, as well as measuring the outcomes post-incubation phase; thus, this study addresses the following research objectives:

[1] To investigate the effect of incubation type on turnover, and job creation,

[2] To compare the effect of sector-specific business incubators against mixed sector business incubators on turnover, and job creation.

# CHAPTER 3: RESEARCH METHODOLOGY

This chapter provides more understanding of how the research study has been conducted by explaining the research methodology, research design, population and sampling. Moreover, it addresses the methodological issues regarding the research instrument, data collection, data analysis, limitations, validity and reliability.

## 3.1 Research Paradigm

The positivism paradigm is the location of this study and takes the deductive approach. “Positivism paradigm is an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality and beyond, the purpose of the theory is to generate hypothesis that can be tested and also allow explanations of the law to be assessed” (Bryman, 2016, p. 28). The growing theory of incubator-incubation impact studies means that within this proposed study, there are constructs readily established relating to business incubation performance and economic development which can be assessed. The assumption in this study relates to these constructs existing ontologically, the ability to test them empirically and independent of the researcher at the time during which the research is conducted (Creswell, 2014).

To minimise potential bias and social desirability, the researcher remained objective by limiting direct contact with the SMME respondents. The questionnaires were self-administered which resulted in no direct contact with the respondents. A quantitative research approach was adopted and the research operated within a deductive framework of stable and pre-defined research objectives (Creswell, 2014). The quantitative study included the discovery and verification of the findings and knowledge (Bryman, 2016).

## 3.2 Research Design

A cross-sectional research design was adopted, utilising quantitative techniques. The data was observed and collected from respondents at a particular point in time. The cross-sectional design enabled the description of the reality of small business incubator performance outcomes measured through SMME performance during a certain period. Thus, the constructs being investigated only represented what was happening at the time the data was being collected (Olsen, 2000). Furthermore, the researcher compared two different typologies (sector and mixed sector business incubators). The data was collected during November 2017 and January 2018. A systematic approach was adopted to deal with the variation of the stated cases.

The researcher focused on business incubator institutions which primarily provide either sector specific or mixed sector support to SMMEs to create a stable benchmark for the study. The cross-sectional data was collected through self-administered questionnaires in which emails were sent to respondents to complete. Although the questionnaire was designed to have short close-ended questions to motivate respondents to complete the survey, the challenge with this approach was getting incomplete responses and missing data (Bryman, 2016).

## 3.3 Population and sample

### *3.3.1 Population*

The population of this study were SMMEs who graduated from business incubators from either sector specific or mixed sector programmes in South Africa. The research approached organisations that were sector specific and mixed to measure the effect of these programmes respectively from graduated SMMEs who attended business incubators such as Raizcorp (mixed sector), Shanduka Black Umbrellas (mixed sector), Aurik tech (sector focused), Innovation Hub (sector and mixed sector focused), Riversand Incubator (sector focused), Tuksnovation High Technology

(sector focused), EgoliBio- Biotech (sector focused), Awethu Business Incubator (mixed sector).

Conveniently, the researcher also requested heads of incubators or programme managers to distribute the data to only the SMMEs who had graduated from the programme. According to SEDA (Small Business Development Agency), there is a total of 57 sector specific incubators across South Africa. Moreover, a report conducted by the DTI (2014) suggests that there is a total of 105 business incubators in the country, covering both the private and public support of incubators. The report showed that 35 of these business incubators are based in Gauteng (DTI, 2012).

### *3.3.2 Sample and sampling method*

This research adopted a purposive sample approach, because the study focused on SMMEs that were part of an incubation process and graduated from the programme. Thus, SMMEs who graduated from either a sector specific or mixed sector business incubator programme were identified and were asked to participate in this study.

The sample target for this study was 106 respondents with a response rate of 99% (Bryman, 2016). This study adopted Green's (1991) method for selecting the minimum acceptable sample size. The researcher sought to ascertain the relationship between sector specific and mixed sector business incubators on SMMEs' performance measured by turnover, survival rate and job creation.

Therefore, Green (1997) suggests that the sample size should be 104 + 2 individual independent variables which would equal 106. Field (2009, p. 223) states that "…with six or fewer independent variables a sample of 100 is fine". The purposive sample provided limited generalisability about the effect of business incubators in South Africa.

## 3.4 The research instrument

The nature of this study was not to assess the perceived value-add of business incubators but to mainly understand the value-add services offered in sector specific

and mixed sector business incubators for comparison reasons and analysis (Xu, 2010). Furthermore, the quantitative method allowed for measurement of metrics identified in this study which were turnover and job creation as per the Main (1997) adopted framework. Consequently, an online survey method was used. The research instrument consisted of four sections and was divided as follows:

PART A: Collecting demographic data such as gender, race and level of education

PART B: Collecting data about when the SMMEs were enrolled in the programme and when they graduated from the programme in years. SMMEs were required to provide information related to the type of business incubator in which they were participating.

PART C: Collecting data related to the sector in which the SMME operated as well the type of services provided to SMME during the programme.

PART D: Collecting data related to turnover job creation and survival rates (Mokgoko, 2015).

## 3.5 Procedure for data collection

Self-administrated surveys were more suitable for the research design and enabled quantitative analysis ability and numeric description of trends by investigating the sample of the population (Creswell, 2014). The survey was advantageous in that it provided faster turnaround times and was more convenient for the respondents (Creswell, 2014).

The self-administered questionnaire was sent to participants via email, using the Qualtrics system. Some of the email addresses were obtained from the business incubator institutions identified, whereas other emails were sent by incubator programme managers to SMMEs who met the criteria. A description outlining the context of the study was provided using the University of Witwatersrand letterhead to ensure the credibility of the study.

Before completing the survey, respondents had to read the statement of consent and choose whether they would like to be part of the research.

In addition, participates were required to provide an honest reflection of the incubation programme/process and how it had contributed to improving the SMMEs performance or not. The confidentiality clause was maintained throughout the researching process; this was done to protect the identity of the respondents (Bryman, 2016).

## 3.6 Data analysis and interpretation

Data analysis usually contains the process of organising and collecting data, creating summaries, observing and identifying patterns as well as applying statistical methods. This research assessed varying functions and relationships that exist among variables (business incubation performance outcomes) (Ntlamelle, 2015). Descriptive, correlation and regression statistical procedures were conducted to tests Hypothesis 1. In order to test Hypothesis 2, a comparison of the mean scores between unrelated groups on the same variable was required. Therefore, a t-test was required to compare sector specific business incubators against mixed business incubators (Chen, 2002; Field, 2009).

The IBM Statistical Package for Social Sciences (SPSS 25) was utilised during the hypothesis testing phase and it also allowed for the quantitative data to be analysed and interpreted.

Prior to analysing the data on SPSS, the data collected from completed questionnaires were downloaded from Qualtrics to a CSV Excel spreadsheet file to the data for final analysis This process involved cleaning the data by identifying and examining consistencies in responses and the removal of data that did not meet the criteria or assist the research in addressing the problem under investigation (Field, 2009).

Furthermore, the descriptive statistical technique was used in summarising the data and describing the sample characteristics. This technique enabled the researcher to simplify the data into manageable patterns and themes.

This study utilised a combination of numerical tables, frequencies, as well as graphical figures to present the data (Bryman, 2016).

### *3.6.1 Descriptive statistics*

A descriptive analysis was performed to understand the simple features of the data and allow for a quantitative analysis. According to Field (2009), the first step in analysing data once collected, is to look at the graphical data trends to understand the statistical model of data.

The frequency distribution was used to illustrate how many times each score occurred and also to test and resolve certain assumptions, such as normality. The descriptive statistics were also used to analyse the breakdown of the demographics, such as gender, race and educational level (Field, 2009). The performance outcomes of the study, such as turnover and job creation, were demonstrated graphically to show an average increase over time.

### *3.6.2 Correlation*

A correlation analysis was conducted to measure the relationship between the independent and dependent variables (Bryman, 2016).

Correlation was suitable to test the relationship between sector specific business incubators and improved SMMEs' performance measured in turnover and job creation. Also, it was used to test the relation between mixed sector business incubators and improved SMMEs' performance, measured in turnover and job creation. The independent variables in this case are "mixed and sector specific business incubator" and the dependent variable is SMME performance measured by turnover and job creation. The relationship between the independent variable (sector specific) and dependent variables was predicted to be positive (Chen, 2002).

That is, as an SMME goes through the sector specific business incubator, the better their performance would be in terms of turnover and job creation. Therefore,

calculating the covariance would be a good way to assess whether two variables are related to each other (Field, 2009).

### *3.6.3 Regression*

Although a correlation analysis looked at the relationship between the dependent and independent variables, the regression analysis assisted in measuring the predictive capacity of the independent variables on the dependent variables This process is useful in helping the researcher understand how best the model fits the data (Field, 2009). Simple regression was conducted on all dependent variables (turnover, job creation) against the independent variable to assess the hypotheses (Chen, 2002).

### *3.6.4 T-tests – Comparing means*

The t-test was used to test

H1 *There is a significant positive relationship between incubation type improved SMMEs performance measured in turnover and job creation and*

*H2 There is a significant difference between sector specific and mixed sector incubation in improving SMMEs' performance measured in turnover and job creation.*

The t-test conducted tested for the significant differences between the mean scores of groups, sector specific and mixed business incubators in improving business performance (Chen, 2002; Field, 2009).

## 3.7 Limitations of the study

A non-probability technique was used which may have limited the ability to generalise the research outcomes (Bryman, 2016).

The study did not analyse the incubation process. It only assessed the post-incubation outcomes which may also have been a limitation and may cause inability to replicate.

Self-administration questionnaires are prone to a lower response rate than comparative interview studies. The researcher prevented this problem by developing shorter questions, following up on respondents, attaching a cover letter explaining the nature of the research study, producing clear instructions and allowing the respondents to only see one section of the questionnaire at a time (Bryman, 2016).

## 3.8 Validity and reliability

According to Swanepoel (2009), reliability and validity relate to the researcher's ability to provide a comprehensive overview of the construct in a manner which is non-biased and subjective. Validity relates to the ability of the research to assess what it sets out to measure. A pilot study during October 2017 was conducted with a group of respondents to gauge the validity of the study before collecting data for the final research study. The pilot study had a total of 28 respondents who successfully completed the questionnaire, as requested.

Post the pilot phase, the researcher modified the questionnaire by adding the question "what business support services do SMMEs receive in the business incubation programme they are in".

Other questions were also revised using feedback received from participates. On the other hand, reliability relates to whether the study can produce the same results when applied in a different context. Reliability answers the consistency question of the measure (Bryman, 2016).

### 3.8.1 External validity

External validity is concerned with the generalisability of the measure to other contexts (Bryman, 2016).

