An Investigation of InvoTech business incubation programme and its effect on entrepreneurs

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DECLARATION

I, Nobahle Mkhwanazi, declare that this research report is my own work except as indicated in the references and acknowledgments.

Nobahle Mkhwanazi

Signed at …   …………………………………

On the ……………………….. day of   2023.
              16 March

DEDICATION

I dedicate this thesis to you, my family. Your devotion, support and prayers have driven me to achieve all the goals I set out to achieve. I am honoured to have a family like you.

To my late father who passed away just before I submitted my thesis, you really encouraged me to continue my studies and go further. May your soul rest in peace forever.

I appreciate everything that you've done for my brothers and myself, Mom. Do not worry about your hard work being ignored. You've been dependable, and for that I'm grateful. I pray that God will continue to use you as a light in the world.

ACKNOWLEDGEMENTS

Abstract

Governments all over the world have pinned the hopes of economic recovery on the SMMEs but they face the daunting challenge to survive. It is widely recognized that knowledge-based, entrepreneurial enterprises are the main creators of economic improvement and that such enterprises require professional business development services. The South African government has made attempts to ameliorate the difficulties encountered by SMMEs, through different business incubation models. Incubators create value by combining the entrepreneurial spirit of start-ups with the resources not normally available to new ventures. The purpose of this research was to investigate the efficiency of the InvoTech business incubation programs and their influence on SMMEs. Using a quantitative methodology, data were analysed using the R Software for Statistical Computing version 4.1.2 statistical package. The descriptive, statistical, and generalized least squares regression methods were then employed to analyse and report the outcomes of the study. The findings suggested that business Incubators have a positive effect towards helping SMMEs to survive and blossom. Various factors, like gender and age of the entrepreneur, geographical location, the sector to which the SMME belongs and firm age have an effect on the success of the firm pre- and post-incubation.

List of Abbreviations and Acronyms

ANC	African National Congress
BBBEE	Broad-Based Black Economic Empowerment
BBI	Benue Business Incubation
BEE	Black Economic Empowerment
BIs	Business Incubators
DTI	Department of Trade and Industry
DUT	Durban University of Technology
EU	European Union
GDP	Gross domestic product
GLS	Generalised Least Squares
ICT	Information Communication Technology
IDC	Industrial Development Corporation
ILO	International Labour Organization
InvoTech	Innovation Technology Business Incubator
ISP	Incubation Support Programme
KZN	KwaZulu Natal
LED	Local Economic Development
MSME	Micro Small Medium Enterprises
NEF	National Empowerment Fund
NSB	National Small Business
SA	South Africa
SARB	South African Reserve Bank
SBDC	Small Business Development Corporation
SEDA	Small Enterprise Development Agency
SEFA	Small Enterprise Finance Agency
SMEs	Small Medium Enterprises
SMMEs	Small Medium and Micro-Enterprises
STP	SEDA Technology Programme
TBIs	Technology Business Incubators
UBIs	University/Academic-Based Incubators
UK	United Kingdom
UN	United Nations
USA	United State of America
VBIs	Virtual Business Incubators

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1 CHAPTER 1: INTRODUCTION TO STUDY

1.1 CONTEXT OF THE RESEARCH

Business incubation has been practised in South Africa since the advent of independence in 1995. It has developed over the years and has been used as an effective tool to combat unemployment in developing countries (Gonsalves and Rogerson 2019). Business incubators (BIs) are organisations that execute business development via the support services they provide, and which are intended to boost economic growth by aiding entrepreneurs and their businesses (Al-Mubaraki and Busler 2017). The support provided by BIs includes, but is also not restricted to, workplace space, shared resources, business assistance, and internet connectivity. Small Medium and Micro-Enterprises (SMMEs) have been and are currently playing a vital role in the development of developing countries like South Africa (Ayandibu and Houghton 2017a; Garatsa and Dlamini 2021). Known as the fuel that the South African economy engine uses for development, SMMEs have been seen over the years as better job creators than corporate companies (Ministry of Small Business Development 2015). According to Fatoki (2018) SMMEs in South Africa are facing a failure rate of 70%-80% despite the efforts being administered by BIs.

Currently, business incubators are one of the techniques utilised to reduce the rate of failure among small businesses and enhance assistance for SMMEs (Lose 2021). According to Ogutu and Kihonge (2016); Opondo (2017) the entrepreneurial skills that the SMMEs need in developing and supporting their businesses are pragmatic abilities, individual innovative development abilities and business management skills, and there is no clear evidence that incubators are efficiently fostering this. Therefore, Ramraj (2018) recognised that an absence of business and enterprising capacities impacts the development and movement of an organisation, with an absence of abilities conceivably resulting in an organisation's obliteration.

Moreover, a study done by Bushe (2019) discovered that the SMME failure can be due to a lack of business strategies. He further states that SMMEs fail to articulate and implement strategies representative of their market structure, which leads to business failure. Therefore, business incubators like InvoTech are there to reduce the rate of business failure. However, Lose *et al.* (2020) assert that the problems that SMMEs who graduate from incubation programs are facing may be partly because the BIs themselves are facing their own challenges.

According to Ayatse, Kwahar and Iyortsuun (2017), incubators are crucial to supporting entrepreneurs. They aim to support new business ventures with the vision that they will later become successful and sustainable companies (Iyortsuun 2017). The assistance provided by BIs includes, but is not confined to, office space, shared resources, business assistance, and network connectivity. In a study done by Lose *et al.* (2016) which measured the graduation rates and level of satisfaction of entrepreneurs enrolled in BI programmes, the results indicated that 55% of the entrepreneurs who enrolled in the programmes benefited from attending them. However, 45% of the respondents indicated that they did not benefit. More so, the main problem facing BIs, according to the study, is lack of funding. Other challenges they were facing were lack of support from stakeholders, and uncommitted clients (Masutha and Rogerson 2014). According to Rogerson (2017) just like their clients, BIs are also facing their own challenges which in turn affect the quality of the services that they provide.

Previous researchers mentioned that BIs face many creativity and innovation challenges (Lose *et al.* 2016; Meyer and Mostert 2016; Rens *et al.* 2021) such as lack of entrepreneurial skills, lack of venture capital, poor growth rate, productivity falling behind, an aging population, downsizing, and the lack of true entrepreneurship (Al-Mubaraki and Busler 2017). As a result, BIs find it difficult to uphold their mandate as agents of development.

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1.2 Conceptual Framework

Having examined the models, the next section presents the theoretical framework for the study, which traces the enterprises before they are enrolled in the accelerator, the BI process and the situation after graduating from the incubator. Figure 1 below shows a graphical presentation of the framework.
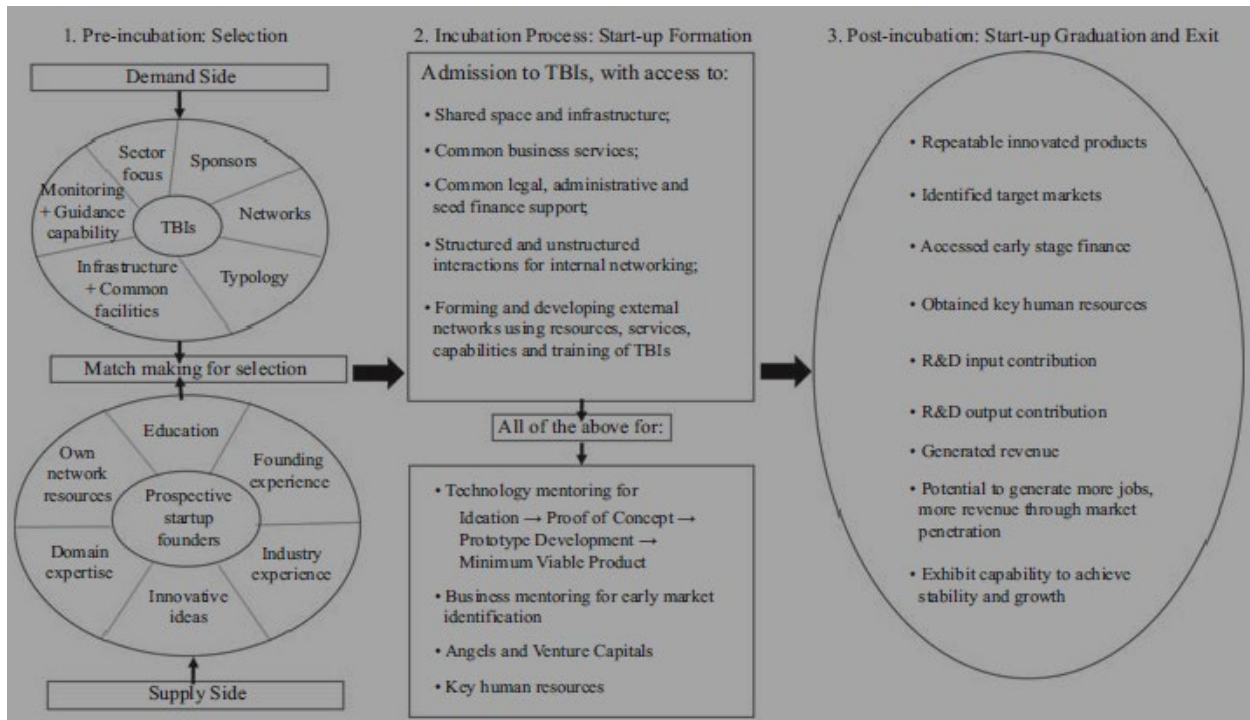
Figure 1: Theoretical Framework

(Adapted from Hillemane, Satyanarayana and Chandrashekar (2019)

Pre-Incubation: In the pre-incubation stage, a Technology Business Incubator (TBI) must choose incubation candidates from a pool of applicants (possible start-ups). This is the method used to pair people together, a case of supply and demand. TBIs seek high-quality ideas that align with their goals, are suitable for their responsibilities, and make use of their services to the fullest extent feasible throughout the incubation period, with the help of careful monitoring and mentorship (Hillemane, Satyanarayana and Chandrashekar 2019).

The incubation stage: Nurturing starts with shared workspace, infrastructure, and services. Monthly networking sessions help incubatees. Constant surveillance and interaction between incubator administrators and start-ups enable both to leverage network services to augment the latter's own networks, discovering and partnering with relevant technological mentors to proceed from ideation to demonstration of concept and design process. Start-ups need four management inputs. Convergence relies on TBI infrastructure, services, internal and external networking, and start-up networks (Hillemane, Satyanarayana and Chandrashekar 2019).

Post incubation stage. Well-specified new items, repeatable manufacturing, clearly identified target markets, suitable human capital, and early-stage finance signify graduation and departure. Such start-ups will have created R&D inputs and outputs. Such start-ups might create employment and money via market penetration for expansion and long-term viability (Hillemane, Satyanarayana and Chandrashekar 2019). This ends the venture formation obligation of a TBI. This then leads to the discussion of firm performance.

1.3 BACKGROUND

InvoTech is an Innovation and Technology Business Incubator financed by the Small Enterprise Development Agency (SEDA) and supported by the Durban University of Technology (DUT) and the Mangosuthu University of Technology. InvoTech is positioned to be the preeminent Business Incubator in South Africa, transforming ideas and new technology into economically viable, sustainable enterprises. InvoTech was founded in 2011 by the Durban University of Technology and the Small Enterprise Development Agency Durban as a Section 21 non-profit organisation.

1.3.1 Overview of InvoTech Incubator

Figure 2: Overview of InvoTech incubator

Source: InvoTech (2018)

Vision: InvoTech aims to be the premier business incubator in KwaZulu-Natal for transforming ideas and new technology into sustainable and financially successful companies.

Mission: InfoTech's mission is to is provide small businesses with technical, economic, legal, consulting, and information services at the time of their founding. It was established to demonstrate support for the creation and growth of small firms in the innovation sector in the province of KwaZulu Natal (KZN).

InvoTech Business Incubator adheres to and is controlled by a number of legal frameworks that regulate its daily activities. It has developed a dynamic 18-step business and technology incubation methodology to assist entrepreneurs in transforming their creative company ideas into profitable organisations (InvoTech 2018). InvoTech targets sectors in the green economy, the digital creative industry, the food technology sector,

and agricultural innovations with an effect (InvoTech 2018). Its primary goals are to promote a culture of innovation, the development of good employment, an entrepreneurial spirit, and the expansion of the South African economy. Strategic alliances with KZN-based institutions have positioned InvoTech as a regional hub for business and technological development, connecting industry, innovators, and venture capitalists.

The formative years of small and medium-sized enterprises (SMEs) are beset with considerable obstacles that result in a large proportion of business failures. The business incubation system that enables the development and survival of firms is crucial to the survival of small and medium-sized businesses (Iyortsuun 2017). The phenomenon of Technology Business Incubators (TBIs) began in the United States, but has since expanded significantly. The approach assures that organizations overcome what are known as the vulnerability of newness and the risk of smallness, generating inventive, successful, and sustainable businesses (Bismala, Andriany and Siregar 2020). The phenomenon of incubatorship is fairly new in South Africa in comparison to worldwide trends (Lose 2019). Lose (2016) noted that the practice of business incubation in South Africa started in 1995 when the Small Business Development Corporation (SBDC) established a similar concept that was known as the hives of industry. The most recent phase in the evolution of business incubators in South Africa is a part of national government SMME programmes. The evolution of business incubators in SA was assumed to be in four stages (Rogerson 2017). Objectives were set to target the rise in SA's challenge of unemployment, inequality and poverty. The aim was to provide services such as training, consulting, business advice and other services for efficient and effective functioning of the incubators housed in them (Rogerson 2017). The business model of InvoTech fits into the incubator model set by the government.

1.4 THE RESEARCH PROBLEM

The crux of the matter is that business incubation practitioners, stakeholders, policy makers and researchers do not have a systematic approach for monitoring and evaluating the performance of business incubators (Rens *et al.* 2021). Even though academics and practitioners have increased attention on evaluating the effectiveness and impact of BIs,

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the existing literature suffers from theoretical and empirical limitations (Van der Spuy 2019).

Correspondingly, despite the government and private organisations investing in incubator programmes, their impact on SMEs is rarely documented in a South African context (Hewitt and van Rensburg 2020). There are also limited studies on challenges faced by both incubators and incubatees. In recent years, even though such studies have increased, scholars noted that the focus is mainly one-sided and focuses on the needs and challenges of incubatees only (De Beer *et al.* 2016; Iyortsuun 2017; Harper-Anderson and Lewis 2018; Dlamini 2020; Hewitt and van Rensburg 2020).

This necessitates an examination of the obstacles encountered by BIs when attempting to help SMMEs and the efficacy of their initiatives for SMMEs. Consequently, the purpose of this research is to investigate the efficiency of the InvoTech business incubation programmes and their influence on SMMEs in order to fill the apparent vacuum in the literature.

1.5 RESEARCH QUESTIONS

The investigation raised the following questions

1. What are the attributes of SMMEs under InvoTech incubation programme for the period between 2018 to 2021.
2. How do the performance drivers of InvoTech incubation programme affect SMMEs?

1.6 RESEARCH OBJECTIVES

- To explore the attributes of SMMEs under InvoTech incubation programme for the period between 2018 to 2021.
- To explore how the performance drivers of InvoTech incubation programme affect SMMEs.

1.7 SIGNIFICANCE OF THE STUDY

This research is aimed at offering techniques for enhancing business incubators' ability to make crucial commitments toward the growth of SMMEs in order to reduce the rate of dissatisfaction. Using this approach, the results may contribute to economic growth and advancement. This study was conducted to determine the effect of business intelligence (BI) on the performance of small and medium-sized enterprises (SMMEs) and to assist decision-makers in understanding the benefits of business in a variety of courses at academic institutions and in developing the enterprising mindset and skills required for starting new businesses. This research is significant to SMMEs and business incubators because it validates the necessity to acquire entrepreneurial skills, which may accelerate the growth and longevity of firms.

1.8 LIMITATIONS OF THE STUDY

The limitation of this research is that the study solely focused on InvoTech business incubation, which is a BI based in KwaZulu-Natal. The conditions under which it operates may be different from other BIs that operate outside of the province and may be different in terms of typology. Notwithstanding this challenge, it is noteworthy that KwaZulu-Natal ranks second in the country in terms of economic contribution and size, and these results bear important implications for the province as it aims to leverage incubation models to revive the struggling SME sector.

1.9 DELIMITATION

The research was conducted in a BI in the eThekwini Metropolitan area. Because the researcher lives in eThekwini and has been exposed to the experiences of InvoTech businesses, eThekwini Metro was selected. In addition, research expenditures would be reduced.

1.10 STRUCTURE OF DISSERTATION CHAPTERS

Chapter 1: This chapter introduces and provides context for the research. This section describes the objectives and goals of the study and questions pertaining to the study.

This chapter also includes a short summary and contextual analysis of the research, including its context and backdrop.

Chapter 2. Literature Review: This chapter examines the literature studied in relation to the current research issue. It emphasises entrepreneurship as an economic growth strategy designed to foster the expansion of SMMEs. Business incubators are acknowledged as the means to achieve firm growth. Therefore, the literature examines in depth the history and setting of SMMEs and the organisation of research, the origins of business incubators, the different forms they take, and their value offer.

Chapter 3. Research Methodology: The research methodology described the kind of research undertaken, the types of data that were utilised, the framework of analysis, and the tools used to ascertain the relationship between incubator enrolment and SMME performance.