The purposive sampling technique which can be classified under the non-probability sampling technique, may not allow for generalisability to other contexts. SMMEs in different parts of South Africa may be prone to different contextual challenges, thus the findings in this study cannot be generalisable to different geographical locations.

### *3.8.2 Internal validity*

Internal validity relates to the degree in which characteristics being measured enable the researcher to make accurate inferences about the construct being investigated (Bryman, 2016). The internal validity issues prevalent in this study relate to the nature of the questionnaire being self-administered and the inability of the researcher to influence how SMMEs may respond. SMMEs may have issues in how they understand and interpret various questions and this could be attributable to different levels of education among the respondents (Mokgoko, 2015).

### *3.8.3 Reliability*

The Main (1997) framework was adopted in measuring jobs created, as well as turnover. These two metrics have been utilised as key to assessing post-incubation SMME performance, as cited in the literature. Therefore, it can be said that the reliability was maintained by utilising a consistent measuring instrument which allows for replicability (Mokgoko, 2015).

## 3.9 Ethical Considerations

This study addressed ethical issues as follows:

- Respondents were not forced to participate in the study
- Confidentiality was maintained at all times.
- The researcher was willing to share the research information with the respondents (see cover letter in Appendix B and respondents choosing to complete the questionnaire provided consent to the terms of the study).
- Respondents' identifiable information was not requested; they were left anonymous to remove any bias which may occur.
- The researcher applied for the ethics certificate which was granted to the researcher as permission to collect data.

## 3.10 Conclusion

In conducting this chapter, the study sought to investigate and compare the effect of sector specific and mixed business incubators in improving SMMEs' performance: A structured research design which enabled the comprehensive examination of the main research problem, together with the sub-problems was adopted. Quantitative research design and methodologies were implemented in this study and a purposive sampling technique was used to gather responses to the research instrument. In the following chapter, the results of the statistical tests are presented, prior to a discussion on the findings of the study.

# CHAPTER 4: PRESENTATION OF RESULTS

## 4.1 Introduction

This chapter presents the outcomes of the study with the use of tables and graphs. The first section presents the demographic profile of the responding SMMEs and a brief breakdown of the total number of sector specific versus mixed sector business incubators, as well as the types of business support services to which SMMEs have been exposed. The following section presents the results pertaining to the regression and correlation analysis relating to testing hypothesis 1. The t-test conducted assesses the significant differences between the mean scores of groups, sector specific and mixed business incubators in improving business performance measured by job creation and increase in turnover for testing hypothesis 2 (Field, 2009). The two hypotheses are summarised as follows:

*Hypothesis 1: There is a significant positive relationship between incubation type and improved SMMEs performance measured in turnover and job creation*

*Hypothesis 2: There is a significant difference between sector specific and mixed sector incubation in improving SMMEs performance measured by job creation and turnover.*

## 4.2 Data Quality and Screening

A total of 828 research questionnaires were sent out through Qualtrics. A total of 146 responses were returned with only 105 observations deemed useful for explaining the demographics of the study. The usefulness of the questionnaire responses for analysis was based on whether the questionnaire was complete or not.

## 4.3 Results Pertaining to Demographics

With regard to the demographic profile of the respondents, the study collected gender, race, age to explore whether the business incubators are aligned to the B-BBEE mandate of the country. Table 1 contains the gender distribution of the respondents. From the sample of n=105, 44 were females, (42%), and 58 males, (55%) which seems fairly distributed.

**TABLE 1: GENDER DISTRIBUTION OF THE SAMPLE**

| DISTRIBUTION OF GENDER OF SAMPLE | | |
|---|---|---|
| | RESPONDENTS | |
| | FREQUENCY | PERCENTAGE |
| FEMALE | 44 | 42 |
| MALE | 58 | 55 |
| NS | 3 | 3 |
| TOTAL | 105 | 100 |

Table 2 contains the age distribution of the respondents. The age groups of respondents are indicated in five intervals, namely, 18-23 years, 24-29 years, 30-35 years, 36-45 years and 55 years and older. The majority of the respondents who enter and graduate from business incubators are between the ages of 24 and 45, which represents 85% of the sample respectively. The youth represents approximately 57% of the total sample.

## TABLE 2: AGE DISTRIBUTION OF THE SAMPLE

| DISTRIBUTION OF AGE OF SAMPLE | | |
|---|---|---|
| AGE | RESPONDENTS | |
| | FREQUENCY | PERCENTAGE |
| 18-23 | 4 | 4 |
| 24-29 | 25 | 24 |
| 30-35 | 30 | 29 |
| 36-45 | 34 | 32 |
| 46-55 | 8 | 8 |
| 55 and older | 3 | 3 |
| NS | 1 | 1 |
| TOTAL | 105 | 100 |

Table 3 contains the race/ethnicity group distribution of the respondents. The ethnicity groups of respondents are indicated in five intervals namely, Black, White, Coloured, Indian and those who do not identify with a specific race group. Seventy-one comma four per cent (71.4 %, n=75) of the respondents are Black whilst around 9% (n=19) of the respondents are Indian. Whites and Coloured participants were equally represented in the sample with 10 % (n=10) and 10 % (n=10) respectively. It can be concluded that the majority of the respondents are Black**.**

## TABLE 3: RACE DISTRIBUTION OF THE SAMPLE

| DISTRIBUTION OF RACE OF SAMPLE | | |
|---|---|---|
| RACE | FREQUENCY | PERCENT |
| BLACK | 75 | 71 |
| COLOURED | 10 | 10 |
| INDIAN | 9 | 9 |
| NS | 1 | 1 |
| WHITE | 10 | 10 |
| TOTAL | 105 | 100 |

Figure 4 illustrates the highest educational level distribution of the respondents. The educational level of respondents is indicated in seven intervals namely; lower than matric, matric, certificate or diploma, bachelor's degree, master's degree, doctorate and other. Ten per cent of the respondents had a matric while only five per cent of the respondents had lower than matric. The majority (42%) of respondents have a certificate/diploma qualification. Second highest to this was (23%) of the respondents who reported to have had a bachelor's degree qualification.

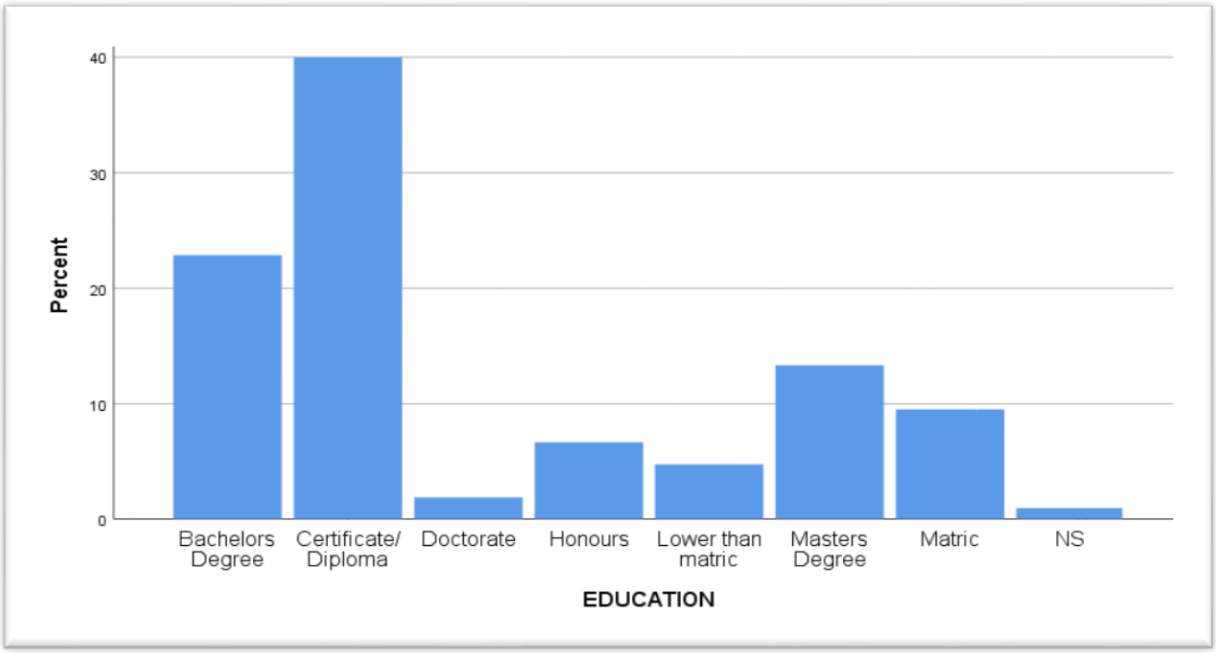



**FIGURE 4: BAR GRAPH SHOWING THE PERCENTAGE OF THE LEVEL OF EDUCATION**

Table 4 shows that the majority, 76 per cent of the respondents (n=80) were affiliated to a mixed sector business incubator with 21 per cent of the respondents (n=22) being affiliated to a sector specific business incubator. Three per cent of the surveyed population did not respond to this question (n-3). The majority of the surveyed SMMEs operated in the business services sector (n=30).

## TABLE 4: TYPE OF INCUBATOR PROGRAMME DISTRIBUTION OF THE SAMPLE

| Type of incubator programme | | | | | |
|---|---|---|---|---|---|
| | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Mixed Focused Incubator | 80 | 76 | 80 | 76 |
| | NS* | 3 | 3 | 3 | 3 |
| | Sector Focused Incubator | 22 | 21 | 22 | 21 |
| | Total | 105 | 100 | 105 | 100 |

Figure 5 illustrates the sector distribution of the respondents. The majority of the SMMEs are operating within the business services, manufacturing sectors (n=28, n=14), while transport and communication, ICT were evenly represented (n=7) respectively.