Chapter 4. Presentation and Discussion of Findings: The outcomes of the study were given in the analysis's conclusion. Understanding the nature and breadth of business incubation programmes and their impact on entrepreneurs is the focus of this procedure. The raw data were encoded with values in order to derive meaning and enable data translation and measurement comparison. With the use of graphs and tables, the results were shown visually. Using descriptive and inferential statistics and logistic regression analysis, a comprehensive discussion, interpretation, and evaluation of the findings were conducted. In connection to the theoretical framework and prior research, these findings were examined.

Chapter 5. Conclusion and Recommendations: The examination of the data led to the establishment of certain conclusions and the comprehension of the whole discourse led to the discovery of certain linkages and the establishment of comprehensive knowledge. This research is intended to expand academics' and industry experts' grasp of the significance of understanding the incubation process and how it can be adapted for SMMEs in various geographic and economic zones. It may also serve as a springboard for more research on the topic of SMMEs and incubation.

2 CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter examines the literature considered in relation to the current study. It focuses on entrepreneurship development as a strategy for economic growth meant to encourage the expansion of SMMEs. SMMEs are widely recognised as crucial economic growth drivers, and are seen not only as job creators, but also as sales generators and a source of tax and, therefore, fiscal income (Zhou and Gumbo 2021b). In various nations, including the United States, the United Kingdom, Brazil, Zimbabwe, South Korea, India and Ghana, the expansion of the SMME segment has been emphasised in recent years (Cowling, Liu and Zhang 2016; Herrington and Kew 2016b; Njanike 2019; Osano 2019; World Bank 2019). In South Africa, the expansion of SMMEs is seen as one answer to the country's high rate of unemployment and sluggish economic development (Garatsa and Dlamini 2021).

Despite its crucial function, this sector still confronts several obstacles in South Africa (SAICA, 2017), and SMMEs are not contributing to the creation of employment and economic development as intended, owing to high rates of failure. The government of South Africa has adopted a variety of programmes to help SMMEs, as it is not ignorant the sector's requirements and importance (Ayandibu and Houghton 2017d). Nonetheless, these activities are often poorly customised to enterprises of all sizes and instead solely target the largest SMMEs. Shortly after 1994, the government realised the significance of SMMEs and devised several measures, such as incubators, to foster their development. Business incubators are acknowledged as the means to achieve firm growth. Therefore, the literature investigates in depth the origins of BIs, the different varieties, and the unique value they offer.

2.2 DEFINING AN SME

The most difficult aspect of delimiting small-scale enterprises is developing a comprehensive taxonomy of an SME (Nieuwenhuizen 2019b). There is little consensus

around the definition of a small business, since the term is often applied subjectively (Mukorera 2016). The absence of a universal definition of the term has added to the complexity of trying to understand what really entails being a small business (Anastasia 2015). This author further notes that the large variation in definitions and classification of SMEs has confounded the efforts by researchers in trying to reach a common framework to delineate the actual meaning of these enterprises. However, this being the case, it does not preclude researchers from defining SMEs. It only means that there is a plethora of definitions, depending on one's point of view and departure as well as geographical location (Muriithi 2017).

The European Union (EU), the UK and international organisations such as the International Labour Organization (ILO), the World Bank, the World Trade Organization (WTO) and the United Nations (UN) commonly use the abbreviation "SME" to refer to small and medium-sized enterprises (Muriithi 2017; Gopaul 2019). The term "small and medium businesses" or "SMBs" is predominantly used in the United States of America (USA) (Berisha and Pula 2015). In Africa generally, MSME is typically used for micro, small and medium enterprises (Ombongi and Long 2018). However, South Africa uses the abbreviation "SMME" for small, medium and micro-enterprises (Akinsola and Ikhide 2019).

The absence of a universal definition of SMEs has led to many definitions, varying from country to country (Anastasia 2015; Berisha and Pula 2015; Rudzani *et al.* 2016). The Bolton Committee (1971) made the first attempt to define SMEs, which categorised them using economical and numerical definitions (Rudzani *et al.* 2016). This set the agenda for examining the importance of SMEs in world economies (Pratt and Virani 2015). The economic definition entailed that the business was owned by a single independent owner and had a small market share. The numerical definition of an SME is quantified in terms of the size of the SMME and how it contributes towards the growth of the country, exports and the creation of employment, (Rudzani *et al.* 2016).

Similarly, the World Bank used employee numbers, the total value of assets, and yearly revenue to define SMEs. For an enterprise to be classified as an SME it must satisfy the

criteria on number of employees, turnover, and total sales per annum. The UK adopts criteria for SMEs comparable to the EU in that businesses are disaggregated into three aspects, which are the number of workers employed on a full time basis, annual revenue or asset value (Gopaul 2019).

Table 1: European Union Statistical Definition

Company Category	Employees	Turnover	Balance Sheet Total
Micro	≤ 10	≤ £ 2 million	≤ £ 2 million
Small	≤ 50	≤ £ 10 million	≤ £ 10 million
Medium-Sized	≤ 250	≤ £ 10 million	≤ £ 10 million

Source: Pohludka and Štverková (2019)

2.2.1 Defining Small Business: The South African Perspective

South Africa has the same difficulty in identifying a small company and establishing the parameters that define SMEs (Soni, Cowden and Karodia 2015). In an effort to clear the confusion with regard to the definition of SMEs, the government of South Africa promulgated the National Small Business (NSB) Act of 2004 (Lekhanya 2016). It defined a small business as:

> … *a separate and distinct business entity, including co-operative enterprises and nongovernmental organisations, managed by one owner or more which, including its branches or subsidiaries, if any, is predominantly carried on in any sector or sub*

sector of the economy mentioned in Column I of the Schedule14. (Ministry of Small
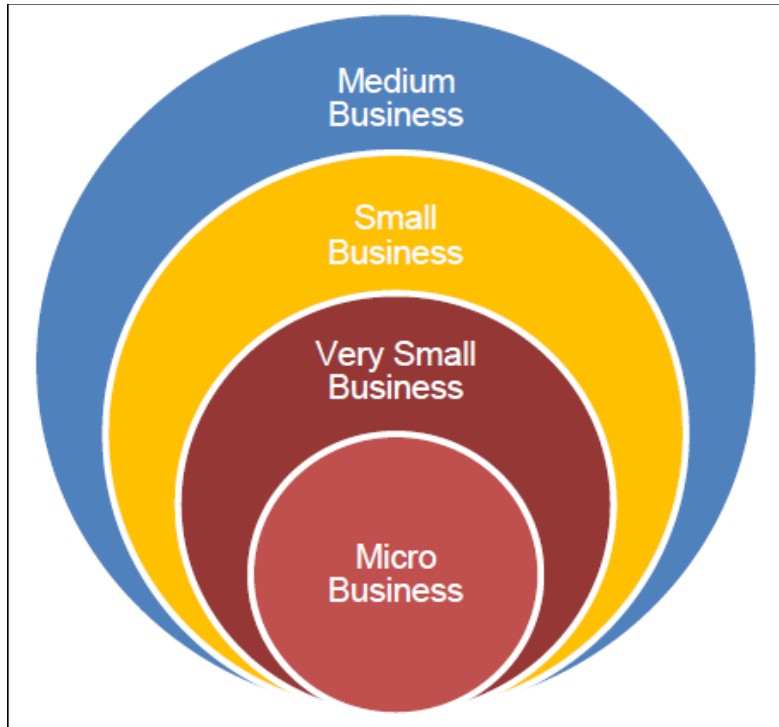
Business Development 2015) .

Figure 3: SME Categories in South Africa, Adapted from SEDA (2020)

The Standard Bank of South Africa defined small enterprises as organisations with annual incomes ranging between R50 000 and R5 000 000, or a legal entity with fewer than 250 workers (Balogun, Ansary and Ekolu 2017). Baporikar (2021) took the argument further by adding working capital and asset values as other factors that can influence the definition of SMEs. He contends that SMEs are defined as an enterprise with a maximum asset base of about R10 000 000, excluding land and working capital, in which between 10 and 300 employees work. The definitions of SMMEs in South Africa, focusing on numerical aspects, according to the NSB Act, are shown in Table 2. below

Table 2: Statistical Definition of SMEs in South Africa

Size of Firm	Workers (quantity)	Yearly Income	Total Assets (excluding fixed assets)

Micro	Fewer than 5	Less than R150 000	Less than R100 000
Very Small	Fewer than 10-20 depending on type of industry	Less than R200 000-R500 000 depending on sector	Less than R150 000-R500 000 depending on sector
Small	Fewer than 50	Less than R2M-R25M depending on industry	Less than R2M-R2.4M depending on sector
Medium	Fewer than 100-200 depending on business sector	Less than R4M-R50M depending on industry	Less than R2M-R18M depending on industry

Source: Rudzani *et al.* (2016)

Based on the data shown in the tables above, the primary distinction between these sorts of enterprises is their ability to employ and generate money. Notwithstanding the fact that there are various interpretations of SMMEs and a lack of consensus, small enterprises play a crucial role in the growth of any economy (Naicker and Rajaram 2019).

2.3 IMPORTANCE OF SMES

The strategic role of small businesses remains of the utmost importance to social-economic development because of their undisputed role in addressing some of the most fundamental problems, such as unemployment, poverty and low economic growth (Hyder and Lussier 2016). Schumpeter (1934), one of the earliest economists, underscored the importance of entrepreneurship by small businesses. Schumpeter noted that small businesses contribute towards the growth of the economy and progress of any country (Mukorera 2016). Schumpeter further argued that SMEs are quick to innovate by nature of their size. History is replete with events of economic turmoil like the Great Depression of 1945, the global financial crisis of 2008 (Kubickova, Kirimhan and Li 2019) and recently the Covid-19 epidemic, just to mention a few (Bruwer, Hattingh and Perold 2020). SMEs have been used as a springboard for quick economic recovery from such crises (Cowling, Liu and Zhang 2018). Zafar and Mustafa (2017) aver that the sector is appreciated worldwide for its significant contribution to the development of any given society and economy. Adeyele and Omorokunwa (2017) note that SMEs are acknowledged as the engines to drive the objectives of poor and developing countries by virtue of being able

to quickly mobilise idle funds, create employment and adapt to quickly-changing customer needs.

The Sahel and Sub Saharan regions of Africa have been noted as regions that have harnessed the economic potential of SMEs to catapult growth and to break the stranglehold of poverty impacting society (Gonsalves and Rogerson 2019). By this token, many governments have recognised the power of SMEs as building blocks for their economic development (Lekhanya 2016; Ayandibu and Houghton 2017d; Cowling, Liu and Zhang 2018; Naicker and Rajaram 2019). The importance of SMEs is brought to the fore by that fact that governments the world over have played an important role in promoting small businesses (Muriithi 2017; Naicker and Rajaram 2019). In many EU countries and in Japan, the role of SMEs has been recognised at the highest political levels by promulgating policies that aim at increasing the competitiveness of SMEs (Laurenţiu 2016).The South Korean government set up an award winning e-procurement portal in 2002 which resulted in an increase in the number of small businesses that were involved in state procurement, reducing the time and cost of doing business with the state (Herrington and Kew 2016b).

Osano (2019) emphasises that a significant portion of Kenya's private sector is made up of micro, small, and medium-sized businesses. According to a study of the industry conducted in 1999, there are 1.3 million SMEs in the sector overall, employing 2.3 million people. The government of Kenya took a number of steps to reduce the cost of doing business, since doing so might increase the quality of goods produced in Kenya sold in both domestic and international markets. Mukorera (2016), argues that despite the economic and political upheaval in Zimbabwe, SMEs have continued to grow and have sustained the lives of the poor populace.

In 1994, the ANC government was faced with the enormous task of reversing the effects of apartheid (Naicker and Rajaram 2019). The government was confronted by a racially-charged society comprised of high levels of poverty and inequality and an angry uneducated black majority (Kunene 2014; Matarirano, Chiloane-Tsoka and Makina 2019). It was necessary to implement policies to attempt to erase apartheid's legacy,

particularly poverty. The government gave the Department of Trade and Industry (DTI) in particular the responsibility of facilitating solutions to problems connected to the sustainability and growth of SMMEs, placing SME development high on its agenda (Nieuwenhuizen 2019).

The South African government supports the SMME sector as a way to develop the skills of local business owners and to encourage the utilisation of community resources, technology, and labour (Rungani and Potgieter 2018). According to DTI estimates, SMMEs employ more than 50% of the workers in the private sector and contribute 40% to the GDP of the country. Since SMEs are thought to be responsible for up to 80% of new employment produced globally, they are a significant contributor to the economy of the nation (Rungani and Potgieter 2018). It is also important to note that small SMEs are heterogeneous as they exist in various sectors and at different stages of growth phases.

Churchill and Lewis (1983) postulate a five-stage growth progression of an enterprise through which it evolves: existence, survival, success, take off and resource maturity. On the other hand, Maas and Herrington (2006) identify only two phases of enterprise growth, which are the start-up and the established phases. This distinction of SMEs' lifecycle evolution, which is contradictory among scholars, shows that there is a need to customise interventions which enhance performance of SMEs. To ensure that SMEs are thus effectively supported across their lifecycle, the government of South Africa has devised a variety of interventions, which include grants, subsidies, and human capital development, among other things (BER 2016). However, another means that has become commonplace not only in South Africa, but across the globe, is the incubation model. Incubation programmes form a critical cornerstone in the development of small enterprise as they enable them to establish operations, and importantly, help them to grow and thrive (SEDA 2018).

2.3.1 Socio-Economic Impact of SMMEs in South Africa

Over time, the invaluable role of small and medium-sized entrepreneurs in the development of society at large and the economy have been highlighted, with the sector being tagged as the "engine of the economy" not only in South Africa, but globally (Ngibe

and Lekhanya 2019). The sector has been recognised as the backbone and foundation stone for economic development owing to its socio-economic contribution through employment growth, positive trade balance and fostering entrepreneurship (Herrington and Coduras 2019). Other studies have argued that, just like large corporations, small businesses play a crucial role in economic and industrial development through innovative activities and creation of employment as well as contribution to the GDP (Herrington and Kew 2016a).

The South African Reserve Bank (SARB (2015) contends that small enterprises leverage on their agility and hunger to lead in innovation, as testified by the success of Silicon Valley entrepreneurs. Their flexibility positions them as strategic drivers of social and economic development, particularly in rural settings. SMMEs, unlike large corporates, can survive on less complicated infrastructure which in turn incentivises them to employ more people than large firms (Didier *et al.* 2021). Research shows that small enterprises are more labour-absorptive than large organisations. A study of the South African manufacturing sector shows that micro-sized enterprises (4.84), small-sized (3.14), and medium-sized enterprises (2.03) have very high average employment ratios per R1 million income, compared to large enterprises (0.58) (Zhou 2021). This submission dovetails with Herrington and Kew (2016a) recommendation to South African policy makers to prioritise the introduction of reforms that would enable the growth of the SMME sector. The study noted that these enterprises contribute significantly to employment generation, economic development and equitable distribution of income.

A change in fortunes for the country's economic growth clearly lies within the potential of the small-firm sector, as these businesses have the ability to revive and sustain economic growth (IMBADU 2016). The National Planning Commission (2011) placed its hope of changing apartheid legacy patterns in SMMEs, as it is through them that real economic transformation can be achieved. In appreciation of the sector's contribution to the domestic economy, the Presidency established the Ministry of Small Business Development, aimed at exploiting the potential small businesses have in unlocking opportunities and achieving inclusive economic growth and sustainable employment (Bureau for Economic Research 2016). A recent study established that SMMEs continue

to be leaders in job creation, providing 55% of formal employment opportunities in the country (Real Economy Bulletin 2017). According to Sitharam and Hoque (2016a), an estimated 5.9 million SMMEs were responsible for more than 11.6 million jobs in South Africa. However, the most significant worry is that fewer than 20% of these SMMEs are properly registered with the Companies and Intellectual Property Commission (CIPC).

Khambule (2018) avers that the SMME sector is an important element in addressing socioeconomic development and the tripartite concerns of poverty, joblessness and income disparities. Without a thriving SMME sector the country would be vulnerable to social instability. Some studies have indicated that SMMEs bring social benefits which can be seen in different forms, such as competition, and thus minimise monopolistic behaviours by large established firms (Ncube 2016). The study indicates the need for interventions to address some of the inhibiting tendencies of various institutions on the performance of small enterprises. In that regard, an informed intervention by the government and other pertinent institutions in the SMME sector can accrue positive results (Zhou 2021). In spite of the socio-economic role they play, SMMEs in South Africa are confronted with a number of challenges.

2.4 CHALLENGES FACED BY ENTREPRENEURS

Numerous experts in academia have studied the myriad issues that small and medium-sized enterprises (SMEs) in South Africa and elsewhere face today (SEDA 2016). A literature search on SMME growth reveals that inadequate capital is a major barrier to SMME creation and expansion (Akinyemi and Adejumo 2017). Limited access to markets, inadequate financial resources, a lack of public sector support, a stagnant and overregulated business environment, and severe infrastructural deficits (especially power outages) are all factors that may hinder the growth and longevity of small and medium-sized enterprises (SMMEs) on the African continent (Schmidt et al. 2016; Gonsalves and Rogerson 2019).