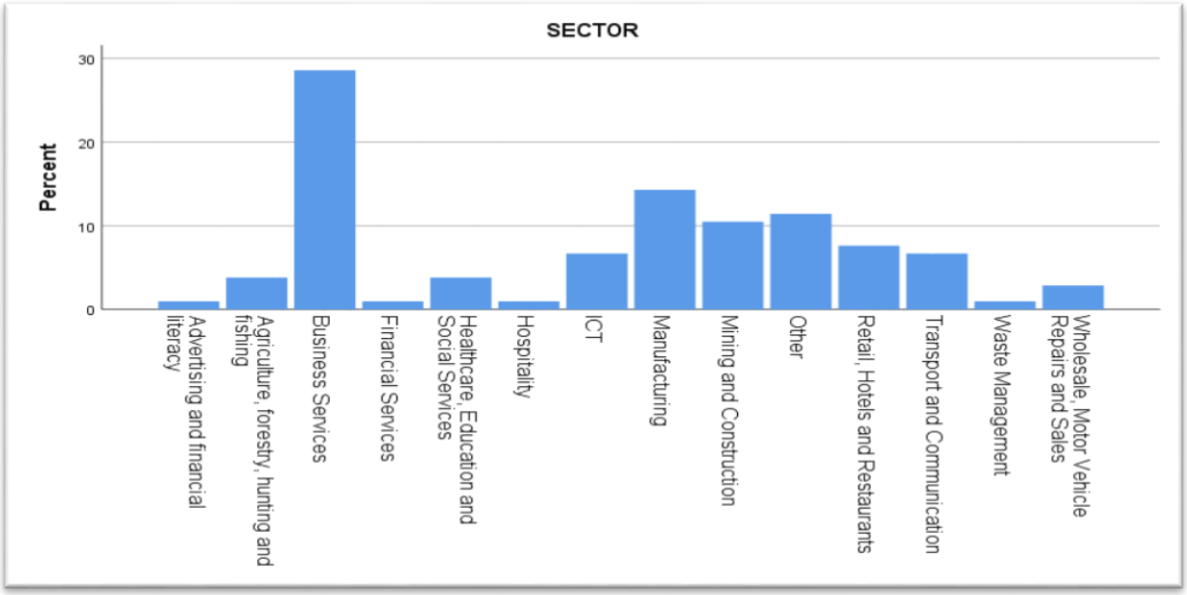


**FIGURE 5: THE PERCENTAGE OF THE SECTOR DISTRIBUTION OF THE SAMPLE**

Table 5 shows that out of the 105 respondents, only 63 specified the kind of support they are being offered by their respective incubators. The type of support that most entrepreneurs receive from incubators are: Business Development and Strategic Management, Financial Management, Leadership and Training.

**TABLE 5: BUSINESS SUPPORT SERVICES**

| Type | Support provided | Yes | No | Total | % Yes |
|---|---|---|---|---|---|
| | Office Space | 22 | 41 | 63 | 35% |
| INFRASTRUCTURE | R&D Facilities | 11 | 52 | 63 | 17% |
| | Leadership & Coaching | 28 | 35 | 63 | 44% |
| | Business Dev and Strategic Man | 41 | 22 | 63 | 65% |
| | Innovative Problem Solving | 22 | 41 | 63 | 35% |
| | Financial Management | 31 | 32 | 63 | 49% |
| | HR Management | 20 | 43 | 63 | 32% |
| | Technical | 8 | 55 | 63 | 13% |
| TRAINING | Legal Matters | 23 | 40 | 63 | 37% |
| | Investors | 12 | 51 | 63 | 19% |
| | Suppliers | 9 | 54 | 63 | 14% |
| | Customers | 13 | 50 | 63 | 21% |
| | University Researchers | 2 | 61 | 63 | 3% |
| CONNECTION | Financiers | 11 | 52 | 63 | 17% |

## 4.4 Descriptive Statistics: Business Incubator Performance Measures

Figure 6 shows the difference in average turnover of SMMEs from the time they graduated and the time of study. Conclusions cannot be made from face value as this needs to be statistically tested whether it is a significant difference or not which is done in the next section under hypothesis testing.

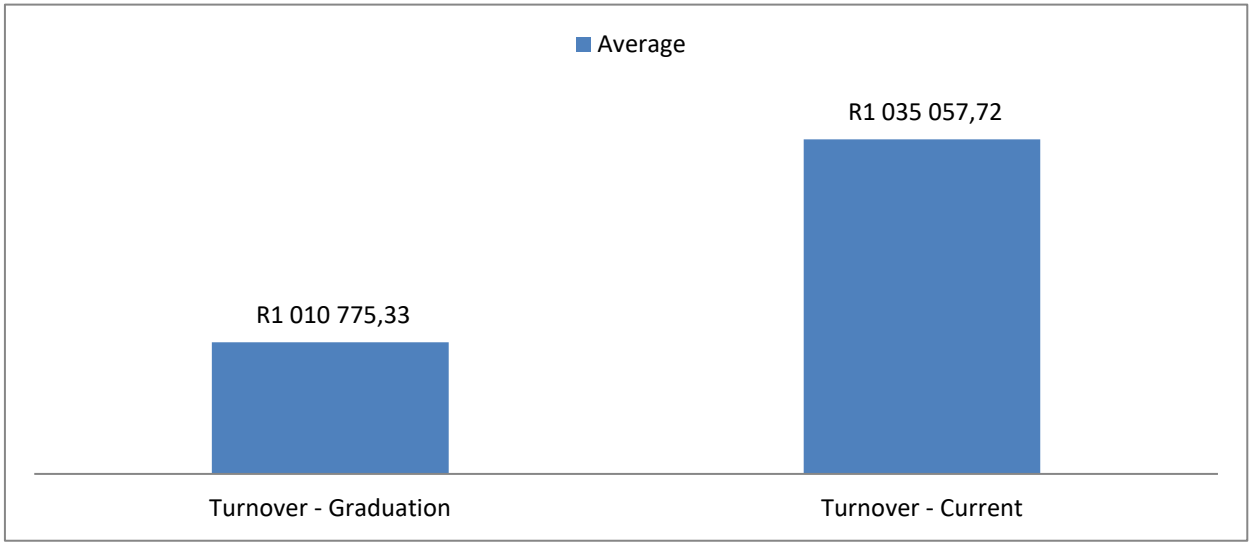



**FIGURE 6: A BAR GRAPH SHOWING THE AVERAGE TURNOVER OVER TIME**

Figure 7 compares the average turnover difference between sector specific and mixed sector business incubators. The results show that, on average, mixed sector SMMEs do better in terms of turnover during the business incubation programme and post the programme, the SMMEs' turnover decreases. This is however, the inverse for sector specific businesses.

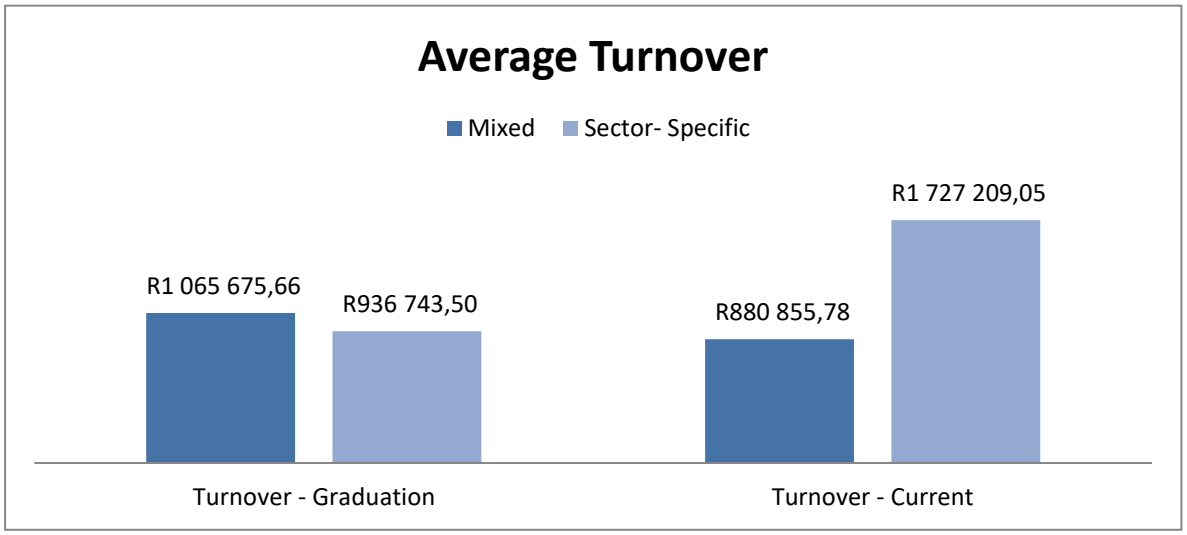



**FIGURE 7: A BAR GRAPH SHOWING THE AVERAGE TURNOVER BETWEEN SECTOR SPECIFIC AND MIXED SECTOR BUSINESS INCUBATORS OVER TIME**

Graph 8 and 9 respectively demonstrate the average full time and part time jobs created by sector specific and mixed sector business incubators. Graph 9 shows that both mixed sector and sector specific on average produce five jobs after SMMEs graduate from the programme whereas, on average, sector specific produce at least one more part time job than mixed sector business incubators. The significance of these assumptions is also reviewed under hypothesis testing.

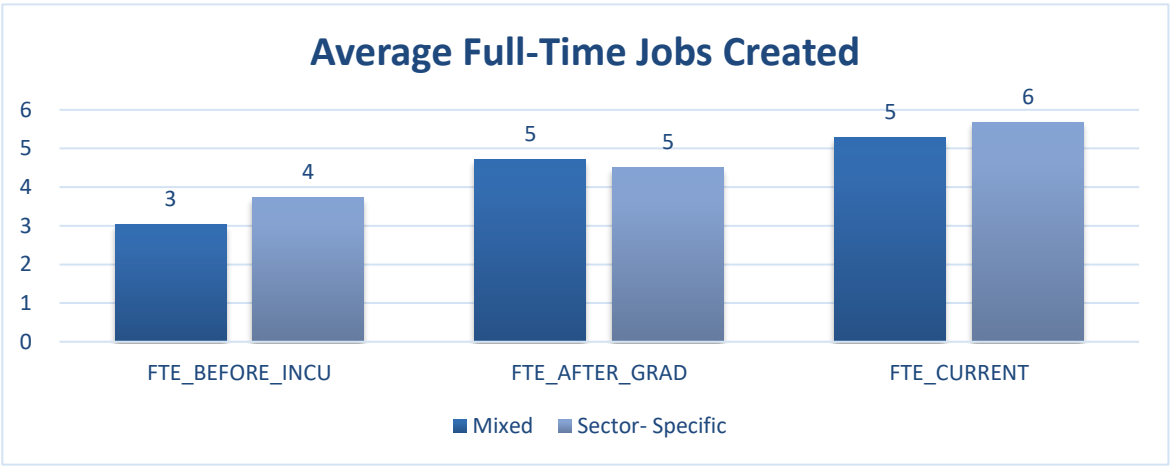
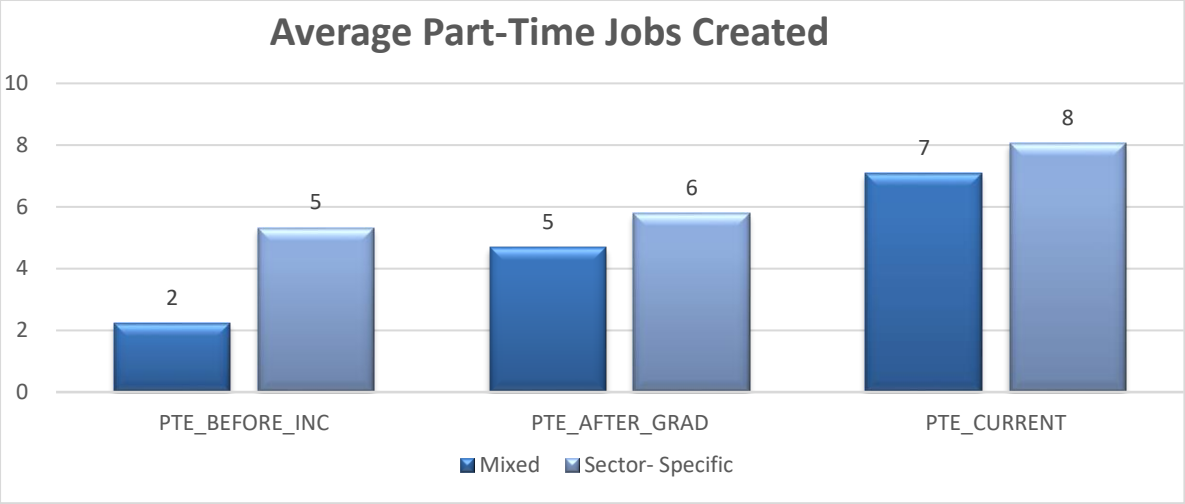


**FIGURE 8: A BAR GRAPH SHOWING THE AVERAGE FULL TIME JOBS**




**CREATED BETWEEN SECTOR SPECIFIC AND MIXED SECTOR BUSINESS INCUBATORS OVER TIME**

**FIGURE 9: A BAR GRAPH SHOWING THE AVERAGE PART TIME JOBS CREATED BETWEEN SECTOR SPECIFIC AND MIXED SECTOR BUSINESS INCUBATORS OVER TIME**

Although business survival was not central to measuring SMME performance in this study, based on the research instrument adopted, the researcher sent out questionnaires to SMMEs who had previously gone through an incubation programme. SMMEs were asked whether they were still running the same business or not, and the results in Table 6 showed that n=96 respondent were still running the same business post graduating from the business incubator. Out of n= 105 SMMEs only 6 (6%) either closed their businesses or they are not running the same businesses anymore.

The survival rate was not identified as a key dependent variable due to the nature of the data that was collected on this variable. There was no regression conducted for this specific variable especially because the level of measurement was nominal/categorical data.

Table 6 shows that n=74 SMMEs in the mixed sector business incubator are still involved in the same business post the incubation programme and only n=6 have closed business operations. However, from the research sample, the data shows that

n=0 of the sector focused SMMEs have discontinued business operations from the data collected at the time of the study. Therefore, from the descriptive statistics, it can be suggested that most businesses that have been through either sector focused or mixed focused business incubators show good survival rates n=96.

**TABLE 6: BUSINESS SURVIVAL**

| | | INCUBATOR_TYPE | | |
|---|---|---|---|---|
| | | Mixed Focused Incubator | Sector Focused Incubator | **Total** |
| BUSINESS SURVIVAL | No | 6 | 0 | 6 |
| | Yes | 74 | 22 | 96 |
| Total | | 80 | 22 | 102 |

## 4.5 Results Pertaining to Hypothesis 1

### 4.5.1 Testing Assumptions

In order to test hypothesis 1, mixed and sector specific incubators were treated as binary variables (*Mixed Sector is coded 0 and Sector specific coded 1)* because respondents had to answer yes or no if they are in mixed versus sector specific incubators*.* Most statistical tests cannot handle categorical data and thus dummy variables have to be used to analyse and explain the binary variables (Field, 2009). To conduct regression analysis, certain assumptions are made and the research tests that none of the assumptions are violated prior to conduction parametric tests.

Normality of data is important for many statistical tests as normal data distribution is an underlying assumption in parametric testing (Field, 2009). Normality can be addressed using two methods: graphically or numerically (Field, 2009).

The normality was tested using two approaches; firstly, using descriptive statistical analysis, the frequency chart histogram was drawn which included the normal curve.

Secondly, the Kolmogorov-Smirnov test and the Shapiro-Wilk test were also used to analyse normality (Field, 2009). The data was extremely skewed for “turnover after graduation and current turnover”.

Transformation was used, the square root of the original data and the skewness and kurtosis improved significantly, as indicated in Table 7 and 8, and it was deemed close enough to normality and parametric tests were then used

In terms of the Independence of error, Durbin Watson is close to 2 so there is no problem of correlated error terms as indicated in Tables 10 and 13. Outliers were tested using box plots and Cook’s Distance. All those that were outliers or extreme values were addressed by either deleting or replacing by the next large observation + 1 as indicated in Appendix C, figures 10 and 11 (Field, 2009). After addressing these, there were no large residuals; all were less than 1. Table 7 shows that all the variables have skewness close to 1 and a kurtosis close to 2 which are less than 3 and 7 respectively, therefore normality can be assumed (Field, 2009).

**TABLE 7: DESCRIPTIVE STATISTICS**

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| TURNOVER_GRAD | 102 | .00 | 3001.00 | 616.0672 | 745.65048 | 1.628 | .474 |
| TURNOVER_CURRENT | 102 | .00 | 3163.00 | 675.5054 | 770.29160 | 1.587 | .474 |
| JOB_BEFORE | 102 | .00 | 6.50 | 1.8406 | 1.46788 | 1.245 | .474 |
| JOB_GRAD | 102 | .00 | 7.30 | 2.1785 | 1.59155 | 1.315 | .474 |
| JOB_CURRENT | 102 | .00 | 8.39 | 2.4740 | 1.87059 | 1.444 | .474 |

Table 8 shows another normality test that was conducted, but this time categorising the sample into the two incubator types. The Kolmogorov and Shapiro tests were all less than 0.05 (p<. 05) and violated the normality assumption. However, due to the small sample size, this is understandable (Field, 2009).

**TABLE 8: TEST OF NORMALITY**

**Tests of Normality**

| | Incubator Type | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| SALES_GRAD | Mixed Sector | .212 | 80 | .000 | .770 | 80 | .000 |
| | Sector Specific | .203 | 22 | .019 | .826 | 22 | .001 |
| SALES_CURR | Mixed Sector | .198 | 80 | .000 | .808 | 80 | .000 |
| | Sector Specific | .235 | 22 | .003 | .810 | 22 | .001 |
| JOB_BEFORE | Mixed Sector | .130 | 80 | .002 | .896 | 80 | .000 |
| | Sector Specific | .220 | 22 | .007 | .862 | 22 | .006 |
| JOB_GRAD | Mixed Sector | .151 | 80 | .000 | .872 | 80 | .000 |
| | Sector Specific | .242 | 22 | .002 | .893 | 22 | .022 |
| JOB_CURRENT | Sector Specific | .170 | 80 | .000 | .840 | 80 | .000 |
| | Sector Specific | .165 | 22 | .124 | .894 | 22 | .023 |
| SALES_GRAD | Sector Specific | .212 | 80 | .000 | .770 | 80 | .000 |

a. Lilliefors Significance Correction

### *4.5.2 Hypothesis 1a:*

*There is a significant positive relationship between incubation type and improved SMMEs performance measured in turnover.*

The special type of Pearson Correlation was used to test the linearity of the dependent variable with the independent variable. This type of technique can handle relationships that exist between dichotomous independent variables and a continuous dependent variable (Field, 2009). The Pearson correlation in Table 9 indicates that there is a positive relationship between sector specific incubators and Sales after graduation, though it is very weak and insignificant (r=0.031, p>0.05).

**TABLE 9: CORRELATION**

**Correlations**

| | | **INCUBATOR_S** | **TURNOVER_GRAD** |
|---|---|---|---|
| INCUBATOR_S | Pearson Correlation | 1 | .031 |
| | Sig. (2-tailed) | | .755 |
| | N | 102 | 102 |
| TURNOVER GRADUATION | Pearson Correlation | .031 | 1 |
| | Sig. (2-tailed) | .755 | |
| | N | 102 | 102 |

*Correlation is significant at the 0.05 level (2-tailed)*

*Note: Mixed Sector is coded 0 and Sector specific coded 1*

Table 10 shows the model summary from the regression analysis of the sales during graduation as an outcome variable and sector specific incubator as a predictor variable at (R square= 0.001). Hence, we can conclude that incubator type accounts for 0.1% of the variability in improvement in sales after graduation.

The predictive capacity of this model is not significant, according to the ANOVA Table 19 Appendix C (p>0.05). Both the correlation coefficient and the regression results support the hypothesis that sector specific incubators have a positive relationship with annual turnover, though the relationship is small and insignificant (Field, 2009).

**TABLE 10: MODEL SUMMARY**

| Model Summary | | | | | |
|---|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | .031[a] | .001 | -.009 | 749.00153 | 1.027 |
| a. Predictors: (Constant), INCUBATOR_S | | | | | |
| b. Dependent Variable: SALES_GRAD | | | | | |
| *Note: Mixed Sector is coded 0 and Sector specific coded 1* | | | | | |

Table 11 results show that incubator type is not a significant predictor of sales after graduation with (p>0.05). Sector specific incubators seem to be doing better than mixed sector SMMEs at 3%. Therefore, a sector specific incubator only contributes 3.1% to the variability of change in Sales after graduation.

## TABLE 11; COEFFICIENTS

| Coefficients | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 603.876 | 83.741 | | 7.211 | .000 |
| | INCUBATOR_S | 56.524 | 180.313 | .031 | .313 | .755 |
| *a. Dependent Variable: Sales Grad* | | | | | | |
| *Note: Mixed Sector is coded 0 and Sector specific coded 1* | | | | | | |

### *4.5.3 Hypothesis 1b*

*There is a significant positive relationship between incubation type and improved SMMEs' performance measured in turnover.*

The Pearson correlation in Table 12 indicates there is a positive relationship between a sector specific incubator and job creation after graduation though it is very weak and insignificant (r=0.113, p>0.05).

## TABLE 12: CORRELATION

| Correlations | | | |
|---|---|---|---|
| | | INCUBATOR_S | JOBS GRADUATION |
| INCUBATOR_S | Pearson Correlation | 1 | .113 |
| | Sig. (2-tailed) | | .258 |
| | N | 102 | 102 |
| JOBS GRADUATION | Pearson Correlation | .113 | 1 |
| | Sig. (2-tailed) | .258 | |
| | N | 102 | 102 |
| *Correlation is significant at the 0.05 level (2-tailed)* | | | |
| *Note: Mixed Sector is coded 0 and Sector specific coded 1* | | | |

Table 13 shows the model summary from the regression analysis of job creation during graduation as an outcome variable and sector specific incubator as a predictor variable at (R square= 0.013). Hence, we can conclude that incubator type accounts for 17.3% of the variability in improvement in job creation after graduation. The predictive capacity of this model is not significant, according to the ANOVA Table 21 Appendix C (p>0.05).