A decade of evaluation of government policies regarding SMMEs up to 2004 reveals that, in conjunction with commercial and public service providers, its grant programmes had become much more diverse and gave more assistance choices to more small businesses

(Botha et al. 2020). Rogerson's (2004) analysis of the effects of government programs from 1994 to 2003 reveals that small enterprises made a minimal contribution to employment creation owing to their lack of expansion. Furthermore, he emphasises that the majority of programmes disregard micro- and informal businesses When examining the unique obstacles and problems faced by SMBs, the DTI (2013) initially found that the regulatory and legal environment facing SMMEs, access to global markets, finance and commercial premises (at affordable rental rates), acquisition of skills and managerial expertise, access to appropriate technology, quality of business infrastructure in poor areas, and in some instances, the tax burden, were problematic for SMMEs. The effects of Covid-19 on the viability of SMEs have been catastrophic. A simple desktop search revealed that everyone agrees with this statement; yet, Hewitt and van Rensburg (2020) are cautious in estimating the number of small and medium-sized enterprises (SMEs) that have already or will soon shut their doors.

2.4.1 Business Environment

SME failure is attributed to bureaucracy and an overregulated business environment (Muriithi 2017). The prolonged business registration procedures, complicated licensing process and burdensome tax systems are some of the factors that stifle growth (Ministry of Small Business Development 2015). The government has done a great deal of work to help small businesses, but the DTI notes that lack of interdepartmental cooperation and duplication of duties is a big impediment to the creation and sustainability of SMEs (SEDA 2016). Some of these policies actually end up stifling the growth of SMEs (Sibiya and Kele 2019). Tax compliance is one of the regulations that places an unfair burden on SMEs. The costs of compliance are time-consuming and expensive; thus, SMEs choose to remain informal by not registering their businesses (Naicker and Rajaram 2019).

2.4.2 Access to Finance

Access to finance is one of the major difficulties that that start-up businesses have to overcome in order for them to grow (Sitharam and Hoque 2016b). A report by SEDA (2016) noted that major financial institutions in South Africa are less inclined to finance budding organisations; they would prefer to finance them at the later stages. This poor

access to finance has a negative impact on profitability. Sitharam and Hoque (2016b) state that the difficulty in accessing finance is further compounded by financial crises and unforeseen events such as the Covid-19 outbreak which shook the financial markets (Bruwer, Hattingh and Perold 2020). A report from the Ministry of Small Business Development (2015) indicates that limited access to credit was singled out as one of the variables hindering small enterprises' potential to develop into large organisations. The Minister reiterated that the Ministry was ready to come up with policies that will help the SMEs to access finance and form partnerships with the private sector to ease the plight of small firms (Ministry of Small Business Development 2015). Despite the efforts of the government to provide funding, the underlying problem is that the SMEs do not know where to access the funds.

This problem is exacerbated by late payment by government departments for tenders that have been awarded to small businesses (Muriithi 2017). For Mojapelo (2018), delayed payment is one of the major reasons why SMEs shy away from dealing with any sphere of the government. The despicable practice of late disbursement of payments, especially by governments, not only stunts the growth of SMEs, but often leads to closure of businesses (Bailey 2019). Late payment negatively impacts on business performance because it raises costs associated with venture capital, cash reserves are depleted, it increases the cost of collections, and leads to loss of jobs, and losses are inevitable (Bailey 2019). Poor access to finance and lack of adequate funding thereof is further compounded by lack of requisite skills and training.

2.4.3 Lack of Skills and Training

Subsequent studies by Herrington and Kew (2016b) discovered that despite concerted efforts by various organs of the state responsible for small enterprises, the difficulties confronting the SMMEs still persist and there are no signs of these slowing down, as evidenced by the high rate of SMME failure. Rogerson (2016b) states that inadequate skills on the part of management and a lack of training are the two main contributing factors to the demise of SMMEs. A review of scholarly work by (Worku 2013) discovered that exceptional and proven entrepreneurial acumen is essential for the worldwide establishment of a successful SME sector globally. Business owners who are lacking in

entrepreneurial knowhow must strive to acquire the knowledge to improve their capacity in business leadership. This has been identified as one of the main reasons why small enterprises are not developing in the Third World countries, even though they receive government support (Sitharam and Hoque 2016b).

Stankovska, Josimovski and Edwards (2016) also found that adopting new technologies and systems is usually enhanced or hampered by the level of knowledge and technical acumen, which may subsequently lead to the demise of SMEs. Sitharam and Hoque (2016b) further observe that despite the great advancement and ubiquity of technology globally, SMEs are still struggling because they have not implemented any of the available technology. Lack of financial resources to employ skilled workers means that the small enterprises cannot develop the core capability which would in turn lead to a competitive advantage (Ayandibu and Houghton 2017b). On the same theme, Sitharam and Hoque (2016b) assert that entrepreneurs have very little knowledge of financial matters; thus, the businesses were doomed to fail from the beginning. To fill the knowledge gap, some businesses have shown a willingness to hire more people; however, they are held back by regulations on minimum wages, and thus failure remains a real threat (Botha *et al.* 2021). In rare circumstances where the SMMEs circumnavigate the lack of skill, they are further hamstrung by lack of access to markets.

2.4.4 Access to Markets

The global trading environment has evolved such that small enterprises can no longer pride themselves on being domestic market champions (Bushe 2019). It is no longer a choice, but a business requirement, for small businesses to become involved in the global market (Sitharam and Hoque 2016b) to avoid domestic saturation and limitations in the local market (Sibiya and Kele 2019). Limited access to markets, especially for rural based SMEs, is a serious constraint to SME competitiveness and success (SEDA 2016). Small firms are further stifled by lack of productive capacity and technical expertise to meet the standards of the global markets. They are also finding it difficult to compete on the domestic markets because the markets are flooded by cheap imported goods (Osano 2019). It is asserted by Sitharam and Hoque (2016b) that an inability to engage in foreign markets may be a deadly error for contemporary firms of any size. Chances of success

are higher when businesses go across national frontiers. However, going global is not without its problems for small enterprises (Sitharam and Hoque 2016b). Global aspirations are held back by poor infrastructure.

2.4.5 Poor Infrastructure

Poor infrastructure, especially transportation, electricity, and Information and Communication Technology (ICT), are significant obstacles to company growth. Access to such facilities is vital for the growth of existing SMEs and the creation of new ones (SEDA 2016; Bushe 2019). These are enormous additions to business operating costs (Gupta *et al.* 2017). Ayandibu and Houghton (2017b) weigh in by arguing that most South African SMMEs suffer from being underfunded and using dilapidated infrastructure which they expect to be made available by the state. This kind of infrastructure is exorbitantly expensive for emerging enterprises to acquire and manage. Efforts by the governments to make such infrastructure available are stagnated by corruption.

2.4.6 Corruption

Corrupt tendencies are serious concern for companies in Africa. The harmful practice forces SMMEs to redirect their intended funds to non-financial endeavours. In many nations, bribes or facilitation payments are demanded by government personnel prior to the delivery of services (Muriithi 2017). According to Bushe (2019), corruption is a crippling factor in both the business and governmental sectors of South Africa. In 2014, South Africa scored 44th on the global corruption perception index (Index 2018). For the owners of SMMEs, this necessitates paying additional money outside their budget, or reducing their budget, in order to pay for unjustified activities that diminish their income and negatively impact their performance (Garatsa and Dlamini 2021). It is not uncommon for legal authorities to subject business owners to constant harassment and intimidation, seizing merchandise on the basis of unpaid licenses and other fines (Muriithi 2017). This deplorable practice continues to undermine the efforts of African governments to encourage SMMEs throughout Africa. In reality, Africa is home to some of the most corrupt nations that in the world (Bushe 2019). The behaviour compromises well-

considered plans and commitments to eradicate poverty on the African continent and enhance its economic development (Sitharam and Hoque 2016b).

2.5 SME SECTOR DEVELOPMENT FROM AN INTERNATIONAL PERSPECTIVE

As alluded to above, the economic significance of small and medium-sized enterprises (SMEs) to the growth of countries is generally accepted, and there is an abundance of research and empirical evidence to support this claim (Stankovska, Josimovski and Edwards 2016). Small enterprises constitute an essential component of any economic system (Ramukumba 2014; Bahri-Ammari and Nusair 2015; Sudhakar 2015) and much more so when it pertains to their position in developing and growing nations, particularly in the African setting. (Ayandibu and Houghton 2017c). The following paragraphs will provide a synopsis of the development of SMMEs from different parts of the world.

2.5.1 The European Union (EU)

The EU has constantly recognised the critical part played by SMEs in the growth of economies, contributing 99% of the employment opportunities (Bassi and Dias 2019). The EU 2020 Strategy, prioritises policy implementation aimed at enhancing the business environment, which will ultimately increase organisational competitiveness, particularly for SMEs (Laurențiu 2016). The most important methods that directly develop and support SMEs within the EU political block are legislation and EU operational programmes (Laurențiu 2016) thus eliminating administrative and fiscal burdens that weigh down the SMEs (De Marco, Martelli and Di Minin 2020). Laurențiu (2016) further reveals that the European Commission drafted the European Act "First think of the children" in 2008 to strengthen and consistently grow SMEs. The Act reiterated that the EU needed to prioritise the needs of SMEs in the implementation of EU policy. The European Act was guided by 10 principles that reflected the trends in EU Member States in the SME sector (Laurențiu 2016).

2.5.2 The United Kingdom (UK)

The small business sector in the UK economy is of paramount importance, and it contributes 80% to the country's economic growth. The government has thus allocated considerable resources to provide support services for this sector (Aghelie 2017). The same author statistically proves that of the 3.7 million businesses in the UK, 97% are defined as small businesses. The above idea received recognition from Brown and Lee (2019) who observe that the UK government has been financially supporting high growth SMEs since the financial global economic crisis. Cowling, Liu and Zhang (2016) further argue that the government pooled resources together into one place to help the SMEs to have access to finance. (Lyee and Cowling 2015) add that the UK government even recognised the difference between urban and rural small enterprises and thus provides differential support as a way of breaking the barriers to growth.

2.5.3 South Korea

Bulut and Yen (2013) observe that South Korea has one of the most advanced e-procurement systems in the world. The procurement system, which was set up in 2002, has resulted in ease of doing business between SMEs and the government (Baek 2015). A lot of resources were committed to streamlining the whole process and dealing with red tape when it came to doing business with state-owned departments (Herrington and Kew 2016b). The paper-based process was replaced by a live portal that was easily accessible to the SMEs. This was made possible by the ubiquity of an internet connection which covered 90% of the country (Herrington and Kew 2016b).

The South Korean government also provides additional help to SMEs to help them survive and prosper by improving access to markets for small businesses. The government increases the visibility of SME products by including them in a product catalogue that can be accessed by companies that consult for and supply goods to the government (Herrington and Kew 2016b). SMEs that offer good services and products are allocated "indefinite delivery contracts" at competitive prices. The government also releases certain stockpiled raw materials at discounted prices to the deserving SMEs as a way of promoting SMEs (Baek 2015; Herrington and Kew 2016b).

2.5.4 Dubai

Riaz and Mushtaq (2017) report that the government of the United Arab Emirates declared that the year 2015 was "the year of innovation". The intention was to initiate government departments working towards promoting SME growth. Studies conducted by Dubai SME, the agency of the Department of Economic Development in Dubai, noted that small enterprises make contributions of up to 47% of the Emirate's gross domestic product and more than 50% of the labour force (Bridge 2018). The CEO of Dubai SME confirmed that the initiatives and policies of Dubai SME had been adopted globally by organisations and bodies such as the World Bank, the UN, and the Organisation for Economic Cooperation and Development as global best practices (Riaz and Mushtaq 2017; Bridge 2018). The government therefore plays an important role in providing an environment that is conducive to SME growth (Pervan, Al-Ansaari and Xu 2015).

2.5.5 Kenya

Research carried out by Osano (2019) states that MSMEs formed the largest proportion of privately owned firms in Kenya. The results of the survey conducted on the Kenyan SME sector in 1999 noted that the sector had a total of 1.3 million MSMEs with an employment complement of over 2.3 million workers. It was noted that the MSME contribution to employment in the sector was 85% (Ombongi and Long 2018). This is supported by the fact that the Constitution of Kenya has passed institutional and regulatory reforms to promote SMEs (Osano 2019). Gumboh and Gichira (2015) note that 30% of the government's procurement budget is reserved for SMEs as a way of promoting growth. The government of Kenya also created a youth and female entrepreneurship fund aimed at encouraging the creation of new enterprises (Igwe, Onjewu and Nwibo 2018). It is acknowledged by Douglas *et al.* (2017) that various measures to reduce the cost of conducting business were undertaken by the Kenyan Government to increase competitiveness of Kenyan products for the export as well as the local market. Statistics from the World Bank show that Kenya has made huge strides it its effort to increase the ease of conducting business. Kenya improved its position four successive times from position 80 in 2017 to position 61 in 2018 (World Bank 2019).

As a way of enhancing the important contributions of SMEs in the development of the economy, many governments across the globe develop various policies and incentives to boost them (Darko and Chan 2018). Other developing economies, like Pakistan, have established dedicated bodies to help promote small and medium enterprises through SME-related policy formulation and access to finance facilitation (Hyder and Lussier 2016). While it may not be the governments' direct task to start and operate new businesses through which employment opportunities can be provided, they still have a role to ensure that key fundamentals are in place to incentivise new venture creation and the sustainability of already operational businesses.

Governments should thus create a conducive environment through enhanced reforms and policy that promote ease of conducting business and minimise unnecessary delays (Herrington and Kew 2016b). Governments can consciously create policies that increase or even decrease market concentration. Certain government decisions, like tax policies, can influence small businesses' access to finance if there is an exemption on corporate income tax; also, selective subsidies have been found to influence market structure and can even result in efficient firms that did not receive subsidies disappearing (Pervan, Al-Ansaari and Xu 2015). This implies that well-crafted government support programmes or policies can improve small firms' survival (He and Yang 2016b). Having discussed the role of governments in the promotion and development of SMEs from a global perspective, the following section well gravitate towards the development of SMMEs in South Africa.

2.6 SMMES IN SOUTH AFRICA

When undertaking to investigate and understand any phenomenon of an economic nature in South Africa (Kunene 2014), it is of paramount importance to consider the historical setting of the country to get to the bottom of the current problem, and also to understand the environment and the context of the decisions that have been taken (Ayandibu and Houghton 2017b). Apartheid had a major detrimental influence on the development of small and medium-sized enterprises, because it never propagated conducive conditions for small businesses to thrive. The apartheid regime was to blame for the income

disparities in the country and was the major cause of the closure of small businesses (Garatsa and Dlamini 2022).

The arrival of colonialists in the late 1800s, with the intention of gaining access to precious minerals like gold and diamonds, led to the founding of mining firms in South Africa (Kunene 2014). Europeans owned these conglomerates, while the local black population were employed as labourers in the mines. This was the beginning of modern capitalism in Africa. According to Ayandibu and Houghton (2017b), the local population became forced labourers and never owned the means of production. The locals were wallowing in poverty while the colonialists enjoyed the wealth derived from the mineral resources.

1940 saw a change in governance, when the Afrikaners defeated the English in an election and took over the running of the country. They implemented a racially-charged policy called apartheid. This system, according to Abel (2019), stripped the locals of fertile and productive land and took away their rights to own any business or assets. The quality of education for the blacks was poor; thus, the indigenous people remained an unskilled labour force in South Africa. The large firms, which were mainly white-owned, were heavily subsidised, while SMEs which were the domain of the black population were side-lined and thus received no support from the government (Gono, Harindranath and Özcan 2016). The plight of the "black" South Africans drew the attention of the international community and resulted in sanctions being imposed on the apartheid regime in 1962 (Ayandibu and Houghton 2017b). The African National Congress (ANC) intensified the armed struggle, and increased political pressure from the UN and other relevant organisations the world over led to the collapse of apartheid after 46 years of oppression (Abel 2019).

The ANC was democratically elected in 1994 and was faced with the mammoth task of reversing the legacy of apartheid (Irene 2017). They were faced with a racially-charged society comprising high levels of poverty and inequality and an angry, under-educated black majority (Kunene 2014). The prevailing political and economic situation therefore became the point of departure for the ANC government to ameliorate the situation. Against this background, Irene (2017) notes that the Reconstruction and Development

Plan was one of the primary measures enacted to correct the previous regime's inequalities. State responses towards small enterprises in South Africa can therefore be seen as a way of opening up the economy and offering support towards the emancipation of SMMEs (Rogerson 2016b).

It was very clear to the new government that a shift in policy that would emancipate the black majority and provide a conducive environment for the creation and sustainability of SMEs was required (Kunene 2014). The White Paper published in 1995 showed the government's intent when it came to dealing with small businesses (SEDA 2016). Even though SMEs were already operational, the government of South Africa formally recognised SMEs with the promulgation of the National Business Act in 1996 (Bruwer 2017). This action plan saw the establishment of a number of government entities such as SEDA, and the merger of the Small Enterprise Finance Agency (SEFA), the South African Micro-Finance Apex Fund and Khula Enterprise Finance Limited to look after start-ups, with a capital requirement of up to 3 million rand (SEDA 2016). Further to this, the BBBEE policy was implemented, with the intention of promoting equitable distribution of wealth (Mayombe 2018; Hewitt and van Rensburg 2020).