## TABLE 13: MODEL SUMMARY

| Model Summary | | | | | |
|---|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | .113[a] | .013 | .003 | 1.58926 | 1.698 |
| a. Predictors: (Constant), INCUBATOR_S | | | | | |
| b. Dependent Variable: Jobs Graduation<br>*Note: Mixed Sector is coded 0 and Sector specific coded 1* | | | | | |

Both the correlation coefficient and the regression results support the hypothesis that

sector specific incubators have a positive relationship with job creation even though the relationship is small and insignificant.Table 14 results show that incubator type is not a significant predictor of job creation after graduation with (p>0.05). Sector specific incubator seems to be doing better than mixed sector incubatees by .782 units (Sector Specific Incubator: B=.782, p>0.05). Therefore, sector specific incubators only contributes 17.3% to the variability of change in job creation after graduation. All Betas are not significant, though they support the fact that sector specific perform better than mixed sector incubators (p>0.05).

**TABLE 14 COEFFICIENTS**

| Coefficients | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Unstandardised Coefficients | | Standardised Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.305 | .207 | | 11.136 | .000 |
| | INCUBATOR_S | .782 | .446 | .173 | 1.754 | .082 |
| *a. Dependent Variable: Jobs Graduation* | | | | | | |
| *Note: Mixed Sector is coded 0 and Sector specific coded 1* | | | | | | |

As such, based on the above models, there is insufficient evidence to reject the Null Hypothesis (There is no significant positive relationship between incubation type and improved SMMEs' performance measured in turnover) and insufficient evidence to support Hypothesis 1.

### *4.6.1* Results Pertaining to Hypothesis 2

#### *4.6.1.1 Testing Assumptions of the T-Test*

The t-test conducted, tested for the significant differences between the mean scores of groups, sector specific and mixed incubation programmes. The effect of sector specific incubators in improving SMME performance was compared to the mixed business incubator programme. The assumption of the t-test conducted explored the normality of the distribution, together with homogeneous variances as determined by the Levene's Test. The equal variance assumption was met. Table 15 shows the test on the equality of variance is not violated.

### *4.6.2 Hypothesis 2a*

*There is a significant difference between sector specific and mixed sector incubation in improving SMMEs performance measured by turnover.*

The t-test conducted shows that the p-value is greater than 0.05, therefore there is no significant difference in the means of the two groups (mixed and sector specific) on turnover. According to the independent samples t-test (Tables 15 and 16) conducted, the results show that there is no relationship between likelihood to increase in turnover whether the entrepreneur was in a sector specific incubator or in a mixed incubator programme since the p-value was greater than 0.05 (p-value = 0.753 at graduation and p=.079 at current state). Therefore we reject the hypothesis.

**TABLE 15: HYPOTHESIS 2A TURNOVER GROUP STATISTICS**

| GROUP STATISTICS | | | | | |
|---|---|---|---|---|---|
| | **TYPE OF INCUBATOR PROGRAMME** | **N** | **MEAN** | **STD. DEVIATION** | **STD. ERROR MEAN** |
| **SALES_GRAD** | Mixed Sector | 80 | 603.8757 | 755.45930 | 84.46292 |
| | Sector Specific | 22 | 660.3996 | 724.19243 | 154.39834 |
| **SALE_CURRENT** | Mixed Sector | 80 | 610.0433 | 699.91683 | 78.25308 |
| | Sector Specific | 22 | 913.5492 | 967.02813 | 206.17109 |

## TABLE 16: HYPOTHESIS 2A TURNOVER INDEPENDENT SAMPLE TEST

| INDEPENDENT SAMPLES TEST | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| - | | LEVENE'S TEST FOR EQUALITY OF VARIANCES | | T-TEST FOR EQUALITY OF MEANS | | | | | |
| | | F | SIG. | T | DF | SIG. (2-TAILED) | MEAN DIFFERENCE | 95% CONFIDENCE INTERVAL OF THE DIFFERENCE | |
| | | | | | | | | LOWER | UPPER |
| Sales Grad | Equal variances assumed | .099 | .753 | -.313 | 100 | .755 | -56.52390 | -414.25928 | 301.21148 |
| | Equal variances not assumed | | | -.321 | 34.625 | .750 | -56.52390 | -413.94291 | 300.89511 |
| Sale Current | Equal variances assumed | 3.147 | .079 | -1.651 | 100 | .102 | -303.50589 | -668.30853 | 61.29676 |
| | Equal variances not assumed | | | -1.376 | 27.336 | .180 | -303.50589 | -755.72039 | 148.70862 |

### *4.6.3 Hypothesis 2b*

*There is a significant difference between sector specific and mixed sector incubation in improving SMMEs' performance measured by job creation.*

In conducting the t-test for job creation, the mean scores of sector specific business incubators (m=2.18 before graduation, m= 2. 52 at the time of graduation and m=3.09 at the time that the survey was conducted), compared to means scores of the mixed sector business incubators (m=1.75 before graduation, m=2.08 at the time of gradation and m= 2.31 at the time that the survey was conducted).

**TABLE 17: HYPOTHESIS 2B JOB CREATION GROUP STATISTICS**

| Group Statistics | | | | | |
|---|---|---|---|---|---|
| | Type of incubator programme | N | Mean | Std. Deviation | Std. Error Mean |
| JOB_BEFORE | Mixed Sector | 80 | 1.7479 | 1.33999 | .14981 |
| | Sector Specific | 22 | 2.1781 | 1.85906 | .39635 |
| JOB_GRAD | Mixed Sector | 80 | 2.0847 | 1.57596 | .17620 |
| | Sector Specific | 22 | 2.5195 | 1.63834 | .34929 |
| JOB_CURRENT | Mixed Sector | 80 | 2.3054 | 1.87690 | .20984 |
| | Sector Specific | 22 | 3.0873 | 1.75343 | .37383 |

The conducted independent sample t-test indicated that there was no statistically significant difference between the sector specific and mixed sector business incubators in job creation. The results show that there is no relationship between likelihood to increase employment and whether the entrepreneur was in a sector specific incubator or in a mixed incubator programme since the p-value was greater than 0.05 (p-value =.133, p=923, p=942). Therefore we reject the hypothesis.

The conducted independent sample t-test indicated that there was no statistically significant difference between the sector specific and mixed sector business incubators in job creation. The results show that there is no relationship between likelihood to increase employment and whether the entrepreneur was in a sector specific incubator or in a mixed incubator programme since the p-value was greater than 0.05 (p-value =.133, p=923, p=942). Therefore we reject the hypothesis

## TABLE 18: HYPOTHESIS 2A JOB CREATION INDEPENDENT SAMPLE TEST

| INDEPENDENT SAMPLES TEST | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | LEVENE'S TEST FOR EQUALITY OF VARIANCES | | T-TEST FOR EQUALITY OF MEANS | | | | | |
| | | F | SIG. | T | DF | SIG. (2-TAILED) | MEAN DIFFERENCE | 95% CONFIDENCE INTERVAL OF THE DIFFERENCE | |
| | | | | | | | | LOWER | UPPER |
| _JOB_BEFORE | Equal variances assumed | 2.294 | .133 | -1.220 | 100 | .225 | -.43021 | -1.12960 | .26919 |
| | EQUAL VARIANCES NOT ASSUMED | | | -1.015 | 27.281 | .319 | -.43021 | -1.29919 | .43878 |
| JOB_GRAD | EQUAL VARIANCES ASSUMED | .009 | .923 | -1.136 | 100 | .258 | -.43481 | -1.19387 | .32425 |
| | EQUAL VARIANCES NOT ASSUMED | | | -1.111 | 32.488 | .275 | -.43481 | -1.23123 | .36161 |
| JOB_AT THE TIME OF THE SURVEY | EQUAL VARIANCES ASSUMED | .005 | .942 | -1.754 | 100 | .082 | -.78187 | -1.66625 | .10251 |
| | EQUAL VARIANCES NOT ASSUMED | | | -1.824 | 35.385 | .077 | -.78187 | -1.65184 | .08810 |

## 4.7 Summary of the results

In conclusion, the findings reveal that relationships do exist between variables, but they are small and insignificant.

The first test conducted sought to assess the relationship between sector specific incubation and improved SMMEs performance when compared to mixed sector business incubators measured in turnover and job creation. The results of the test found that there was a positive relationship between sector specific programmes in improving turnover, but the relationship was weak and insignificant. Furthermore, the results show that incubator type is not a significant predictor of job creation after graduation with ($p>0.05$).

Secondly, a t-test was conducted, to test for the significant differences between the mean scores of groups, sector specific and mixed incubation programmes in improving SMME performance, measured by job creation and increase in turnover. The results showed that there was no significant statistical difference between the sector specific and mixed sector business incubators in job creation and turnover.

Lastly, key to note from the descriptive statistics, it can be suggested that most businesses that have been through either sector focused or mixed focused business incubators show good survival rate ($n=96$).

# CHAPTER 5: DISCUSSION OF THE RESULTS

## 5.1 Introduction

The study investigated and compared the effect of sector specific versus mixed sector business incubators in improving SMMEs' performance measured in turnover, job creation and business survival. The study found that business incubation programmes are perceived as instrumental for driving economic development and the attainment of the B-BBEE enterprise development objectives. However, it is important that SMME incubation programmes are measured on their capability to contribute to economic development, especially in the context of an emerging economy such as South Africa.

The central question of this study was concerned with investigating to what extent different business incubator types contribute towards improving SMMEs' performance in South Africa. Particular to this study was to explore which incubation type leads to increased job creation and turnover, understanding what the significant difference is and unpacking which incubator type has high business survival rates of post incubation phase. To address these research problems, the study relied on the insights of the SMMEs who had graduated from various small business incubators in order to investigate and compare the effect of mixed sector and sector specific business incubators.

This chapter evaluates and interprets the results of the study, making use of the literature reviewed and the hypotheses formulated. The chapter also presents a discussion pertaining to the demographic profile of the respondents of the survey. It continues to discuss the regression and correlation analysis for testing hypothesis1. This is followed by a discussion on the conducted t-tests, which effectively leads to the discussion of the findings from the second hypothesis.

The chapter closes with a conclusion of results observed, prior to outlining the possible implications for the appropriate audience.

## 5.2 Demographic profile of respondents

In the design of this study, there were a variety of business incubators where programmes were identified which met the condition of either being sector specific or mixed sector. A total of 105 respondents was sought by the study with the intention of widening representation and to provide a greater understanding of the performance of sector specific versus mixed sector business incubators in improving SMMEs' performance in South Africa.

A total of 828 research questionnaires were sent out through Qualtrics. A total of 146 responses were returned with only 105 observations deemed useful for explaining the demographics of the study.