Post-apartheid governments are, however, still struggling with the unequal distribution of wealth and high unemployment (Mahadea and Kaseeram 2018) and most worryingly, most SMEs are not surviving past year 3 of their establishment (SEDA 2018). Their economic activities are not producing sufficient jobs, which leads to high unemployment. The success of SMEs would have gone a long way to helping to solve the unemployment problem (Nieuwenhuizen 2019); consequently, their demise has a significant impact. Despite the well-documented high rate of failure, new enterprises are being established, and funds are being allocated to them (Bruwer 2017). Due to the government's emphasis on fostering the expansion of small and medium-sized enterprises, the Department of Trade and Industry (DTI) has been charged with ensuring that these businesses succeed and achieve their full potential (Nieuwenhuizen 2019).

2.7 ROLE OF GOVERNMENT IN SMME DEVELOPMENT

In order for small businesses thrive and contribute to economic growth, many governments across the globe develop various policies and incentives to boost them (Darko and Chan 2018). Other developing economies, like Pakistan, have established dedicated bodies to help promote entrepreneurship through SMME-related policy formulation and access to finance facilitation (Hyder and Lussier 2016). While it may not be the direct responsibility of the governments to create jobs and run enterprises, it is their obligation to guarantee that the groundwork for entrepreneurialism is solid. Therefore, administrations should foster productive settings by enacting changes and laws that make it simpler to start and run a firm while cutting down on bureaucracy (Herrington and Kew 2016a). Darko and Chan (2018) argue that governments can, consciously or otherwise, create policies that increase or even decrease market concentration. Certain government decisions such as tax policies can influence small businesses' profitability through income exemptions. Also, selective subsidies have been found to be key significant drivers of the market structure, at times even resulting in the disappearance of efficient firms that did not receive subsidies.

The main implication is the need for informed and locally-relevant government support programmes to effectively improve small firms' performance without adversely impacting other firms in the market (He and Yang 2016a). Fatoki (2014) acknowledge that the success or failure of small enterprises can be affected by the country's governance and institutional structures, as these enterprises require government intervention to deal with external challenges like crime, corruption, skills shortages and property rights. Some governments have resorted to incubation centres through which entrepreneurs receive tailor-made private and public support (Allahar *et al.* 2016). This type of support, which is normally administrative and financial, modifies firms' distribution in the market. The resultant modification can be positive if supported firms are efficient, and negative if they are not. The latter can be disastrous in the long term, as incubated firms can temporarily increase their potential efficiency and push out efficient firms not being supported, thus adversely impacting on aggregate productivity (Teruel-Carrizosa 2006; He and Yang 2016a).

To avoid this challenge, government support should not be generalised, but rather empirically driven. Before the development of various SMME support schemes, pertinent stakeholders should invest some effort in appreciating the diversity and compexity of the sector. It is important to recognise that different companies have different sets of needs; hence, government interventions and policies should recognise the heterogineity of small firms and avoid the "one-size-fits-all" approach (Fawcett and Hampton 2020). The support should be administered in such a way that it does not generate negative externalities and jeopardise the survival chances of other firms without access to the same support (He and Yang 2016a). However, other researchers Bartik *et al.* (2020) found that firms that did not receive any government subsidies ended up being more efficient than those that did. The study indicated that subsidies, instead of helping, may end up creating a moral hazard, as the firms cease to be innovative and rely on "free" government support to fund operations.

2.7.1 South African Government Policy Intiatives

Given the alarming rate of unemployment, poverty levels, and inequality, the South African government has over the years, in the post-apartheid era, developed a plethora of policies, strategies and programmes with the aim of promoting SMMEs through an enabling environment (Bureau for Economic Research 2016). After seeing the potential of small and medium-sized enterprises, the South African government enacted the National Business Act (NSBA) in 1996 and created the first National Small Business Council (NSBC), outlining a plan to foster the growth of SMEs throughout the country (Schmidt *et al.* 2016). The National Empowerment Fund (NEF) was established in 1998 with the goal of encouraging investments in black-owned enterprises by providing monetary and non-monetary assistance to black-empowered firms.(Ayandibu and Houghton 2017d; Botha *et al.* 2021).

With an eye toward the future decade, the government announced the Integrated Small-Enterprise Development in 2003 to direct its programmes of assistance and company growth (DTI 2003). Micro-businesses, SMEs operating in high-growth industries, and SMMEs run by black people all qualified for subsidised aid under this plan. The targeted assistance was supposed to boost economic development, provide new employment

opportunities, and lessen poverty. Rogerson (2016a) argues that SMMEs have not yet realised their full development potential.

Constantly striving to further promote SMMEs, the administration passed the National Business Amentment Act in 2004 (Sitharam and Hoque 2016b; Ayandibu and Houghton 2017a). With the promulgation of this law, the Department of Trade and Industry (DTI) merged with the Ntsika Enterprise Promotion Agency, the National Manufacturing Advisory Centre and the Community Public Private Partnership Programme to become the Small Enterprise Development Agency (SEDA) (Botha *et al.* 2020). SEDA was given the authority to provide small and medium enterprises in South Africa with non-monetary assistance in the areas of business strategies, design, and execution of small company development, as well as the merger of state-funded new business support organisations (SEDA 2020).

The Technology Innonation Agency, the National Youth Development Agency and the Micro-Agricultural Financial Institution of South Africa were among the other organisations founded between 2006 and 2008 with the mission of aiding SMME owners (Fatoki 2018). In 2012, the government established the SEFA as part of the DTI to aid small enterprises in securing funding. This agency was founded by merging the Khula Enterprise Finance Limited, the Industrial Development Corporation (IDC) and the South African Micro-Finance Apex Fund (Zhou and Gumbo 2021b).

Multiple public entities, such as SEDA, the Cooperatives Development Agencies and the Cooperatives Tribunal, and various government entities were consolidated in 2014 to form the DSBD, also known as the Ministry of Small Business Development, to lead a holistic strategy for the growth and development of small and medium enterprises and cooperatives (Zhou 2021). The Ministry is meant to drive entrepreneurship growth in the country, with a dedicated budget of approximately R1 billion per annum (South Africa 2018). Through this Ministry, the government aims to develop regulatory and economic policies to improve SMMEs' access to infrastructure, energy and other related support interventions. The intended result is radical economic transformation through entrepreneurship and a culture of innovation in the country (DSBD 2014; IMBADU 2016).

The government of South Africa is aware of its role in creating a conducive environment that minimises the cost of doing business and boosts business growth. In 2014 the government ring-fenced R847 billion for infrastructural development over a three-year period; the main focus was on freight and energy provision. Through this and many other interventions, the government anticipates enormous impact on the development of SMMEs, especially with regard to ease of doing business and market access (SARB 2015).

The authorities, however, anticipated that during the following decade, these initiatives would bear fruit in both a material and immaterial sense (Botha *et al.* 2021). Despite the government's efforts and the new measures it has undertaken, the Minister of Trade and Industry said that around 70% of SMMEs in South Africa fail within their first year, one of the highest failure rates anywhere in the world (Zhou and Gumbo 2021b). However, Monitor (2017) reports that South Africans are enthusiastic about the chances for starting their own enterprises and confident that they have the requisite knowledge, expertise, and experiences to be successful. In spite of the optimism reported by the respondents, Bosma *et al.* (2016) point out that South Africa is one of the nations with the lowest entrepreneurial ecosystems (Monitor 2017).

A disconnect exists between the optimistic views of SMME owners and the particular programmes and initiatives put in place by the government to help this sector, and the reality of high SMME failure rates. Organisation that provide guidance, facilitate the launch, and track the development of emerging firms are a new kind of incubator. A business incubator is one provider of this kind that helps new and aspiring company owners by providing them with guidance and resources (Albort-Morant and Oghazi 2016). This study will examine the impact of the InvoTech BI programme on entrepreneurs, taking into consideration the aforementioned interventions, problems, and impediments.

2.8 BUSINESS INCUBATORS

Entrepreneurship, incubation and innovation are themes that are particularly appealing to academics, students, and young people throughout the world, and they need greater consideration. Entrepreneurship and innovation are crucial to the shift to a knowledge-

based economy and future corporate success (Alzaghal and Mukhtar 2017). Incubators, innovation and entrepreneurship are closely linked concepts. In essence, business incubators are a crucial economic approach used to create and commercialise innovative goods, processes, and business models.

2.8.1 Overview and Definition

The formative years of small and medium-sized enterprises (SMEs) are beset with considerable obstacles that result in a large proportion of business failures. The business incubation system that enables the development and survival of firms is crucial to the survival of small and medium-sized businesses (Iyortsuun 2017). Scholars typically see business incubation as a strategy that fosters entrepreneurial growth by establishing and executing programmes that provide targeted resources and services to businesses (Garatsa and Dlamini 2021). The idea is predicated on the notion of boosting the survival and growth of enterprises via the development of methods that enable the early identification of firms with high success potentials but limited resources. The phenomenon of incubation is seen as a technique that enables the functioning of crucial and perhaps important technologies (Albort-Morant and Ribeiro-Soriano 2016). However, Ayatse, Kwahar and Iyortsuun (2017) remark that the onus remains on the entrepreneur to ensure the survival of the firm, since they are susceptible to "incubator syndrome".

The approach assures that organisations overcome what are known as the vulnerability of newness and the risk of smallness, generating inventive, successful, and sustainable businesses (Bismala, Andriany and Siregar 2020). The phenomenon of incubation is consequently seen as a technology that "enables the operation of crucial and perhaps key technologies" (Dlamini 2020). In general, the incubation concept aims to achieve several fundamental goals, including the creation of new jobs and businesses, the promotion of an entrepreneurial climate, the commercialisation of technology, the diversification, revitalisation, and acceleration of the growth of industry and local economies, the reduction of company mortality, the reduction of unemployment, the enhancement of university-incubator interaction, and the promotion of technology development and transfer (Ayatse, Kwahar and Iyortsuun 2017).

With the foundation of Stanford Research Park, California in 1951 and the Batavia Industrial Centre, New York in 1959, the contemporary company incubation movement began (Lose 2021). Thus, the phenomenon of Technology Business Incubators (TBIs) began in the United States, but has since expanded significantly (Torun *et al.* 2018; Hassan 2020). In the United States, the development of incubator models occurred in three distinct stages. Before the 1980s, the first wave of models were developed and flourished. By 1980, around twenty research and technology parks and eleven business and/or technology incubators had been developed in the United States (Hillemane, Satyanarayana and Chandrashekar 2019). The second wave of BI models blossomed between the 1980s and the late 1990s. By the year 2000, the United States had over 600 BIs and 160 research and technology parks (Hassan 2020). The turn of the new millennium witnessed the emergence and flourishing of the third instalments of BI models. According to the National Business Incubation Association of the US, the number of entrepreneurship accelerators in the United States increased from 12 in 1980 to over 1,250 in 2012 (Hillemane, Satyanarayana and Chandrashekar 2019).

Two significant factors, among many others, contributed to the spread of the incubation movement in the United States: the inability of governmental policies to attract investments from large multinational corporations, and research findings highlighting the need to encourage start-ups and small businesses to stimulate job growth and national sustainable growth (Torun *et al.* 2018). The TBI phenomenon has concurrently extended to other advanced economies, including the United Kingdom, Malaysia, Singapore, Sweden, France, Australia, Mexico, China, Taiwan, Brazil, India, Germany, and Russia (Ogutu and Kihonge 2016; Hillemane, Satyanarayana and Chandrashekar 2019). Presently, there are over 7,000 accelerators worldwide, of which approximately 1,800 are in the United States, 900 are in Europe, and numerous others have arisen internationally (Al-Mubaraki and Busler 2017). Since then, BIs have gained increasing significance as a means of promoting technology-based start-ups worldwide (Torun *et al.* 2018; Hillemane, Satyanarayana and Chandrashekar 2019).

The digital economy has offered a new form of the business incubator mechanism, called the incubator, the first of which was founded in Massachusetts in 2005 and named Y

Combinator. In 2013, there were around 213 incubators in operation throughout the world. Business accelerators differ from BIs by providing seed funds, being cohort based, focusing on short term processes and having for-profit structures (Torun *et al.* 2018). In addition, while business incubators have flourished as one of the most well-known instruments for firm formation and growth, a variety of private sector-managed workplaces are developing to assist the soft and hard parts of entrepreneurship globally (Harper-Anderson and Lewis 2018). Co-working spaces, which emerged in San Francisco in 2005 and have expanded significantly over the last five years, are the most noteworthy. In 2015, over 7,800 co-working spaces were in existence globally (Hillemane, Satyanarayana and Chandrashekar 2019).

The phases of business incubation services include pre-incubation, incubation, and post incubation. This includes various protocols and procedures that control the connection between the incubators and the incubatee (tenant). Pre-incubation comprises the process of soliciting, applying for, and evaluating prospective incubator tenants. The terms and conditions include a contract on rental payments, time spent in the incubator, and facility usage (Gonsalves and Rogerson 2019). Mentoring includes assistance with concept refinement and advancement, prototype creation, and commercialisation. The main performance metrics are status reports, identifying gaps and addressing them with the assistance of business incubation management, networks, funding, marketing, and enterprise acceleration. Post-incubation is the time after a company has graduated from the incubator and departed, during which the incubator staff monitors the business's success and maintains relationships with former tenants. This is often accomplished online, via physical visits and invitations to incubator lectures and workshops (Ogutu and Kihonge 2016).

As there is no commonly-acknowledged definition of the notion, the concept of BI is controversial. The discourse on business incubators is replete with specifics and several classifications that are almost identical (Gonsalves and Rogerson 2019). Despite several attempts, academics have not yet agreed on a common delimitation for BIs (Albort-Morant and Ribeiro-Soriano 2016). Ayatse, Kwahar and Iyortsuun (2017) state that a major ambiguity in the field arises from the fact that people often confuse virtual incubators with

conventional incubators that offer in-house tenancy, neglect to properly describe the incubation process, or define it but are unable to distinguish with whom the incubation process occurs, and use terms like "science parks" and "technology centres" interchangeably. BIs, in the eyes of academics, are places where new businesses can find the guidance and resources they need to get off the ground and grow quickly, while also reducing the hazards associated with taking risks and competing in a global market (Hassan 2020).

Adding a network interface to the notion, incubators are considered as inter-organisational or social collaboration stakeholders concerned with achieving "socially-relevant" aims by leveraging the power of several organisations (Ayatse, Kwahar and Iyortsuun 2017). The notion of a network accelerator is built on geographical synergy, physical closeness, interpersonal symbiosis, and economies of scale, with the ultimate goal of leveraging innovative initiative and expertise in building and managing successful businesses (Iyortsuun 2017). Nevertheless, academics dispute whether a business incubator is an institution or a generic phrase synonymous with an enterprise support environment. According to Harper-Anderson and Lewis (2018); Hillemane, Satyanarayana and Chandrashekar (2019), accelerators are registered institutions that provide reasonably-priced office space and focused support programmes with the express aim of fostering the growth of small start-up companies into thriving enterprises.

How should one define incubation? The most plausible definition is one proffered by Albort-Morant and Ribeiro-Soriano (2016) who defined a BIs as:

> *An organization designed to accelerate the growth and success of entrepreneurial companies through an array of business support resources and services that could include physical space, capital, coaching, common services, and networking connections.*

It is possible that this is the most pertinent definition. The provision of a physical place and financial and non-financial assistance is key to the concept of an accelerator (Opondo 2017). Today's BI environments, however, typically use virtual incubation and other forms of ICT. They are often located near universities and in science parks, where they serve

as incubators for turning "pure" research into practical applications, while simultaneously bolstering the impact of the surrounding commercial sector (Carvalho, Noronha and Galina 2019). Having defined incubation, the next step is to delve into the process of BI.

2.8.2 The Business Incubation Process

What exactly is the company incubation process? A simple model comprises of a three-step entry-exit process:

- selecting potential emerging or new ideas/concepts/start-ups from a pool,
- which then undertake focused activities that add value,
- before departing the incubator as independent, viable and lucrative companies.

Potential entrepreneurs are the inputs, whereas incubated or graduated enterprises are the results (Iyortsuun 2017). Particularly, planned offerings or activities that add value are offered to prospective enterprises, who are eventually graduated from the incubation process as mature enterprises. As a strategy for encouraging economic emancipation and the uptake of technology, business acceleration programmes are meant to bring value to incubated firms with the goal of raising their survival rates (Al-Mubaraki and Busler 2017).

Various models have been created to describe the phenomena relating to the activities that ad value and the process of BI. Campbell, Kendrick, and Samuelson are recognised as the first scientists to define the incubation process. They described the value-added services as a diagnostic of requirements applied to the new company ideas of potential entrepreneurs, followed by supervision of the successful businesses chosen for incubation, and finally giving financial investment and access to expert networks (Ayatse, Kwahar and Iyortsuun 2017). Smilor (1987) enhanced the Campbell model by emphasising the external environment (incubator affiliation and support structures) while ignoring the internal systems happening inside the incubator. He conceived of the incubator as a mechanism that bestows "structure" and "legitimacy" on entrepreneurs while managing a collection of assisting resources.