With regard to the demographic profile of the respondents, the study collected gender, race, age to explore whether the business incubators are aligned to the economic objectives of the country. The majority of the respondents who enter and graduate from business incubators are between the ages of 24 and 45 which represents 85% of the sample respectively.

The youth total 57% (n= of the sample size and n=75 (75%) of the businesses are black owned. This could be due to the high unemployment rate prevalent in the country which is pushing young people to start-up businesses and utilising business incubation programmes for support.

In terms of the gender profile of the respondents, 40 businesses were male-owned while the remaining 39 were female-owned businesses in the mixed sector business incubator programmes, while only five females out of a sample of 22 were incubated in the sector specific programme.

In both sector and mixed business incubators, the majority of the respondents had a certificate/diploma (n=42, 40%). Business incubators provide a variety of business support services aimed at reducing business failure (Hackett & Dilts, 2004). The services offered by business incubators range from financing opportunities, business development support, networking opportunities and access to market opportunities for the improved performance of small businesses (Rogerson, 2004). What emerged in this study is that out of the 105 surveyed respondents, only 63 specified the kind of support they are being offered by their respective incubators. The type of support that most entrepreneurs receive from incubators is Business Development and Strategic Management, Financial Management, Leadership and Training.

The majority, 76 percent of the respondents (n=80), were affiliated to mixed sector business incubators with 21 percent of the respondents (n=22) being affiliated to sector specific business incubator.

Furthermore, from the overall descriptive statistics when reviewing the performance outcomes of SMMEs who graduated from either sector specific or mixed sector, the results show that over time the entrepreneurs reported an increase in new jobs and turnover.

## 5.3 Discussion pertaining to Hypothesis 1

***Hypothesis 1:*** *There is a significant positive relationship between incubation type and improved SMMEs' performance measured in turnover and job creation*

A business incubator is instrumental in driving economic and social development. It is designed to advance and grow emerging ventures by providing business development assistance (Wiklund, 1998).

The underlying objective is to produce successful businesses that will create jobs, revitalise local economies and assist SMMEs to commercialise new innovations (Wiklund, 1998; Hackett & Dilts, 2004a).

Moreover, assessment of a business incubator relates how it aligns itself with the set goals and objectives (Bearse, 1998). SMMEs benefit from incubators through a variety of services offered which are intended for growing their business (Montigny, 2007). The type of business development services offered to the SMME may impact their businesses positively.

Some scholars predicted that there might be a disparity in how SMMEs may perform depending on the type of business incubator in which they are involved. This study determines how incubators assist firm development based on the incubator type comparison. The primary research question was whether one sort of incubator offered more value to small businesses than another.

An early effort to group incubators was based on their use e.g. sector or mixed focused (Plosila & Allen,1985). Bearse (1998) has indicated that the lack of data available limits the ability of researchers and practitioners to determine the appropriate benchmarks for evaluating the effectiveness of incubators across the various types (Bearse, 1998). Hypothesis 1 was used to investigate research objective 1 which investigated the effect of the incubation type on turnover and job creation. Studies have found that participation in a business incubation programme increased turnover and job creation post incubation phase (Mokgoko 2015; Main, 1997; Virtanen & Kiuru, 2013; Plosila & Allen,1985).

Therefore, in order to investigate and compare whether the incubation type has an effect on SMME performance measured by jobs created and increase in turnover, responses were solicited from sector specific and mixed sector business incubators, to report on jobs created before, during and post the incubation programme.

Similarly, respondents were requested to report on turnover at the year of graduation and sales when the survey was conducted. Hypothesis 1 can be divided into two sections as follows:

***Hypothesis 1a:*** *There is a significant positive relationship between incubation type and improved SMMEs' performance measured by an increase in turnover.*

The results suggested that incubator type is not a significant predictor of turnover after graduation with ($p>0.05$). However, sector specific incubator seems to be doing better than mixed sector SMMEs by 3% increase in sales after graduation. Therefore sector specific incubator only contributes 3.1% to the variability of change in turnover after graduation.

***Hypothesis 1b:*** *There is a significant positive relationship between incubation type and improved SMMEs performance measured by Job Creation*

The results of the regression analysis show that incubator type accounts for 0.13% of the variability in improvement in job creation after graduation. The predictive capacity of this model is not significant ($p>0.05$). Furthermore, results show that the sector specific incubator seems to be doing better than mixed sector SMMEs by 17.3% in jobs created after graduation. All Betas are not significant though they support the fact that sector specific perform better than mixed sector incubators ($p>0.05$).

## Conclusion

The results suggest that business incubation type is not a significant predictor of increase in turnover and job creation post-incubation phase, although, turnover and job creation are positively correlated with being part of a business incubator. It seems like SMMEs from sector specific business incubators perform better in terms of turnover and job creation after graduating.

It is therefore concluded that sector specific incubators have a positive relationship with annual turnover and job creation, although the relationship is small. As such, there is not enough evidence to reject the Null Hypothesis, nor is there is enough evidence to support Hypothesis 1.

## 5.4 Discussion pertaining to Hypothesis 2

***Hypothesis 2:*** *There is a significant difference between sector specific and mixed sector incubation in improving SMMEs' performance measured by turnover and job creation.*

As discussed in the literature review, business incubators differ in their focus of sectors and services. For example, one may find a chemistry sector focused incubator which may drive creative chemistry related ideas to this sector while a manufacturing business incubator may focus challenges related to this sector (Isenberg, 2010). Research suggests that different business incubators may have different objectives and the results that the different types of incubators produce may be different (Plosila & Allen,1985).

For example, in a study conducted by Masutha and Rogerson (2014), it revealed that the majority of the sector focused business incubators were facilitated by the public sector while the mixed focused business incubators were facilitated by the private sector (Masutha & Rogerson, 2014). The objectives were also found to be different. Public sector business incubators are concerned with widening economic participation, closing the skills gap, as well as creating job opportunities. By contrast, most private sector incubators focus on increasing turnover and profit margins for the small businesses (Masutha & Rogerson, 2014).

These objectives are not viewed separately in this study. The assumption made is that as the business grows it may need to employ more people.

The study found that private sector business incubators created more jobs than public sector incubators. Similar to this study, the sector specific business incubators are compared to mixed sector, facilitated by either the private or public sector. Therefore, Hypothesis 2 was used to address the second research objective which compared the effect of sector specific business incubators against mixed sector business incubators on turnover and job creation. This hypothesis was divided into two subsections which can be categorised as follows:

***Hypothesis 2a*** *There is a significant difference between sector specific and mixed sector incubation in improving SMMEs' performance measured by turnover.*

The t-test conducted shows that the p-value is greater than 0.05 therefore there is no significant difference in the means of the two groups (mixed and sector specific) on turnover. According to the independent samples of t-tests conducted, the results show that there is no relationship between likelihood to increase in turnover, whether the entrepreneur was in a sector specific incubator or in a mixed incubator programme since the p-value was greater than 0.05.

***Hypothesis 2B*** *There is a significant difference between sector specific and mixed sector incubation in improving SMMEs' performance measured by job creation.*

The conducted independent sample t-test indicated that there was no statistical significant difference between the sector specific and mixed sector business incubators in job creation. The results show that there is no relationship between likelihood to increase employment and whether the entrepreneur was in a sector specific incubator or in a mixed incubator programme since the p-value was greater than 0.05.

### *5.4.1* Summary of Discussion

The results suggest that there is no statistically significant difference between sector specific and mixed sector business incubators in improving SMMEs' performance measured by job creation and turnover. It is therefore concluded that, whether an incubation program is mixed or sector focused, it does not impact SMMEs' performance. The results from sector specific incubation programmes are not significantly different from the mixed incubator programmes in the outcomes they produce. As such, there is sufficient evidence to accept the Null Hypothesis, and sufficient evidence to reject Hypothesis 2.

In Chapter 5, we discussed the results pertaining to the demographic data and hypotheses testing. The demographic data were discussed with regard to gender, age, race and education. It was found that the majority of the respondents who enter and graduate from business incubators are between the ages of 24 and 45 which represents 85% of the sample respectively. The youth makes up 57% (n= of the sample size and n=75 (75%) of the businesses are black owned. In terms of the gender profile of the respondents, 40 businesses were male owned while the remaining 39 were female owned businesses in the mixed sector business incubator programmes, while only five females out of a sample of 22 were incubated in the sector specific programme. In both sector and mixed business incubators, the majority of the respondents had a certificate/diploma (n=42, 40%).

In summary, in order to investigate and compare the effect of sector specific versus mixed sector business incubators in improving SMMEs performance, previously identified measures, such as job creation and turnover seem to be positively correlated with being part of an incubation programme which is in line with various other research studies (Mokgoko 2015; Main, 1997; Virtanen & Kiuru, 2013; Plosila & Allen,1985).

However, turnover and job creation are positively correlated with being part of a business incubator. It seems like SMMEs from sector specific business incubators perform better in terms of turnover and job creation after graduating. As such, there was insufficient evidence to support Hypothesis 1.

With regard to hypothesis 2, results showed that whether an incubation programme is mixed or sector focused, it does not impact SMMEs' performance. The results from sector specific incubation programmes are not significantly different from the mixed incubator programmes in the outcomes they produce. As such, there is sufficient evidence to accept the Null Hypothesis, and sufficient evidence to reject Hypothesis 2.

# CHAPTER 6: CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

## 6.1 Introduction

This final chapter provides a summary of the study by discussing the conclusions of the study with reference to literature set out at the beginning and highlights key findings that have emerged. The research implications and recommendations are presented, followed by the presentation of the limitations of this research. Finally, suggestions for future research and explorations are made.

## 6.2 Conclusions of the study

Literature commonly cites that the promotion and the development of small, medium and micro-enterprises (SMMEs) are crucial for social and economic development (Timms, 2011). SMME are an instrumental driver for economic growth. Therefore, the development and promotion of SMMEs is a key focus for the national government (Timm, 2011). Various policies and interventions have been established to support SMMEs, as well as drive equality and inclusion within South Africa. These policies were particularly designed to redress the ills of apartheid and create opportunities for the previously disadvantaged groups (Timm, 2011).

A business incubator in this research study is conceptualised as an institution that aims at equipping SMMEs with the necessary skills needed to grow sustainable business and create jobs, by providing business development and training support services, creating linkages and networks and providing infrastructure support services to SMMEs (Scaramuzzi, 2002; Mutambi et al., 2010; Virtanen & Kiuru, 2013).

This is in line with other scholars who suggest that business incubators are aimed at addressing early stage market failure attributable to poor business strategy and inability to access finance.

SMMEs who go through a business incubation process are said to have a 90 per cent chance of survival opposed to those who do not (InfoDev., 2009). Furthermore, companies who go through a business incubation process are said to create jobs and the total number of jobs created by the incubators has an effect on economic development. The continuing growth and expansion of business incubators in the past decade suggest that many governments, local communities and private investors believe that it is desirable to try to help start-up companies to avoid failure by incubating them until they have developed sufficiently to be self-sustaining (Hackett & Dilts, 2004a). Moreover, research reveals that there have been other ways of categorising incubators and business incubators could be categorised by sponsorship, public incubators, private incubators, university or hybrid (Allen & McCluskey, 1990).

The primary motivation of this research was to address the knowledge gap related to how mixed sector and sector specific business incubators contribute towards improving SMME performance in South Africa. The main aim was to investigate and compare the effect of sector specific versus mixed sector business incubators in improving SMMEs' performance. To this end, the research dealt with two sub-problems namely:

[1] To investigate the effect of incubation type on turnover and job creation,

[2] To compare the effect of sector specific business incubators against mixed sector business incubators on turnover and job creation.

“The important role of business incubation as a useful strategy to accelerate growth and development of small and medium sized enterprises (SMEs) has been widely acknowledged in the economic and entrepreneurship literature” (Kavhumbura, 2014, p. 50). The findings of this research indicate a clear reflection of the theory of economic development through entrepreneurship.

The results show an improved average level of job creation, and a positive change in the distribution of turnover. These findings are in line with how a business incubator was operationalised in this study. However, no conclusive statements can be made regarding the survival rates of the SMMEs who graduated since the statistics of this relationship was not measured.

Key to note from the findings is that SMMEs from sector specific business incubators perform better in terms of turnover and job creation after graduating. Contrary to this view, results from hypothesis 2 from sector specific incubation programmes are not significantly different from the mixed incubator programmes in the outcomes they produce when specifically measuring job creation and turnover. One last important finding to note is the survival rate of 94% which demonstrates that business incubation may have a positive impact on the survival rates of firms, post incubation.

Moreover, there is still a need for a consistent framework among various business incubators for measuring post-incubation impact, especially if the main objective of the country is to inculcate a culture of entrepreneurship and to drive economic growth. This study suggests that sector specific and mixed sector business incubators seem to offer the same type of business services. A clear framework needs to be developed which will enable the country to accelerate growth within the SMME sector using the business incubator model.

## 6.3 Implications and Recommendations

This research seeks to enhance the knowledge concerning incubator-incubation impact studies. The recommendations drawn are of reference to stakeholders, such as government and public institutions who facilitate business incubation practices, enterprise development policy makers, as well as SMMEs in developing countries. The output of the study may have provided key findings which may inform future practice and programmes geared towards effective small business incubation.

It has been established that SMMEs have a critical role to play in creating new job opportunities over the next two decades in South Africa; thus, the promotion of business incubation is an issue of mounting policy concern. The findings which emerged from this study provide a good starting point for further exploration of the current state of sector specific and mixed sector business incubators in improving SMME performance.

### *3.6.3 Recommendations for Research*

Results show that out of the 105 surveyed respondents, only 63 specified the kind of support they are being offered by their respective incubators. The type of support that most entrepreneurs receive from incubators is: Business Development and Strategic Management, Financial Management, Leadership and Training. Furthermore, the results reveal that there is no strong connection between business incubators and universities, linking with suppliers and financers.

It is recommended that work needs to be done by business incubator practitioners to expand the incubator function to drive innovation as well as the culture of entrepreneurship. This will include working together in providing access to:

- Financers/ Venture Capital

- Appropriate linkages with universities for novel ideas
- Linkages with suppliers and customers (increase in clients, even outside the incubator walls as well as international linkages) (Montigny, 2007).

The majority of sector focused business incubators in South Africa are driven by the government through SEDA. Private, public and academic institutions need to engage in more collaborative work in order to grow the SMME sector in South Africa. The findings showed that sector specific incubators may perform better than mixed sector incubators in creating jobs. There is an opportunity to further explore whether the South African entrepreneurial ecosystem presents a fertile ground to develop SMMEs that operate within the high growth sectors who have the potential to affect the economy positively through job creation.

It is recommended that government institutions and public corporation seeking to optimise the effect of business incubators as enterprise development spend on SMMEs, should adopt a holistic and transparent measure to assess performance of the incubator. The evaluation needs to be conducted before, during and after the incubation process. Hackett and Dilts (2004a, p. 73) explain that "the *attempt* to measure the impact of business incubation is as important as it is challenging" but it is necessary for policy makers to align regulations pertaining to SMMEs based on accurate data. Interventions being introduced either by public and private institutions need to be co-designed with entrepreneurs to align to what is important to them.

## 6.4 Limitations of the study

The limitations pertinent this this study relate to:

Although survival rate was recognised as a dependent variable, this research failed to measure the statistical significance of this variable when comparing the sector specific and mixed sector business incubators.

There is no equal distribution between the sector and mixed incubator respondents which may be a limitation in the study, as it did not provide enough variation.

Moreover, data suggests the duration of the incubation programmes seem to be very short ranges from 6 months to a year on average and this may have had an effect in the analysis when measuring the SMMEs job creation and turnover over time.

The study did not analyse the incubation process. The research looked at assessing the SMMEs performance after they had left the incubation system this may affect the replicability of the study.

## 6.5 Suggestions for further research

This study looked at how different incubation typologies impact SMME performance. Further research should seek to explore longitudinal and quasi-experimental approaches in studying the effect of business incubators on SMME performance. Obtaining business performance data from SMMEs after the completion of an incubation programme is a problem. Therefore, a longitudinal study may be the best approach to accurately test business incubation performance in Africa, especially with regard to the business survival variable. This is because research suggests that even though the incubator may have pre-defined gaols, it is recognised globally that the core objective of a business incubator should be to assist SMMEs with reducing business failure (Allen & Rahman, 1985).

Further research could also assess the entrepreneurial orientation or the type of entrepreneurs who get selected to participate in either a sector specific or mixed sector business incubator and determine what kind of characteristics are evident to those entrepreneurs whose businesses perform better over time.

The data (when did you enter and graduate from the business incubator) from this study did not provide much insight, except that it seems the duration of the incubation programmes are very short which is a concerning issue. Further studies should try to find out how long entrepreneurs are incubated in the mixed versus sector specific environments. A case study can be conducted which can zoom into comparing the specific business incubator services offered by mixed or sector specific business incubators to further understand distinctive qualities.

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# APPENDIX A

## Research instrument

INFORMATION SHEET AND CONSENT FORM

Hello, I am Faith Tembe (Student Number: 559610). I am conducting a qualitative research study for the purpose of completing my MM in Entrepreneurship and New Venture Creation at Wits Business School.

The study will focus on **investigating and comparing the effect of sector-specific versus mixed sector business incubators in improving SMMEs performance**.

I am asking you whether you will be willing to participate in my research by completing the questionnaires. Please understand that your participation is voluntary and you are not being forced to take part in this study. The choice of whether to participate or not, is yours alone. If you choose not to participate there will also be no penalties and you will NOT be prejudiced in ANY way. You will not be affected in any way whatsoever. **The questionnaire will take you 7 Minutes to complete.**

All responses will be interpreted at an aggregate level and treated with high research ethics and confidentiality as stipulated in the Wits Business school code of ethics.

The significance of the study is rested on assessing the improvement of business performance after the SMMEs incubation phase by measuring job creation, business survival rates and turnover. This study will contribute towards the state of entrepreneurship in the country.

The Wits Business School has approved this research. If you have concerns or questions about the research you may call my academic research supervisor Dr Jabulile Galawe on Email: jabulile.galawe@wits.ac.za

**STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY**

I hereby agree to participate in research on the effect of sector-specific and mixed sector business incubators in improving SMMEs performance. I understand that I am participating freely and without being forced in any way whatsoever. I understand that this is a research project whose purpose is not necessarily to benefit me personally in the immediate or short term. I understand that my participation will remain confidential. I freely and voluntarily choose to participate in this study.

 Yes, I consent

 No, I do not consent

Q1 What gender are you?

| |
|---|
| ○ Male |
| ○ Female |

Q2 How old are you?

| |
|---|
| ○ 18-23 |
| ○ 24-29 |
| ○ 30- 35 |
| ○ 36 and older |

Q3 What is your race?

| |
|---|
| ○ Black |
| ○ White |
| ○ Coloured |
| ○ Indian/ Asian |

Q4 What is your current level of education?

| |
|---|
| ○ Lower than matric |
| ○ Matric |
| ○ Certificate/ Diploma |
| ○ Bachelor's Degree |
| ○ Master's Degree |
| ○ Doctorate |
| ○ Other... please specify |

Q5 Which type incubator programme was your business enrolled in? If enrolled into both types, please choose the most recent

| |
|---|
| ○ Sector focused incubator (business incubator programme focused on a particular industry) |
| ○ Mixed Focused Incubator (Business Incubator programme focused on multiple industries) |

Q6 Which business incubator services were you offered? Please select yes or no

| Business Incubator Support Services | **Yes** | **No** |
|---|---|---|
| Office space | | |
| R & D facilities | | |
| Leadership Training and Coaching | | |
| Business Development and Strategic Management Training | | |
| Innovative Problem Solving | | |
| Financial Management | | |
| HR Management | | |
| Legal Matters | | |
| Connections with investors | | |
| Connections with suppliers | | |
| Connections with customers | | |
| Connections with University researchers | | |

| | | |
|---|---|---|
| Connections with financiers | | |
| Technical Training | | |

Q7 Which sector the business is operating in.

| |
|---|
| ○ Agriculture, forestry, hunting and fishing |
| ○ Mining and Construction |
| ○ Manufacturing |
| ○ Transport and Communication |
| ○ Wholesale, Motor Vehicle Repairs and Sales |
| ○ Retail, Hotels and Restaurants |
| ○ Business Services |
| ○ Healthcare, Education and Social Services |
| ○ Other… please specify |
| ○ |

Q8 Which year did you enter the business incubator?

| |
|---|
| ○ 2017 |
| ○ 2016 |
| ○ 2015 |
| ○ 2014 |
| ○ 2013 |
| ○ 2012 |
| ○ 2011 |

Q9 Which year did you graduate from the business incubator

| |
|---|
| ○ 2017 |
| ○ 2016 |
| ○ 2015 |
| ○ 2014 |
| ○ 2013 |
| ○ 2012 |
| ○ 2011 |

**BUSINESS SURVIVAL**

Q10 Are you still involved in the same business?

| |
|---|
| ○ Yes |
| ○ No |

If no, the pop-up Question will be what happened to the business?

| |
|---|
| ○ Closed the business |
| ○ I sold the business |
| ○ Other… please specify |

**JOB CREATION**

| |
|---|
| Q 11 How many “full time” employees did you have before the incubation? |
| Q12 How many “full time” employees did you have during the incubation? |
| Q13 How many “full time” employees do you have currently? |
| Q14 How many “part time” employees did you have before the incubation? |
| Q15 How many “part time” employees did you have during the incubation? |
| Q16_How may “part time” employees do you have currently? |