Affiliated with the commercial sector, colleges, governments, and non-profit organisations, the accelerator offers a network of services and support or value-added activities (Hausberg and Korreck 2021). Internal support services or value-added activities are provided by the incubator in four fundamental ways: administrative, secretarial, business knowledge, and infrastructure. Internal and external support systems are intended to accomplish the following goals: economic growth, technological diversity, job creation, profitability, viable businesses, and quality products (Hausberg and Korreck 2021). Smilor (1987) did not restrict his concept of incubation value-added operations to internal elements alone, but also included an external perspective (Kiran and Bose 2020). Smilor stated that enterprises in a business acceleration programme profit from the accelerator's external network with the commercial sector, colleges, governments, and non-profit organisations (Rogerson 2017; Hewitt and van Rensburg 2020).

Using the black-box model, Hackett and Dilts (2004) determined that incubators contribute the most value via their performance in three areas: selection, monitoring, and business aid. Black box models are simply the functional relationships between system inputs and system outputs. The model is a universal business incubation model which can be used both in public and corporate purposes. In short, it is structured as black-box: inputs of the process, process activities, and outputs of the process. Their perspective on incubation is on the internal dynamics of the incubation environment (Carvalho, Noronha and Galina 2019). The Benue Business Incubation (BBI) program also views incubation value-addition activities as internal factors occurring inside an incubation program. It identifies three primary activities as enterprise design, enterprise funding and enterprise support, monitoring and evaluation. Performance management service is a recurring decimal and an important service offered by the program (Iyortsuun 2017). Prospective clients are chosen for the BI programme based on their market, financial situation, product, and management features; once chosen, tenants receive extensive business support and finance choices, in addition to strategic, marketing, human resource, and accounting guidance (Ayatse, Kwahar and Iyortsuun 2017).

According to Hackett and Dilts, an accelerator's selection performance is its propensity to act like an "ideal type" venture investor when choosing which start-ups to fund. To narrow down the vast pool of potential candidates, four factors, i.e., management style, market potential, product appeal, and financial stability are considered. This necessitates assessing prospective businesses in light of these criteria. Incubators provide a variety of value-added services, including intensive monitoring and business help. Hackett and Dilts' definition of monitoring and business assistance intensity is the extent to which an incubator keeps an eye on and assists incubatees with the growth of their ventures, including facilitating their ability to learn from low-cost failures and keeping the cost of potential failure within reasonable bounds (Hewitt and van Rensburg 2020).

This is accomplished by the temporal intensity of the aid supplied, its thoroughness, and its quality. Hackett and Dilts' last value-added service is resource munificence, which they describe as the relative abundance of incubator resources as assessed by available resources, resource equity, and resource usage (De Beer *et al.* 2016). Hackett and Dilts describe the result of the iterative design process as five mutually incompatible end states measured by enterprise growth and financial performance at incubatee departure (Hausberg and Korreck 2021). Ayatse, Kwahar and Iyortsuun (2017) notes that the expected outcomes from BI can be that the enterprise is thriving and becomes profitable, the incubatee is surviving and growing but is not profitable or is only marginally profitable, the incubatee operations were terminated while still in the incubator but losses were minimised, and the incubatee operations were terminated while still in the incubator but losses were substantial.

Population, economic health, incubator size, and maturity level are some of the regulating factors in Hackett and Dilts' model (Hausberg and Korreck 2021). In a nutshell, their model for a BI process entails the following three steps: (1) admitting struggling but potentially successful businesses into the incubation programme; (2) providing ongoing support and guidance to these businesses; and (3) graduating successful businesses from the incubation programme to operate independently (Hewitt and van Rensburg 2020). In South Africa, these are the core offerings of every business incubator. After reviewing the models, Ayatse, Kwahar and Iyortsuun (2017) issue a warning about the

narrow scope within which most incubation models are created, noting that most models place too much emphasis on the value-added activities themselves and too little on the relationships between them. The theoretical foundation of this research will be unpacked once we have examined the models mentioned above.

2.9 CONCEPT OF FIRM PERFORMANCE

The sciences of business, administration, and accounting provide the foundation for the notion and assessment of corporate performance. The purpose of performance measurement is to determine how well an organisation functions and is managed based on a predetermined set of standards and standards. A larger perspective of the notion assures that the institution's publics' interests are taken into account, with efficiency and effectiveness as the two main characteristics of performance (Ayatse, Kwahar and Iyortsuun 2017). Galiyeva and Fuschi (2018) describe a performance measurement system as the quantification of an organisation's effectiveness and efficiency. According to Khan et al. (2011), performance measurement is the act of attributing a value to things or events so as to reflect the numbers, attributes, or subcategories of an attribute. Traditionally, businesses' success has been measured primarily on financial parameters such as yearly sales, yearly profit, number of customers, and growth, among others (Galiyeva and Fuschi 2018).

However, proponents of the multiple-objective school claim that performance assessments should include the many stakeholders of an institution, which is a systemic viewpoint (Ayatse, Kwahar and Iyortsuun 2017). Thus, according to Galiyeva and Fuschi (2018) financial performance metrics are of a historical character, give little insight into future performance, promote short-term focus, are internally rather than externally oriented, and have little concern for rivals and consumers. Enhanced contemporary performance measuring systems should encompass both non-financial and financial factors, so making them multidimensional. In the literature on incubation, performance measurement is also multidimensional. The majority of research on business incubators has two significant weaknesses. First, it fails to accurately determine what constitutes success, and even when it does, it is unable to quantify the degree of success using

elements that impact the result of business incubation (Albort-Morant and Ribeiro-Soriano 2016). In the incubation literature, there is no accepted performance metric, causing researchers to use alternative performance measurements.

The variability of business incubators, inconsistent definitions, and the range of criteria to assess their efficacy make it difficult to determine how much value they bring and what genuinely impacts the incubation of successful enterprises (Albort-Morant and Oghazi 2016). The following performance indices are used in a review of the business incubation literature: revenues, finances, venture capital funds, graduation from the initiative, a firm's continued existence, collaboration activity, innovative organisations, institutional or organisational growth, employment generation, increased sales, revenue growth, registration of intellectual property rights, number of patents granted, partnerships, transfer of technology, employment creation, technology development or advancement, development and research productivity, and ability (Ayatse, Kwahar and Iyortsuun 2017).

The literature review conducted by Ayatse, Kwahar and Iyortsuun (2017) focused on business incubators as entrepreneurial support mechanisms. The unifying factor of the studied works revealed that the incubation phenomenon has a considerable influence on company success, with the impact exhibiting either a positive or negative connection. In BI research, the most common business success indicators are firm survival/failure, sales/revenue increase, employment creation, entrepreneurial financing, and networking/alliances, in that order.

This analysis reveals that, of the seventeen research papers examined, only three argued that the business incubation process did not favourably impact the performance of tenants or graduating firms. Overwhelmingly, fourteen researchers offer validity to the concept that incubation fosters an entrepreneurial spirit that supports firms and encourages the formation of new ventures, hence favourably effecting economic growth and development (Ayatse, Kwahar and Iyortsuun 2017). Particularly, the review's results show that incubatees' access to shared infrastructure, graduation from the incubation programme, and evaluation of financing are enhanced by entrepreneurs access to information flows from external networks (Sagath *et al.* 2019). In addition, the research demonstrates that

participation in an incubation programme aids a company's survival long after it has graduated from an accelerator programme, with advantages such as job creation, enhanced revenue, and increased sales. In fact, the data clearly suggests that incubator programme participants outperformed non-participants in terms of business longevity and revenue (Hillemane, Satyanarayana and Chandrashekar 2019).

When it comes to business support and advisory services, the data from the study demonstrates that participants in the accelerator programme accrue enormous advantages in the areas of income and company development, patent filing, acquiring financing or capital, and forming strategic partnerships (Sagath *et al.* 2019). It is also crucial to note that the duration of an accelerator programme and how long the incubator has been in existence contribute to the survival of a corporation. The screening of potential enterprises is a central subject in the literature on incubation, and the examined empirical studies demonstrate unequivocally that incubators place the most emphasis on markets, the management team, and financial aspects, in that order (Harper-Anderson and Lewis 2018). However, concentrating simply on one of the criteria is ineffective, indicating that a business incubator must assess potential incubatees based on all of the characteristics. Thus, the likelihood of survival is increased compared to when each element is addressed independently.

Contradictory data on the benefits of incubation demonstrate that neither business survival nor transfer of technology, employment, or enterprise development are enhanced when organisations use an incubation programme. This data is insufficient to refute the claim that company incubation fosters an entrepreneurial mind-set and greatly contributes to boosting firm performance, both inside and outside the accelerator programme (Sagath *et al.* 2019). As a result of the empirical review, it can be said confidently and clearly that the BI process improves the performance of enterprises from the time they are housed in an incubator until they successfully graduate and become financially stable and competitive firms. This is the contribution made by this review of the literature on business incubation and performance of firms (Ayatse, Kwahar and Iyortsuun 2017). The discussion will now gravitate towards the role of Bis.

2.10 THE ROLE OF BUSINESS INCUBATORS

According to Lose (2016), the primary objective of business incubators is to foster the establishment and expansion of firms, with the expectation that this will result in economic growth and job creation. Thus, the objective of the BI is to improve the standard of living for all residents of the area and nearby regions. Fundamentally, the BI may be seen as a resource for emerging organisations, whose primary objective is to hatch new enterprises (Alzaghal and Mukhtar 2017). Consequently, the same 'blastocyst' concept is used for the incubation of small businesses in order to accelerate the development of new ventures and boost their likelihood of success. In support of this point of view, Al-Damen (2021) identifies the function and purpose of incubators as promoting venture development and economic growth via the provision of different services to enterprises. Nevertheless, this research also shows that the effectiveness of incubators may be judged based on aims and goals.

In summary, the beneficiaries generally agree that business incubators play a vital role, and that such facilities should be involved in:

- Creating a measurable number of jobs in the incubator after three years.
- The incubation process's ability to produce small and medium-sized businesses (SMBs) and, by extension, to improve the survival and failure rates of both established businesses and start-ups.
- Promoting incubation programmes that provide recent graduates with a chance to develop novel ideas, goods, and services and launch their own enterprises with the assistance of private and institutional investment opportunities.
- Accelerating the development of new industries and diversifying initiatives in connection to economic activity through university-based research and commercialisation via incubator-grown firms.
- Making connections and finding avenues for export and import.
- Innovation and creativity-based entrepreneurship supported by small and medium-sized enterprises (SMEs) and start-up accelerators (Lose 2016).

After recognising the importance of BIs, it is necessary to explore business incubators in South Africa.

2.11 BUSINESS INCUBATORS IN SOUTH AFRICA

While incubators have been popular elsewhere, they are a relatively recent phenomenon in South Africa (Lose 2019). Thus, the DTI's definition is used for the purposes of this investigation. Due to the transient nature of incubation, a business incubator is a facility that helps small and medium-sized enterprises (SMMEs) get off the ground by giving them access to resources including business development services, capital, and office space (Rogerson 2017; Hewitt and van Rensburg 2020). According to Lose (2016), 'hives of industry', a version of the Small Business Development Corporation's (SBDC) entrepreneurship development programme, were formed in South Africa in 1995. Hives were groups of workstations that were assembled to form workplaces in order to overcome significant economic challenges in South Africa (Van der Spuy 2019). In spite of the hives' vital function in connecting big and small businesses by sharing knowledge and resources, they were not often referred to as incubators, since there was no set amount of time during which a small firm might participate in the hive's programmes (Ogutu and Kihonge 2016).

BIs in South Africa have recently undergone a transformation as a result of SMME initiatives at the national level. Business incubators in South Africa were seen to have progressed through four distinct phases (Rogerson 2017). The first phase began in 1988, when special business hubs were built for black company owners on the edges of townships like Soweto. Workplace and shared administrative services including accounting, faxing, and filing were made available. The hubs were also a connection to more substantial businesses (Lose 2019). What was lacking was a mandatory incubation time (at least a year) after which SMEs would be required to leave. The DTI, the Department of Science and Technology, and the European Union entered the second phase of development in 2000 with the launch of the 'Godisa' Project (Sotho for "help") (Hewitt and van Rensburg 2020).

Aims were established to counteract the worsening of South Africa's unemployment, inequality, and poverty. Training, counselling, and business assistance were among the services planned to ensure the centres' incubators ran well (Rogerson 2017). Small and medium-sized enterprises (SMEs) with a technological focus were singled out for economic reform and a Black Economic Empowerment (BEE) push (Hewitt and van Rensburg 2020). It was planned to create a system for incubating businesses on a national scale. For its third iteration, the Godisa Programme combined with the SEDA Technological Programme (STP) in 2006 (Lose 2019). The government's targeted aid, decreased poverty, and more employment were the goals. The DTI's Incubation Support Programme (ISP) marked the beginning of the incubation industry's fourth stage and will be implemented through 2022 (Ramraj 2018). It was estimated that there will be 250 business incubators in South Africa by 2015, according to the Department of Trade and Industry (Rogerson 2017; Hewitt and van Rensburg 2020).

SEDA has been a major force in the development of a system of government-sponsored business incubators. Importantly, the SEDA initiative has typically placed its primary emphasis on bolstering sector-specific types of incubators, most of which are tied to manufacturing operations, but also includes those in the information and communication technology (ICT), construction, and agribusiness sectors (Rogerson 2017). Recent positive initiatives in promoting incubators are evident in the work of Ramukumba (2014) who argues that incubatorship was a policy framework by the government to increase survival chances, increase competitiveness of SMEs and redistribute wealth. Black-owned business entities have been prioritised as a way of reversing the legacy of apartheid (Lose 2016). In South Africa the works of (Rogerson 2016a, 2017) describe how BI programmes have evolved to serve SMME growth targets in the nation.

There are now two types of incubation initiatives dominating the South African business scene: innovation centres and BIs. Each was founded with the express goal of promoting business expansion, especially among micro, small, and medium-sized enterprises involved in cutting-edge technologies. In addition, the post-apartheid rebuilding of South Africa has made the development, upgrading, and expansion of small and medium-sized businesses owned by black people a top focus (Lose 2016). In addition, the post-

apartheid rebuilding of South Africa has made the development, upgrading, and expansion of small and medium-sized businesses owned by black people a top focus (Lose 2016). Incubators might be affiliated with or administered by a university, the government, the private sector, or a large company. A BI may focus on a certain area or field of business, such as the technology sector, or it may serve a wide variety of tenants from a variety of industries. Additionally, there is a wide variety of BIs, each with its own unique structure, rules, tenants, administration, financing, and outcomes with respect to whether or not it is reaching the aims for which it was established and what constitutes best practice in incubation (Ogutu and Kihonge 2016).

There are a total of 102 business incubators in South Africa, with 35 situated in Gauteng, 16 in KZN, 15 in the Western Province, 12 in the Eastern Cape, 10 in Mpumalanga, 5 in Limpopo, 4 in the Northern Cape, 3 in the Free State and 2 in the North-West Province. The DSBD Agency is responsible for 42, while DTI- and privately-funded BIs are responsible for 38 and privately-funded incubators are responsible for 25. There are just 102 business incubators, much below the projected 250 by 2015. According to the most up-to-date yearly statistics from SEDA, however, that number has risen to 64. According to Hewitt and van Rensburg (2020) there are 442 business incubators in Africa, with 59 located in South Africa specifically. It seems that one organisation blindly cites another without attempting to ascertain the true situation of affairs. Further desktop research failed to corroborate or validate any of the institutions' statistics with one another.

2.12 TYPES OF BIS IN SOUTH AFRICA

Lose (2019) argues that BIs are crucial to the success of incubators because of the value they provide for the companies they house. Business incubators (BIs) come in a variety of forms, including those focused-on technology, traditional businesses, academic institutions, and the internet (virtual BIs or VBIs). They are all essential parts of the current economic ecosystem that helps new technology-based businesses get off the ground.

Classical BIs, also known as first-generation BIs, were the precursors of modern incubators. Mainly, they aid small and medium-sized enterprises (SMEs) by providing them with rent-free office space, expert business advice, and streamlined administration

(Rens *et al.* 2021). There are around classical 42 BIs in South Africa, all of which are supported by the Department of Trade and Industry's SEDA Technology Programme (STP). Furthermore, the mission and goal of these government entities is to strengthen BIs and acceleration centres (Zwane, Radebe and Mlambo 2021).

Technology BIs combine technology with business acumen to speed up the commercialisation of innovations. Start-ups may benefit greatly from the resources that technology business incubators (TBIs) provide, especially in the areas of technological infrastructure, design process, and research support (Lose 2019).

Virtual BIs: Because customers may be too far away from brick-and-mortar structures to profit from utilising BI office space, several BIs have gone virtual, becoming 'incubators without walls.' Incubatees get help running their firm electronically, using the internet and other new forms of communication. This model's target audience consists of business owners who might benefit from BIs' advice services but would like to keep their current offices (Rogerson 2017; Rens *et al.* 2021). As a result, the virtual incubator can incubate promising target business owners regardless of their closeness to or distance from the incubator's office, and it can do so at a fraction of the cost of a traditional incubator due to not having to provide the space or infrastructure typically associated with such an endeavour (Van der Spuy 2019).

Academic incubators link universities and research centres with industries to train students who want to make a new product, launch a business or have output for research and design activities (Dlamini 2020). Business incubators need to work closely with universities since universities are the primary source of new ideas, research, and resources. If a business intelligence (BI) programme is affiliated with or managed by a university, it benefits entrepreneurs greatly because of the university's connections to business, society, and government (Hassan 2020). Universities take the lead in the entrepreneurial environment by establishing the framework for fostering an entrepreneurial culture and the genesis of new ventures. University objectives have shifted dramatically in recent decades, with an increased emphasis on economic development via research, innovation, and entrepreneurship. Universities' new objectives

to promote, create, and strengthen an entrepreneurial society might be bolstered by an efficient and well-integrated incubation system. An improved financial, legal, and technological environment is provided by university business incubators, benefiting universities, corporate sponsors, governments, and societies alike (Hassan 2020).

On the other hand, Gozali12 *et al.* (2015) emphasise that there are essentially four distinct sorts of accelerator exits, each with its own distinct goals and characteristics namely:

- **Public sponsored BIs:** Government agencies, including cities' economic development offices, urban renewal agencies, and regional planning and growth commissions are the backbone of publicly-funded incubator programmes. The primary goal of government funded accelerators is to create new jobs.
- **Non-profit sponsored BIs:** These accelerators are established and administered by non-profit industrial development groups, regional chambers of commerce, or neighbourhood institutions with wide community support or a proven track record in commercial real estate development. Sponsored by non-profits, the primary purpose of these incubators is to promote regional growth.
- **University Sponsored BIs:** Many of these incubation facilities are university research spin-offs. Most are regarded as incubators for research and technology. The primary objective of university-affiliated accelerators is to commercialise the results of fundamental development and research.
- **Privately sponsored BIs:** Private organisations establish and administer these accelerators. The primary objective is to generate a profit and, in certain situations, to benefit the surrounding community.

2.13 BUSINESS INCUBATION SUCCESS FACTORS

Due to the expansion of investigation on BIs, neither a definition of success in terms of excellence and effectiveness, nor an agreement about which metrics or variables have the greatest impact on the revenue or critical success elements of incubated firms exists (Albort-Morant and Ribeiro-Soriano 2016). Despite this observation, this section will try and enunciate the most common success factors detailed in literature. When operating in South Africa, an incubator might benefit from a range of variables that increase its

chances of long-term success. Financial sustainability, innovative inventiveness, a supportive legal policy framework, and easy access to finance for incubated small and medium-sized enterprises (SMEs) are the four main reasons cited by academics for the achievements of BIs in South Africa. (Alpenidze, Pauceanu and Sanyal 2019; Lose 2019).

2.13.1   Facilities and location

Several scholars have pointed out that an incubator's location is crucial to its success. According to Bose, Kiran and Goyal (2019) most accelerators are found in large urban centres. Towns with industrial parks, colleges, or research laboratories are ideal places for incubators because they provide entrepreneurs with proximity to a wealth of resources and contacts in their respective fields. Lose *et al.* (2016), argue that incubators need to be situated suitably, and that the incubator's physical location conveys some information about its purpose and strategic aims, as the incubator's success is measured in part by the enterprises it attracts. As a result, incubators are often located near redevelopment zones, industrial zones, and places associated with educational institutions (Franco, Haase and Correia 2018).

2.13.2   Incubator governance

When it comes to a company's performance and ability to compete in its industry, the leadership team and personnel play a crucial role. An effective governance structure is crucial for an incubator (Alzaghal and Mukhtar 2017). Incubators often have a seasoned management, a powerful board of directors, a well-known advisory council, a set of well-defined programme milestones, and a set of guiding rules and procedures. Governance of this sort is crucial in identifying, vetting, and ultimately choosing entrepreneurs (Lose *et al.* 2016). In addition, incubator governance is essential, since incubated enterprises must have a clear understanding of the incubator's daily operations, activities, and regulations as well as the expectations for their performance and evaluation (Alzaghal and Mukhtar 2017).

There is a clear necessity for the accelerator to take more action in this field due to the large number of businesspeople who lack proper management training (Alpenidze, Pauceanu and Sanyal 2019). Significant issues regarding management paradigms and

the manager's function in the incubator are brought into focus by this (Harper-Anderson and Lewis 2018). Accelerators are a powerful tool for encouraging entrepreneurship and innovation by providing guidance to start-ups as they develop. They need training in business administration, and they must set out objective-oriented programmes supported by transparent guidelines (Franco, Haase and Correia 2018). For this reason, an incubator has to have managerial and administrative support. Furthermore, there will be challenges and unknowns for every new business. The interaction between the incubation programme's governance model and the business owners it attracts will determine whether and how quickly the incubated firms grow (Alzaghal and Mukhtar 2017).

The incubator's role is to help start-ups by spotting problems and connecting them with resources that can help them solve them. This includes finding ways to get the word out about the incubator, its goals, and the projects it is working on so that the firms it helps launch may get exposure (Alpenidze, Pauceanu and Sanyal 2019). Within the realm of incubator administration, effective advertisement of the accelerator is the way in which its success is seen. Lose (2021) emphasises the need for proactive advertising. Therefore, increasing the likelihood of incubator success and assisting start-ups in launching and expanding their businesses requires a focus on intangible business services and the hiring of competent managers and support employees (Alzaghal and Mukhtar 2017).

2.13.3   Shared Services

Office space at affordable prices and proximity to a pool of common resources, including receptionists, assistants, meeting spaces, boardrooms, and parking spots are all vital components of a successful incubator programme (Schutte and Barbeau 2022). Accelerators provide these tools and services at low prices to cut down on operating expenses, and they have garnered a lot of interest in academia (Alzaghal and Mukhtar 2017). To produce or choose the greatest (more valuable) resources and overcome obstacles to their movement and inimitability is a problem for emerging organisations and entrepreneurial firms (Bose, Kiran and Goyal 2019). Therefore, according to Lose *et al.* (2016), an accelerator may provide both financial aid and guidance. Incubators have expanded the kind of services they provide to start-ups to better facilitate their establishment and growth (Alpenidze, Pauceanu and Sanyal 2019). New businesses now

need facilities, funding, technology, support functions, advice, coaching, and exposure to knowledge networks (Franco, Haase and Correia 2018).

2.13.4 Networking

Due to the evolution and proliferation of ICT, networking is now regarded as one of the most crucial components for the survival of accelerators, enterprises, clients, and organisations (Alzaghal and Mukhtar 2017). The entrepreneurial process is constantly changing. It needs ties or interactions, not just between and among people, but also between and among several organisations (Schutte and Barbeau 2022). Based on results of entrepreneurial study, in order to enhance their reputation and get access to knowledge, financial capacity, and other resources, firms must skilfully create and manage their business networks (Opondo 2017). The ideal input into such systems for achieving objectives and promoting success is a social network. Theories of social networks play a crucial role in several aspects of organisational formation (Franco, Haase and Correia 2018).

According to Bose, Kiran and Goyal (2019) connectivity is among the most significant services offered by an incubator. A network of entrepreneurs may offer the connections and contacts necessary to promote and support a new company in an incubator. Incubators attempt to assist tenant business growth by connecting entrepreneurs to a larger and more diverse array of networking possibilities (Alzaghal and Mukhtar 2017). Incubators provide network access, particularly consultant/specialist networks, finance sources, academic networks, and commercial networks. Networking contributes to the success of incubators and is crucial for developing market prospects for incubated or graduating entrepreneurs and companies. This aspect is essential, since it establishes a solid business network (Franco, Haase and Correia 2018).

2.13.5 Corporate Culture

Culture is one of the most important criteria used to evaluate the productivity and effectiveness of a company. As previously indicated, several scholars describe incubators as institutions. Organisational culture, which is a complex system of beliefs and values, is a vital factor in establishing a company's identity and a crucial indication in constructing

and preserving its reputation. Mastering these sorts of cultures is crucial for all managers because it affects how their companies respond to the changing needs of the corporate environment, and is greatly affected by previous accomplishments and survival lessons (Alzaghal and Mukhtar 2017).

2.13.6 Selection Process of Tenant Firms

Alzaghal and Mukhtar (2017) suggest that one of the most crucial factors for the success of a BI is how the incubator picks the enterprises it desires to incubate, which might vary depending on the incubator's goal and aims. If the goal of an incubator is to grow enterprises, it must have a tenant evaluation, recommendation, and selection procedure (Lose *et al.* 2016). To analyse, suggest, and pick tenant companies, every incubator that aspires to be successful and create sustainable businesses must have sound selection procedures and regulations.

Membership of an incubator is determined by the incubator's board, its management, and a selection panel (Alzaghal and Mukhtar 2017). The availability of stringent selection criteria contributes to the success of incubators. Additionally, Alpenidze, Pauceanu and Sanyal (2019) contend that possible options include prior practical experience, technological specialism, the commodities, goods, or services the business aims to provide to the marketplace, and the possible revenue of the new firm. The selection procedure might be primarily based on the company concept, the innovator, or the organisation's management group (Franco, Haase and Correia 2018).

2.13.7 Funding and support

Access to economic resources is recognised as one of the incubator's efficacy criteria, since it is one of the most important aspects for the sustainability of most entrepreneurs and for the achievement of BIs (Alzaghal and Mukhtar 2017). These writers also emphasise that gaining access to and obtaining financing is the primary objective of incubators, particularly when accelerators initially debut. Funding assists company tenants with a brilliant concept but insufficient funds and knowledge to realise their objective. Incubators provide access to funds via their network of connections and provide

financial training help in addition to real finance; certain incubators may also provide access to a variety of government funding sources (Gonsalves and Rogerson 2019).

Whether an accelerator is privately or publicly funded is a major factor in its accessibility. Corporate funding and individual contributions are examples of private sector support. Any and all levels of government might be considered public sector sponsors. Incubators rely heavily on rent and service fees for funding (De Beer *et al.* 2016). Incubators should implement a self-sufficiency training programme, according to Lose *et al.* (2016). This is crucial to the growth and stability of the project. Since it may be used to purchase a wide variety of goods and services, financial capital is both the most fundamental and broadest kind of resource (Hewitt and van Rensburg 2020). Investors and lenders are hesitant to put money into incubators because of the risks involved (Franco, Haase and Correia 2018).

Maintaining the 'business flow', according to Gonsalves and Rogerson (2019), depends on a number of factors, including a significant level of satisfaction among incubated firms, a high rate of both quantitative and qualitative selection of business plans, rigorous assessment generating relevant orientation, and long-lasting interrelations between organisations and accelerators.

2.14 SUCCESS FACTORS FOR BUSINESS INCUBATORS IN SA

As is the case on the worldwide stage, not all accelerators are successful, and the factors that influence their success and failure must be examined. Lose *et al.* (2016) identified the major characteristics that affect the performance of accelerators in the South African environment, which are highly connected, as shown in Figure 2.15.

Figure 1: Factors for success of business incubators in South Africa

 Source: Lose *et al.* (2016)

The primary objective of a BI is to stimulate the development of new companies in the region by aiding business owners in launching a new firm. Alzaghal and Mukhtar (2017) note that these advantages may be seen in the form of greater employment, extra money, and prosperity resulting from these new firms. Collectively, these communities may help a country expand and reinforce its industrial foundation (Van der Spuy 2019) resulting in improved economic growth that eventually benefits all inhabitants (Hassan 2020). This therefore sets the tone for the discussion of the benefits of BIs in the next section.

2.15 MAJOR CHARACTERISTICS THAT AFFECT THE PERFORMANCE OF ACCELERATORS

According to ChatGPT (personal communication, March 7, 2023) the major characteristics that affects the performance of accelerators are:

2.15.1   *Leadership:* The leadership of a business incubator plays a critical role in its success. Effective leaders are able to set clear goals, provide guidance and support to entrepreneurs, and make strategic decisions to ensure the incubator's sustainability.

2.15.2   *Network:* The strength of the incubator's network is another important factor that affects its performance. A well-connected incubator can provide its clients with access to funding, customers, mentors, and other resources that can help them grow their businesses.

2.15.3   *Resources:* The availability and quality of resources provided by the incubator, such as office space, equipment, and funding, are key determinants of its effectiveness. The best incubators offer a range of resources tailored to the needs of their clients.

2.15.4   *Selection process:* The selection process used by the incubator to choose its clients is also important. A rigorous selection process can help ensure that the incubator works with high-potential entrepreneurs who are likely to succeed.

2.15.5   *Mentoring:* The quality of mentoring provided by the incubator is critical to its performance. Effective mentors can help entrepreneurs develop their skills, overcome challenges, and make strategic decisions.

2.15.6   *Funding:* The availability of funding is crucial for the success of new and early-stage companies. Business incubators that are able to provide their clients with access to funding, either directly or through their networks, are likely to be more successful.

2.15.7   *Program structure:* The structure of the incubator's program can also have an impact on its performance. A well-designed program that is tailored to the needs of its clients and provides clear guidance and support is likely to be more effective.

2.15.8   *Location:* The location of the incubator can also affect its performance. Incubators that are located in areas with a thriving entrepreneurial ecosystem, such as near universities or in urban centres, are more likely to attract high-potential entrepreneurs and provide them with access to valuable resources.

2.16   BENEFITS ACCRUED FROM BUSINESS INCUBATION

2.16.1   Increasing SMME survival rate

SMEs are critical in driving job creation and act as seedbeds of disruptive innovation. Inevitably the South African government has pinned its hope on this sector to address the country's pressing socio-economic problems (Zhou 2022). However, despite this vested interest in the sector, SMMEs continue to register poor performance and the majority fail within two years of commencing operation. In recent years, business incubation schemes have gained prominence as a possible solution to South Africa's persistent SME failure problem (Alzaghal and Mukhtar 2017). The primary purpose is to establish a secure environment to enhance the chances of sustainability by making supportive services available to emerging start-up businesses. These services are geared towards establishing new businesses and decreasing expenses, allowing renters to focus on growing their businesses. This assistance may be monetary or non-monetary (Opondo 2017).

2.16.2   Eradication of poverty and employment creation

The present socio-economic and geo-political restrictions, as well as challenges associated with the profession, such as the small, confined market and donor-dependent economy, may be resolved via the promotion of SMMEs and a technology based economy (Lose *et al.* 2016; Lose *et al.* 2020). Therefore, a business incubator is a tool that may aid business owners in launching new businesses, which in turn generates more employment opportunities (Alzaghal and Mukhtar 2017). As opposed to the typical three years it takes for entrepreneurs to see results in their businesses, those using the services of a business incubator get those results in only one. New businesses also have a better chance of succeeding with incubation (Opondo 2017).

2.16.3   Authenticating the small business

Having an incubator behind you may do wonders for your company's reputation. Banks and other lenders are hesitant to work with small businesses because of the higher risk they pose compared to larger companies. They are short on money and people, and they have a hard time, or no luck at all, obtaining relevant data (Opondo 2017; Lose 2019).

Consumers, funders, and distributors are more likely to trust you if you are involved in a BI. There is some evidence that linking start-ups with incubators might ease their transition into established markets by guaranteeing the reliability and quality of the products they produce (Alzaghal and Mukhtar 2017; Opondo 2017; Lose 2019).

2.16.4 Promoting a culture of entrepreneurship

The participants of a BI develop a common culture based on their own aims and ambitions. Enterprise development is the process of fostering an entrepreneurial culture through the promotion of an entrepreneurial mindset, the enhancement of creativity and innovation, entrepreneurship training, the encouragement of entrepreneurship orientation, and the promotion of the creation and growth of new businesses (Ogutu and Kihonge 2016). Therefore, BIs may aid in the formation of an entrepreneurial attitude. A mindset of entrepreneurship is the capacity to see, act, and mobilise in unpredictable situations. The attitude towards entrepreneurship is necessary for commercial success, since suitable skills for the expansion of a firm are insufficient (Lose 2016; Lose *et al.* 2016). This culture may be converted into human capital, which would allow business owners to learn, exchange, and acquire knowledge from one another.

Opondo (2017) observes that strong links may assist start-ups and small businesses in gaining status by crossing social barriers and prestige levels. Incubation may result in entrepreneurial development, which is essentially the promotion of an entrepreneurial attitude, entrepreneurial orientation, entrepreneurship motivation, and entrepreneurship growth support (Ogutu and Kihonge 2016). This is because the corporate culture impacts the entrepreneurial behaviour and success of businesses. Moreover, the likelihood of forming a social bond increases with the shared culture, preferences, and interests of the people involved (Hewitt and van Rensburg 2020). To enhance company performance and creativity, it is crucial to possess all the necessary entrepreneurial mindset and mentality. Therefore, according to the study, the common advantage of a BI is the learning of entrepreneurial abilities to enable growth and effective management. This is believed to contribute positively to economic development (Gonsalves and Rogerson 2019).

2.16.5   Local Economic Development (LED)

New start-up enterprises provide employment possibilities that lead to a decrease in joblessness, therefore revitalising the local community. The advancement and support of small and medium-sized enterprises (SMEs) through embryonic programmes in municipal authorities exemplifies the LED strategy that aimed, among other objectives, to achieve the organisational obligation at the municipal level to promote economic growth that is beneficial to the local population (Nkwinika and Munzhedzi 2016). The White Paper on Local Government (Department of Provincial and Local Government,1998) further instructs local government to concentrate their resources on growth efforts by collaborating with locals to better their lives via job creation, while being socially accountable (Khambule 2019). It gives assistance to high-potential, high-growth businesses. The location of the incubator has had a good influence on the neighbourhood by fostering creativity and entrepreneurial growth. The majority of incubated firms remain in the neighbourhood. Based on this experience, this demonstrates that incubators have the ability to stimulate growth in the surrounding neighbourhood (Ogutu and Kihonge 2016).