**TURNOVER**

| |
|---|
| Q17 What was your turnover (total sales) on the year of graduation from the business incubator? |
| Q18 What is your turnover (total sales) currently? |

# APPENDIX B

## Consistency matrix

| To investigate and compare the effect of sector-specific versus mixed sector business incubators in improving SMMEs performance | | | | | |
|---|---|---|---|---|---|
| **Sub-problem** | **Literature Review** | **Hypotheses or Propositions or Research questions** | **Source of data** | **Type of data** | **Analysis** |
| To investigate the effect of incubation type on job creation and turnover | Hackett & Dilts, 2004a; Bearse, 1998; Mokgoko 2015; Main, 1997; Virtanen & Kiuru, 2013; Plosila & Allen,1985; Khalid, Gilbert & Huq, 2014; Al-Mubaraki & Wong, 2011; Scaramuzzi, 2002 | There is a significant positive relationship between incubation type and improved SMMEs performance measured in turnover and job creation. | Self-Administered Questionnaires | Incubation Type- Nominal- Categorical<br>Turnover and Job Creation- Nominal Continuous | Descriptive Statistics<br>Correlation<br>Regression |

| To investigate and compare the effect of sector-specific versus mixed sector business incubators in improving SMMEs performance | | | | | |
|---|---|---|---|---|---|
| **Sub-problem** | **Literature Review** | **Hypotheses or Propositions or Research questions** | **Source of data** | **Type of data** | **Analysis** |
| To compare the effect of sector-specific business incubators against mixed sector business incubators on turnover and job creation. | Mokgoko 2015; Main, 1997; Virtanen & Kiuru, 2013; Plosila & Allen,1985; Masutha & Rogerson, 2014; Hackett & Dilts 2004a Hackett & Dilts 2004b; Al-Mubaraki & Wong, 2011; Scaramuzzi, 2002 | There is a significant difference between sector-specific and mixed sector incubation in improving SMMEs performance measured by job creation and turnover. | Self-Administered Questionnaires | Incubation Type- Nominal-Categorical<br><br>Turnover and Job Creation- Nominal Continuous | Descriptive Statistics<br><br>T-Test |

# APPENDIX C

# NORMALITY TESTING

## 1.1 OUTLIERS

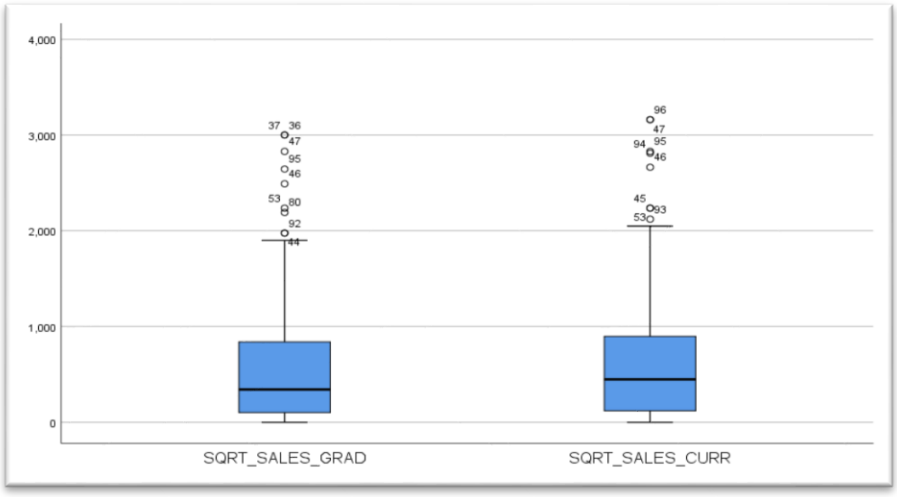



**FIGURE 10: WHISKER AND BOX PLOTS AFTER REMOVING OUTLIERS FOR TURNOVER**

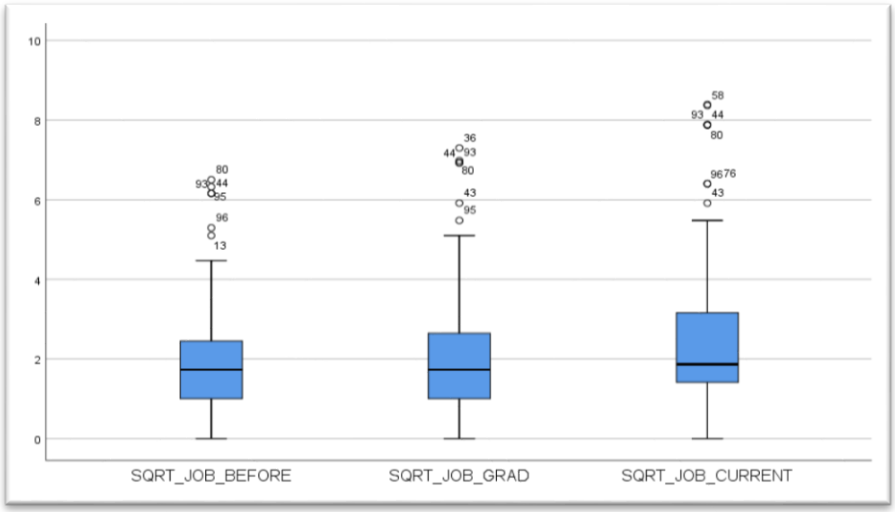



**FIGURE 11: WHISKER AND BOX PLOTS AFTER REMOVING OUTLIERS FOR JOB CREATION**

## 1.2 ANOVA TABLES

**Table 19: ANOVA_ Turnover_ Graduation**

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | | **Sum of Squares** | **Df** | **Mean Square** | **F** | **Sig.** |
| 1 | Regression | 55128,574 | 1 | 55128,574 | 0,098 | **.755** [b] |
| | Residual | 56100329,943 | 100 | 561003,299 | | |
| | Total | 56155458,517 | 101 | | | |
| a. Dependent Variable: Turnover_Graduate | | | | | | |
| b. Predictors: (Constant), INCUBATOR_S | | | | | | |

**Table 20: ANOVA_ Turnover_ Current**

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | | **Sum of Squares** | **Df** | **Mean Square** | **F** | **Sig.** |
| 1 | Regression | 1589449,485 | 1 | 1589449,485 | 2,725 | .102[b] |
| | Residual | 58338813,797 | 100 | 583388,138 | | |
| | Total | 59928263,282 | 101 | | | |
| a. Dependent Variable: Turnover_Current | | | | | | |
| b. Predictors: (Constant), INCUBATOR_S | | | | | | |

**Table 21: ANOVA_ Job Creation_ Graduation**

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| 1 | Regression | 3,262 | 1 | 3,262 | 1,292 | .258[b] |
| | Residual | 252,575 | 100 | 2,526 | | |
| | Total | 255,838 | 101 | | | |
| a. Dependent Variable: Job_ Graduation | | | | | | |
| b. Predictors: (Constant), INCUBATOR_S | | | | | | |

**Table 22: ANOVA_ Job Creation_ Current**

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| 1 | Regression | 10,548 | 1 | 10,548 | 3,077 | .082[b] |
| | Residual | 342,862 | 100 | 3,429 | | |
| | Total | 353,411 | 101 | | | |
| a. Dependent Variable: JOB_ CURRENT | | | | | | |
| b. Predictors: (Constant), INCUBATOR_S | | | | | | |

## 1.3 P-Plots

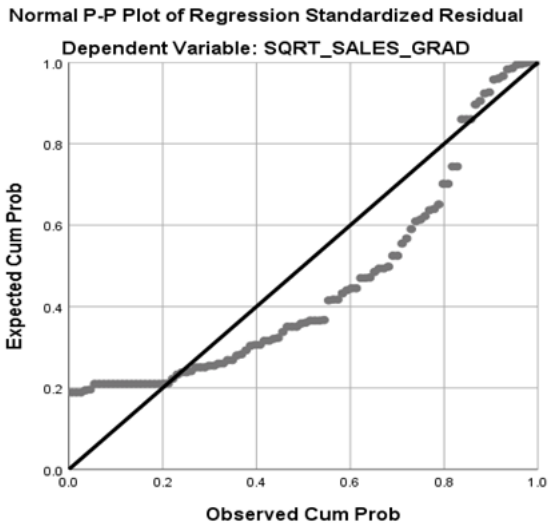



**Figure 12: Normal P-P Plot of Regression Standardised Residual_Turnover Graduation**

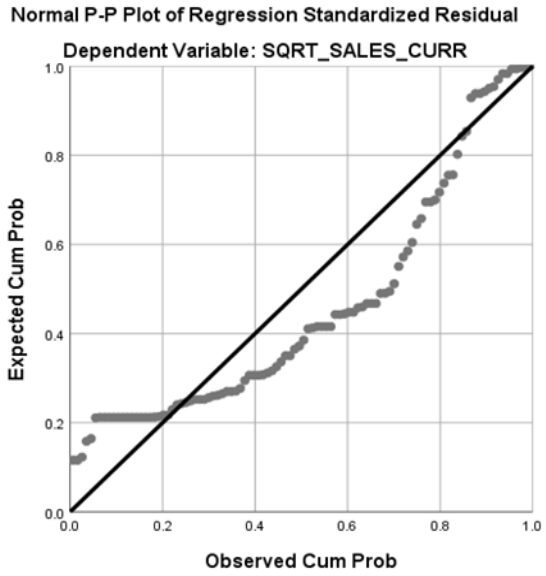



**Figure 13: Normal P-P Plot of Regression Standardised Residual_Turnover Current**

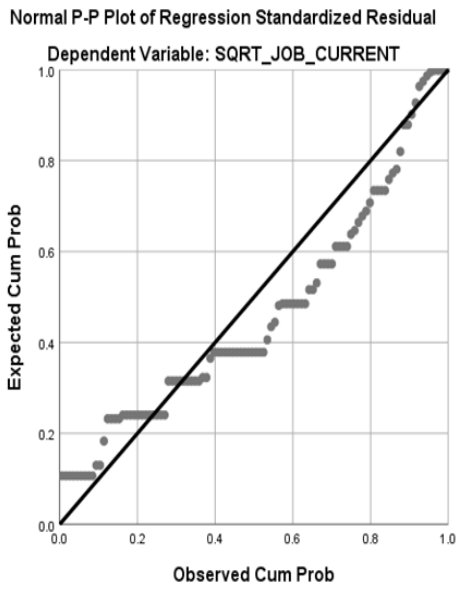



**Figure 14: Normal P-P Plot of Regression Standardised Residual_Job Creation_Graduation**




**Figure 15: Normal P-P Plot of Regression Standardised Residual Job Creation _Current**