2.16.6   Transfer of technology

As small firms attempt to carve out a market niche for their products and services, technology incubators enhance their technical knowledge by introducing new technologies and production lines. Knowledge and technology are essential factors for wealth generation and corporate expansion (Rens *et al.* 2021). The notion of transfer of technology centres around the transmission of information and its accessibility to many consumers in various fields. Rapid technological development has promoted the formation, expansion, and propulsion of small and medium-sized firms (Hewitt and van Rensburg 2020). This is accomplished through using and gaining access to new technology in order to enhance productivity, product creation, marketing, communications, and revenue (Lose 2019). In the age of technology, companies have increasingly used technology as a marketing tool and channel for providing access to additional information about their enterprises through numerous internet domains, therefore extending their networks and opportunities. Nevertheless, the achievement is

not universal, as some organisations still struggle to adapt to technological innovation and use it in their operations (Alzaghal and Mukhtar 2017).

Accelerators provide tenants with transfer of technology and administrative support. This assistance consists of patents, trademarks, and royalties for their goods. Technology incubators concentrate on technology-oriented enterprises and collaborate with technologically-driven companies and those that must leverage specific technologies (Rens *et al.* 2021). These accelerators collaborate with research institutes, science parks and universities to establish cluster start-ups and commercialise spin-offs. Tenants are given the chance to enhance their manufacturing processes and technology, as well as expand their product lines, via incubator networks (Hassan 2020). The above section has enunciated the benefits accrued from BIs and the next section will proceed to look at the possible challenges faced by BIs in South Africa.

2.17 CHALLENGES FACED BY BIS IN SOUTH AFRICA

There is evidence that BIs promote the expansion of the small company sector. This is also one of the reasons why the number of BIs keeps growing with governmental and private backing. (Schutte and Barbeau 2022). Like any other business programmes meant to ameliorate problems in South Africa, BIs are not without challenges, and they are listed below (Meyer and Mostert 2016; Lose *et al.* 2020; Rens *et al.* 2021).

- **Access to qualified staff**: Management activities are crucial to the survival of BIs; nevertheless, a lack of competent personnel within incubator programmes will limit the services provided to the incubatee.
- **Lack of business skills:** Some BIs provide services within their capabilities but do not supply services required by incubatees, making it difficult for BIs to support incubatees. This is often the result of a lack of business skills.
- **Access to funding and sponsorship:** Business incubators often lack access to cash, which makes it challenging for them to remain functioning and assist entrepreneurs.
- **Geographical locations:** The geographic regions in which BIs are situated are not always convenient for incubatees, making it difficult for TBIs to provide their

services to a big population. This further complicates the participation of incubatees in the incubation programme.

- **Lack of entrepreneur commitment:** Some small business owners lack commitment, posing a problem for business incubators (BIs) since they end up using their resources to help business owners that lack dedication.

- **Government policies:** The success of BIs relies on supportive national policies and government involvement; nevertheless, the laws established should favour incubation so that TBIs can successfully aid enterprises.

- **Mentorship:** Mentorship is lacking in BIs. Before aiding entrepreneurs, business incubators must provide mentoring in the areas of company administration, branding, general administration, and public affairs.

- **Stakeholder support:** There is an interlude of the relationship between stakeholder endorsement and BIs. This could be caused by the discipline of incubation since it is still a new concept in South Africa and the advisory board is evidenced as not being competent.

- **Quality of entrepreneurs:** Successful incubation depends on the calibre of the incubatees allowed into the programme; therefore, entrepreneurs need to be disciplined, creative, imaginative, driven, hard-working, and passionate about business.

- **Competent and motivated management team:** Management must have an entrepreneurial mindset and skillset, experience, and knowledge, and they must also be efficient and highly motivated in their roles. This is one of the fundamental difficulties facing BIs in terms of skill.

- **Networking:** It might be difficult to discover the appropriate people, and the act of networking can be intimidating. This makes it challenging for BIs to build effective networks with prospective investors.

- **Financial sustainability and access to advanced technology-based prototypes:** Prototypes based on innovative technologies are difficult for BIs to access, which stifles innovation, new product development, and the presentation of technological advances. (Meyer and Mostert 2016; Lose *et al.* 2020; Rens *et al.* 2021).

However, it is essential to note that BIs remain an important thread in the fabric of the South African economy. Despite the myriad challenges being faced by BI in South Africa, the government is not conceding in providing support to the SMMEs as they are viewed as the panacea for unemployment, poverty, inequality and uneven income distribution. Small businesses incubation programmes have been elevated as potentially effective avenues to provide high impact SME support through BIs.

2.18 CHAPTER SUMMARY

The literature review has highlighted the fact that SMEs are of paramount importance for the economic and social development of any nation. However, there are numerous definitions of small business, governed by geographical location. Most definitions are socially, politically, and economically charged due to the important role small businesses play in both emerging economies and first world countries. SMEs face considerable challenges for survival, and governments all over the world have enunciated policies to assist them to survive, grow and thrive. This chapter defined small and medium-sized enterprises and business incubators. The idea of BIs was examined, as well as the structure of the sector in the United States, incubator demographics, services, and challenges. The origins of BIs, their many varieties, and their value offer were also investigated. In accordance with the study subject and aims, Chapter 3 will outline the research design adopted to answer the research questions.

3 CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The chapter starts by giving a detailed discussion of the research design followed in the study. It offers an overview of some of the reasons why quantitative research design was used for the study. The sections that follow discuss other aspects of the research methodology, including target population, sampling method, the data collection method and the measurement instrument. The chapter gives a brief overview of the data analysis process utilised in the study. Furthermore, the chapter explains how issues of reliability and validity were fulfilled in the study. In addition, it offers an explanation on how the four criteria of credibility, dependability, transferability and conformability were addressed. A discussion of the ethical considerations for the research process concludes this chapter. This relates to the procedures that were followed in acquiring consent, protecting participants' confidentiality and privacy as well as obtaining required institutional permission for the research study to begin and approvals for data collection.

The research design was chosen to answer the following research questions: 1) What are the attributes of SMMEs under InvoTech incubation programme for the period between 2018 to 2021. 2) What are the major performance drivers of SMMEs under the InvoTech incubation programme. The research used a quantitative approach because it made it easier and quicker to reach out to respondents (Dawson 2007). Desai and Potter (2006) posited that the researcher can develop a clear focus on specific hypothesis and questions. Miles (2013) noted that a quantitative methodology can be utilised in exploratory studies, when dealing with complex studies than require a yes or no hypothesis. The quantitative method was therefore suitable for the purpose of this study because the research questions reflected on the factors effect of the incubation process in enhancing SMME survival and productivity.

3.2 RESEARCH DESIGN

A research design is the comprehensive method used to study research issues. It outlines a logical plan on how to tackle identified objectives of a study (Creswell and Poth 2016). In addition, Creswell and Poth (2016) contend that study design is a method for collecting, examining, understanding, and presenting data in research projects. According to Creswell and Creswell (2017), there are three main methods that can be utilised by the researcher, namely a quantitative research method, a qualitative research method and mixed methods research. This study used a quantitative methodology because it allowed the researcher to successfully address the study's primary goal. The primary objective was to establish the impact of incubation on the sales performance of SMEs under the InvoTech incubation programme. The other accompanying objective aimed at establishing the attributes of SMEs incubated under the InvoTech incubation programme (Etikan and Bala 2017). Bell, Bryman and Harley (2022) state that a researcher may build a focus on certain hypotheses and questions. When conducting exploratory research that needs a yes-or-no hypothesis, a quantitative technique might be used, according to Nardi (2018). Since the research problem evaluated the BI programme at InvoTech and its impact on entrepreneurs, the quantitative approach was deemed appropriate for the objective of this study. A thorough analysis of comparable papers revealed that academics have used quantitative research (Lose 2019). Opondo (2017); Schutte and Barbeau (2022) have also examined the function of incubators in increasing the rate of survival of incubated SMMEs using a quantitative methodology.

3.3 TARGET POPULATION

Total analysis units that the researcher plans to employ to draw certain conclusions were defined by Welman, Kruger and Mitchell (2005) as a population. In this study, the target population is SMMEs that have graduated from a Business Incubator and trainers responsible for training those SMMEs. As noted above, Innovation Technology Business Incubator (InvoTech) is located in Durban, supported by DUT and funded by SEDA. Since its emergence in 2011 it has trained and graduated several businesses. InvoTech was approached to provide information regarding entrepreneurs who have successfully

graduated from their one-year training programme. A sample was drawn from the list of graduated entrepreneurs and the trainers who assisted them. The SMMEs that were incubated in the InvoTech BI Included manufacturing, services, agriculture and construction. The sectors under investigation were as per categories of SMMEs under InvoTech BI and no further information on sub-sectors was provided.

The manufacturing sector is part of the goods-producing industries super sector group. The Manufacturing sector comprises establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. The agriculture sector consists of both animal and crop husbandry business. Peri-urban and rural farmers were included in this sector. On the other hand, the construction sector which comprises six main industry sectors; building completion services. building installation services and building structure services was also investigated. The study also investigated the services sector also known as the tertiary sector, is the third tier in the three-sector economy. Instead of product production, this sector produces services maintenance and repairs, training, or consulting. Examples of service sector jobs include housekeeping, tours, nursing, and teaching. The service sector makes up 65% of GDP, 63% of employment and 74% of capital formation in South Africa and has been the main source of growth for the economy in the 1990s.

3.4 SAMPLING METHOD

A sample is a small fraction selected from the target population that is investigated. A pre-defined method is used to select the sample which must ensure that it is a true representative of the target population. This therefore allows the outcomes of the study to be generalised to the whole population. A non-probability purposive sampling method was used in this study. This is where the researcher purposely chooses participants that are suitable and relevant to a study and asks them to participate in the study (Alase 2017). The choice of who participates in the study was governed by the fact that those selected to participate in the study were able to give the necessary information to answer the research questions (Rice *et al.* 2017). This therefore was the target population of this study. Following (Israel 1992), the sample size was calculated using Equation (3.4) below:

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}} \tag{3.4}$$

Where, n is the sample size, N the population size and n_o is defined by $Z^2pq/_{e^2}$, here Z^2 is the desired confidence interval, p is the estimated proportion of an attribute that is present in the population, and q is $1 - p$ and e is the margin of error (Israel 1992) It must be noted that the sample size was calculated based on the proportion and not based on the mean value because the calculation of the sample size for the proportion generally will produce a more conservative sample size than will be calculated by the sample size of the mean (Israel 1992). Israel (1992) further noted that the demerit of using the mean is the necessity of a good estimate of the population variance which is usually not available. In addition, the sample size can vary widely from one attribute to another because each is likely to have a different variance. Because of these problems, the sample size for the proportion was used the preferred choice for this research. Given that the population in the InvoTech registry 140; therefore, the sample size for the study was 80.

Despite purposive sampling presenting the serious drawback of lack of wide generalisability, it offers a huge advantage in that the intentional selection of specific participants provides rich data that supplies the best knowledge and deepest insight on a particular topic (Lune and Berg 2017). The aim is to identify and choose participants who have first-hand knowledge and experience of the topic under investigation, and who can adequately answer the research questions of interest. Hence, a purposive sampling method was selected as the appropriate approach in this study, since the researcher required participants who had the required information to give a detailed comprehension of the topic of interest. The variables in the data were elicited from the characteristics of the population and the factors that affect the success of incubation. This can be supported by findings from Lose (2021) who found out that the same variables as listed in the table had an impact on the success of BI.

Table 3: Sample Distribution by Categorial Variables

Category	Percentage
Male	56%
Female	44%
Total	**100%**
Urban-based	63%
Township-based	30%
Rural-based	7%
Total	**100%**
Pty Registration	86.2%
Other Registration Type	13.8%
Total	**100%**
Services	40.0%
Manufacturing	11.1%
Agriculture	12.5%
Construction	18.8%
Other sectors	17.5%
Total	**100%**

3.5 MEASURING INSTRUMENT

Panel data from InvoTech incubated firms that had graduated within a period was used for in this study. Panel data is a type of data that professionals collect by observing particular variables over a period of time at a regular frequency. This data can help experts establish trends, make correlations and guide further analysis of the variables included in the panel data. Panel data that was utilised comprised among others annual sales information and total employment over a period of four years. This data may allow you to establish a connection between age and average income or contribute to the analysis of a related subject, such as age and employment rates. By combining information from the same test subjects over a long period of time, the researcher can use panel data to correlate two or more variables with limited amounts of statistical uncertainty.

InvoTech is responsible for the running of the national government-funded incubation programmes in eThekwini Metro. The data covered a total of 80 SMEs who have been

through the programme from 2018 up to 2021. The majority of the participants were based in eThekwini (63%), with 30% being from townships and the rest from rural areas. The data had the following main attributes: quarterly sales revenue, owner's year of birth, owner's gender, geographic zone, total number of employees, firm registration year and registration type, incubation duration, meeting type and sector.

3.6 Data Analysis Technique

Panel data from InvoTech incubated firms that had graduated within a period were analysed. To ease measurement comparisons and data translation, the raw data was encoded to extract meaning from the important characteristics (Blair 2015). This coding makes it possible to use analytical applications. The panel data was analysed using the R Software for Statistical Computing, version 4.1.2 statistical package. The descriptive, statistical, and generalised least squares regression methods were then employed to analyse and report the outcomes of the study. Conner (2017) observed that descriptive statistics give the researcher digestible summaries and insights on a certain set of data. Descriptive statistics alone are insufficient to draw an educated and valid conclusion about a research project; hence, other techniques of analysis, such as regression analysis, must be used. Using longitudinal data from the chosen sample, regression analysis was utilised to identify the most influential determinants of incubated enterprises' success (Ali and Bhaskar 2016; Gibbs, Shafer and Miles 2017). This method also permits drawing inferences and generalisations from study data (Simpson 2015). Bradley and Brand (2016) noted that exploratory investigation may be used to either accept or reject a study hypothesis.

3.7 VALIDITY AND RELIABILITY

The extent to which a study evaluates what it claims to investigate is called validity (Marczyk, DeMatteo and Festinger 2010); that is, to the degree to which a process leads to the correct observation of a phenomenon (Creswell and Creswell 2017). Validity indicates the extent to which an instrument measures what it claims to measure and is the most important criterion to check the effectiveness of an instrument (Kothari 2017). Researchers can distinguish between two types of validity, that is, external and internal

validity which are important when evaluating the validity of a research. A validity measurement provides insight into diverse phenomena that is to be investigated (Carmines and Zeller 1979). Due consideration was done in coming up with reliable and valid data collection and analytical tools to gather information.

It was noted by Creswell and Poth (2016) that the repeatability and consistency of a research instrument is of paramount importance. The rationale behind reliability is that any significant findings must not be once off. The same study or research carried out under the same conditions must yield the same results; thus, repeatability is vital (Kothari 2017). This therefore confirms earlier findings and ensures that the results are accepted by the wider scientific community (Trochim, 2005). The strength of the findings and validity of a scientific experiment are determined and enhanced by reliability. The researcher made sure that all variables were adequately measured and pre-tested (Neuman and Robson 2014) with the general population for validity and the results were not part of the actual study. The reliability coefficient of the data collection instrument was checked using the Cronbach alpha test. It is extensively used in research studies to assess reliability (Abed 2020). Cronbach alpha is a measure of the internal reliability of consistency among various items, ratings or measurements (Bujang, Omar and Baharum 2018). The values range from 0-1, indicating that variables with higher numbers measured the same aspects while those with lower values mean that they did not gauge the same dimensions (Bujang, Omar and Baharum 2018). Variables with a statistical significance value of 0.05 or above were considered to be internally reliable for this study (Rahimi 2017).

3.7.1 Trustworthiness

Levy (2010) argues that credibility in qualitative research may be attained via the use of honesty and reliability. The researcher utilised an inquiry audit to demonstrate reliability, which requires an independent party to analyse and examine the research method and data analysis in order to certify or affirm that the results are comparable and can be replicated.

3.7.2 Credibility

This is the capacity to comprehend the facts of the subject under study. Castleberry and Nolen (2018) claim that credibility may be achieved by allowing participants to verify the results based on their own experiences. Creswell and Creswell (2017) note that respondents should be provided with the final report or particular description or topics so that they may contribute context and alternate interpretation. The researcher will share the final copy with all the respondents.

3.7.3 Transferability

This may be defined as the degree to which the results are transferable to other contexts. Kyngäs, Kääriäinen and Elo (2020) define transferability as a procedure performed by readers of any study. In addition, they emphasise that the readers identify unusual situations and relate them to a familiar place or scenario.

3.7.4 Dependability

This occurs when the results can be replicated in the same context with the same participants. Kyngäs, Kääriäinen and Elo (2020) see this as a process wherein equivalent results would have been reached if the same methodologies and individuals had been utilised. In addition, they say that this may be accomplished by publishing a detailed description of each incident, allowing future researchers to obtain the same findings. This study will be published to allow future researchers to attain knowledge.

3.7.5 Conformability

This may be interpreted as evidence that the data, and not the researcher, is impartial. Singh *et al.* (2021) see this as a technique of preserving objectivity in the research. This process can be executed through allowing [an] audit trial. This is a process whereby observers hint step by step the decisions made and procedures". As a result, the investigator will open the report to scrutiny.

3.8 ETHICAL CONSIDERATIONS

Participants' safety was taken into consideration throughout the research. Leedy and Ormrod (2005) see ethics as a component of the internal review boards and expert codes of ethics that give researchers direction. The researcher obtained authorisation to conduct the study from DUT and InvoTech. The investigator also obtained the respondents' agreement to participate in the study, and data was gathered only from the individuals who gave consent.

According to Israel and Hay (2006), anonymity "safeguards participants, fosters trust, and guards against wrongdoing and impropriety that might reflect on the organisation and its institutions." Anonymity was accomplished by encoding the names of respondents recognised by the investigator. Confidentiality is crucial because it protects individuals from preconceptions and social prejudice. The participants were told that the details would be kept secret. Williams and Pigeot (2017) stress that a researcher must safeguard data and adhere to applicable data protection rules. When interviewing candidates, the identities of the individuals were masked using code names. Leedy and Ormrod (2005) note that study data must be presented such that others have no idea how an individual participant responded.

The researcher ensured that no volunteer was harmed physically or psychologically. "Participants are no longer at danger of experiencing unusual stress, shame, or low self-esteem" (Garatsa and Dlamini 2021). Such concerns were removed by ensuring that none of the questions given related to personal experiences.

The researcher informed the participants of the nature of the study as well as any associated hazards. According to Opondo (2017), participants must be informed of what they are agreeing to and have the right to decide whether they choose to participate; researchers should respect this. This will guarantee that all types of engagement are entirely optional. If participants agree to take part in a survey, Leedy and Ormrod (2005) state that they have the freedom to withdraw at any moment.

3.8.1 Anonymity and Confidentiality

According to Bell, Bryman and Harley (2022), they posit that respondents are protected by anonymity and this also creates trust and protects the institution. This was ensured with the aid of giving code names to participants which were known by the researcher. The ethical obligation of confidentiality refers to the responsibility of a researcher or institution to safeguard entrusted information. It includes the responsibility to protect data from unauthorised access, use, disclosure, modification loss or theft. Confidentiality is essential as it protects the participants from stereotyping and social discrimination. According to Castleberry and Nolen (2018) preserving confidentiality throughout the investigation process is crucial to the researcher-respondent connection and the integrity of the research project. The respondents were assured of the information's confidentiality. A researcher needs to protect information and conform to relevant data protection laws. True identification will be concealed using code names when conducting interviews. Clark-Kazak (2017) advises that study data must be presented such that others have no idea how a particular participant responded.

Security measures were implemented to protect data. These measures refer to administrative, physical and technical steps employed to protect information. The researcher fulfilled confidentiality obligations in part by implementing and maintaining security measures. Physical measures such as locked filing cabinets and private location of and access to computers with research information, as well as administrative measures including restrictions on who had access to participants' personal information were implemented. Use of technical measures such as computer passwords, firewalls, anti-virus software, and encryption to protect information from unauthorised access, loss or modification were also implemented.

3.8.2 Protection from Harm

The investigator ensured that no volunteer was harmed physically or psychologically. "Participants no longer face a risk of being subject to uncommon stress, embarrassment and self-esteem" (Bell, Bryman and Harley 2022). Such issues were avoided by ensuring that none of the questions presented were related to personal experiences.

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3.8.3 Informed Consent

The investigator informed respondents about the nature of the research and any associated hazards. Clark-Kazak (2017) avers that participants must be informed of what they are agreeing to and have the right to decide whether or not they choose to participate, and the investigator must respect this. This was accomplished to guarantee that every involvement in the study was voluntary. Kyngäs, Kääriäinen and Elo (2020) note that "if people agree to participate they have the right to withdraw anytime from the study". The issue of consent is closely linked to the right to privacy. Privacy can be defined as a person's right to be free from invasion or interference from others. In today's free and democratic society this is a fundamental right. Research respects the privacy interest of participants with regard to their personal information, articulated feelings and opinions, and personal interactions with others, as well as the spaces they occupy. In order to fulfil this obligation and to protect participants' right to control their personal information, the researcher sought participants' consent to participate in the study. This offered participants an opportunity to have control over personal data by consenting to or refusing consent for the collection, use and disclosure of data.

3.9   DATA VISUALISATION

This aspect explored the attributes of SMMEs which addressed objective number one which was to explore the attributes of SMMEs under InvoTech incubation programme. As part of the analysis, data was explored and visualised in order to identify the distribution thereof over the study period. The visualisations were done in R Software for Statistical Computing version 4.1.2, using the ggplot library (R Development Core Team 2019). Boxplot visualisations, as argued by Williamson, Parker and Kendrick (1989), are useful in identifying what may be hidden in the dataset and also allow a comparison across various variables. The boxplot technique was also adopted owing to its ability to split the dataset into quartiles and indicate the median, lower and upper quartiles, which provides intuitive insights regarding the distribution of the data. This technique is useful too in identifying outliers and the variability of the dataset. Following Curran-Everett (2018), all the quantitative variables were first log transformed to address the problem of outliers and thus ensure data stationarity.

3.10 ECONOMETRIC MODELLING

An economic model is a set of assumptions that describes the behaviour of an economy, or more generally, a phenomenon. An econometric model consists of a set of equations describing the behaviour. These equations are derived from the economic model and have two parts observed variables and disturbances. The equation below shows the main econometric model which was adopted to answer the study's primary research question. As per Equation (1), β_0 is the intercept, whilst $\beta\_1…\beta\_8$ are coefficients for the SME attributes and $\varepsilon\_$ is the error term. The model was fitted using R Software for Statistical computing version 4.1.2 (R Development Core Team 2021).

$$
\begin{aligned}
LN(Sales) = {} & \beta_0 + \beta_1 SME_{Age} + \beta_2 Owner\_Age + \beta_3 Reg + \beta_4 Sector + \beta_5 Loc \\
& + \beta_6 Gen + \beta_7 LN(Inc_{time}) + \beta_8 LN(Tot_{Emp}) + \beta_9 Meet\_type + \varepsilon_{it}
\end{aligned}
\tag{1}
$$

To effectively address the issue of heteroscedasticity and the problem of correlated errors the Generalised Least Squares (GLS) model was adopted to estimate the β-coefficients. Previous studies utilising this technique Perugachi-Diaz and Knapik (2017); Siba *et al.* (2020) assert that it ensures that the model outputs standard errors are heteroskedasticity consistent and produces results from which one can make reliable statistical inferences. The GLS technique is an enhancement of the traditional Ordinary Least Squares approach, which fails to produce best linear unbiased (BLUE) for the β-coefficients when dealing with panel datasets, which was the case in this study. As such, to produce efficient estimators, the GLS estimator transformed the linear regression model. In this case, the GLS model obtained β-coefficients with a transformed version of the OLS, as per equation (2).

$$
\beta_{GLS} = (X^T \Sigma^{-1} X)^{-1} X^T \Sigma^{-1} y
\tag{2}
$$

Here $\sum$ is a positive definite covariant matrix containing (non-) constant variances on the diagonal, with one or more covariances not being equal to zero on the off diagonals. The

nlme package in R, was used to fit Equation (1) in R software. Utilising this model, the second study objective which focused on identifying the major performance drivers of SMMEs under the InvoTech incubation programme was addressed. The results of the analysis are discussed in the next chapter.

3.11 CHAPTER SUMMARY

It can be ascertained from the above discussion that the researcher evaluated the requirements of the research, and the most appropriate research technique was selected. The research was guided by previous studies when it came to the size and selection of the units of study. A quantitative research methodology was used to collect data from the research population. The data collection tool was developed in line with the objective of establishing the effect of incubation on the sales performance of SMEs under the InvoTech incubation programme and establishing the attributes of SMEs incubated under the InvoTech incubation programme. Cronbach alpha was used to test the validity of the questionnaire. The tools to analyse data and the presentation techniques were selected in line with the objectives and aims of the study. The ethical considerations and limitations of the research were also discussed.

4 CHAPTER 4: PRESENTATION AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

This chapter presents an analysis of the primary data that was gathered with aim of investigating the impact of incubation on sales performance and establishing the attributes of SMEs incubated under the under the InvoTech incubation programme. This chapter is divided into two sections, which are descriptive and regression analysis of the data. Panel data that covered a total 140 incubatees but 80 SMEs who had been through the programme between 2018 and 2021 was utilised for this study. These SMMEs had all the data that was needed to evaluate the effectiveness of InvoTech BI program. The previous chapter explained how the target population and the variables of inquiry were

chosen. The majority of the participants were based in eThekwini (63%), with 30% being from townships and the rest from rural areas.

4.2 DESCRIPTIVE STATISTICS

Many researchers have acknowledged that descriptive statistics are a vital part of the presentation and discussion of research findings (Turner and Houle 2019). The reporting of information from all the respondents is hardly realistic; thus, an overview of the traits of the sample data are utilised to effectively communicate this information is a simple and understandable way (Turner and Houle 2019). Vetter (2017) defined descriptive statistics as a particular methodology essentially used to summarise, calculate and describe accumulated data in an efficient, meaningful and rational manner. Conner (2017) further noted that descriptive statistics provide the researcher with brief synopsis and observations about a particular set of information that are easy to digest. It provides a pictorial presentation of information through diagrams and graphs. The analysis of the data came up with a lot of variable but the study utilised variables that had a higher level of significance. Variables like business age and time of incubation were not considered because the inquiry started at the time of registration into the incubator and all the SMMEs spend and equal amount of time in the BI.

Table 4: Sample Distribution by Categorial Variables

Category	Percentage
Male	56%
Female	44%
Urban-based	63%
Township-based	30%
Rural-based	7%
Pty Registration	86.2%
Other Registration Type	13.8%
Services	40.0%
Manufacturing	11.1%

Agriculture	12.5%
Construction	18.8%
Other sectors	17.5%

The analysis above shows that the incubator has more male beneficiaries (at 56%) than females (at 44%). This shows that men are more eager and enthusiastic when it comes to the looking for help from the incubator. Most of the entrepreneurs (63%) who were under the incubator programme were from urban areas, followed by townships (30%) and finally rural areas at 7%. This may be due to the fact that the incubator is located in town. The fact that the incubator is attached to institutions of higher learning may be the contributing factor for having the majority of the SMMEs being located in town, because the majority of university graduates settle in town and pursue business ventures in urban areas.

Business registration is one of the requirements for entry into the incubation programme at InvoTech, thus, it is not unexpected that all of the examined enterprises are legal entities. This is an excellent starting point for company growth help, showing that the owners understood business regulations and adherence procedures, which they may already satisfy in part. The majority (86.2%) of the businesses are privately owned which is line with the findings by Garatsa and Dlamini (2021) who discovered that the majority (97.06%) of businesses that benefitted from incubator programmes were privately owned. The small businesses studied here operate in a variety of economic sectors which means that InvoTech BI is not a sector specific incubator. 40% of the businesses operate in the services industry, followed by construction (18.8%), agriculture (12.5%), manufacturing (11.1%) and other sectors (17.5%).

4.2.1 Data Analysis

Table 4.2 shows descriptive statistics covering quantitative variables from the SMEs dataset. In line with previous studies (Gumbo and Siziba 2016), the variables were first log transformed to minimise data skewness and ensure data stationarity.

Table 5: Descriptive Statistics for SMEs' Continuous Variables

	Mean	Standard Deviation
Owner_Age	4.8	0.97
Sales	8.44	7.09
Tot_emp	1.13	1.02
Incubation_time	0.67	0.42
SME_Age	1.33	0.88

The analysis above indicates that for SMEs under the InvoTech incubation programme, owners are sales revenue and employment was highly volatile as marked by standard deviation. Standard deviation is a statistic that measures the dispersion of a dataset relative to its mean and is calculated as the square root of the variance (McGrath *et al.* 2020). The standard deviation is calculated as the square root of variance by determining each data point's deviation relative to the mean (Shi *et al.* 2020). The study found out that sales revenue and employment performance was further away from the mean.

4.2.2 Independent Variables

The dependent variable is the variable that is being measured or tested in an experiment. The dependent variable is called 'dependent' because it is thought to depend, in some way, on the variations of the independent variable. Independent variables were made up of both categorical and quantitative factors. SMEs' age (SME_Age) was coded as the difference between the respective four years of incubation period (2018 to 2021) and year of registration. Owner's age (Owner_Age) was coded as the difference between the respective four years of incubation period (2018 to 2021) and year of birth. Owner's gender (Gen) was proxied by 1 for female and 0 for male SME owners. Total number of employees (Tot_emp) was the total number of workers adjusted for those added or lost during the incubation period. Type of registration (Reg) was defined as 1 for limited liability (Pty Ltd) companies and 0 for other types of registration. One-hot encoding was used to convert SME location and sectors into an analysable format, with rural and other sectors serving as the anchor variables respectively. Type of meeting (Meet_type) was coded as 1 for virtual and 0 for in person meeting types.

4.2.3 Response variable

The success of a company may be assessed by assets, employment, or sales revenue. However, if the sector is comprised of a combination of capital-intensive and labour-intensive enterprises, performance evaluation based on assets and employment might provide skewed findings. This is due to the fact that employment discriminates against capital-intensive enterprises and assets discriminate against labour-intensive firms (Panda 2013, Zhou 2022). As such, following previous studies, quarterly sales revenue was used as the measure for firm performance. These studies noted that sales revenue is deemed an appropriate metric to measure the performance of incubated SMEs (Panda 2013). The findings of the study which were in line with the objectives of the study, that is, to explore the attributes of SMMEs under InvoTech incubation programme and to explore the major performance drivers of SMMEs under the InvoTech incubation programme. The following sections will therefore focus on the findings of the study as outlined below.

4.3 Characteristics of InvoTech incubated SMMEs

This section of the study seeks to address the first objective of the study which was to explore the attributes of SMMEs under InvoTech incubation programme. The following sections thus focuses on the major attributes of SMMEs that were under InvoTech BI.

4.3.1 Sales distribution over the incubation period
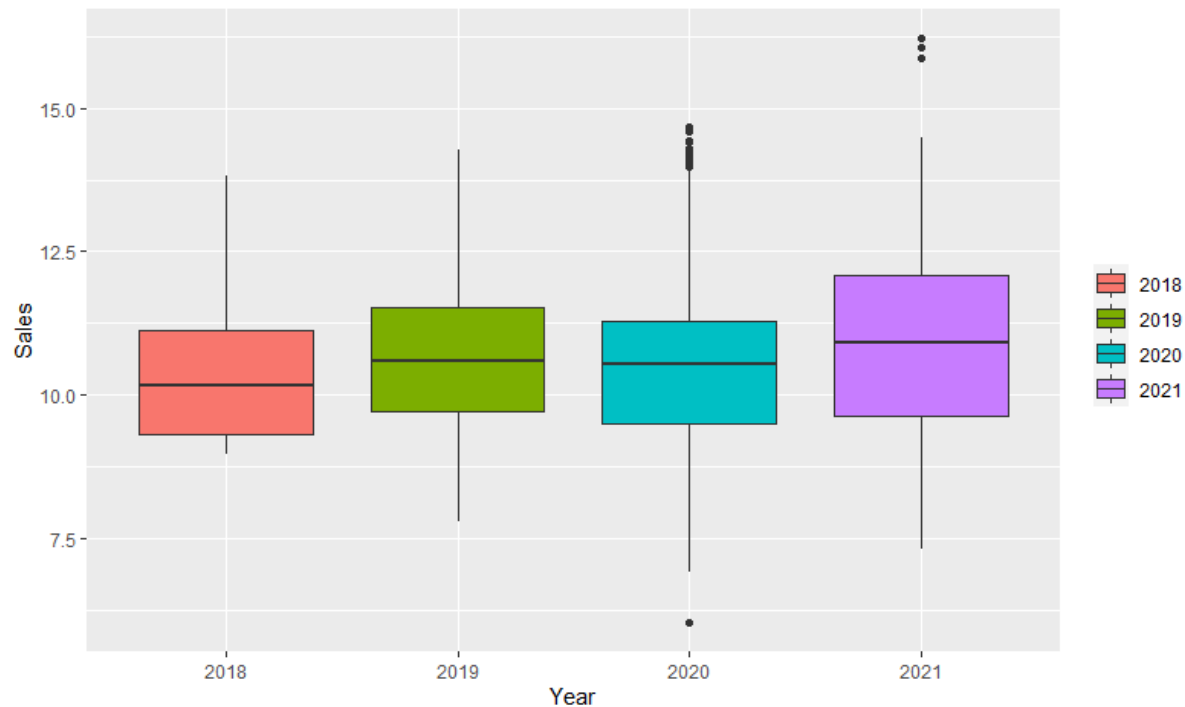
Figure 2: Sales distribution over the incubation period.

The analysis as per figure above shows that 2018 was compact compared to all the other years that were investigated. The year 2021 showed a marginal increase in terms of sales and there was a balance between good and bad performers. In the year 2020 a larger percentile of the forms performed below the median. In the year 2021 there was a marked improvement in overall sales and the there was a balance between the good and bad performers. However, the graph exhibits signs of volatility. The marked improvement can be attributed to the relevant interventions that were proffered by the government. The improvement can also be attributed to the help and knowledge the businesses accrued from the business incubator programme. The results are in line with the main objective of the study which meant to establish the impact of incubation on the sales performance of SMEs under the InvoTech incubation programme. The shows that even though the SMMEs were affected by factors like Covid 19 they had a sizable growth in Sales. This therefore can be attributed to BI.
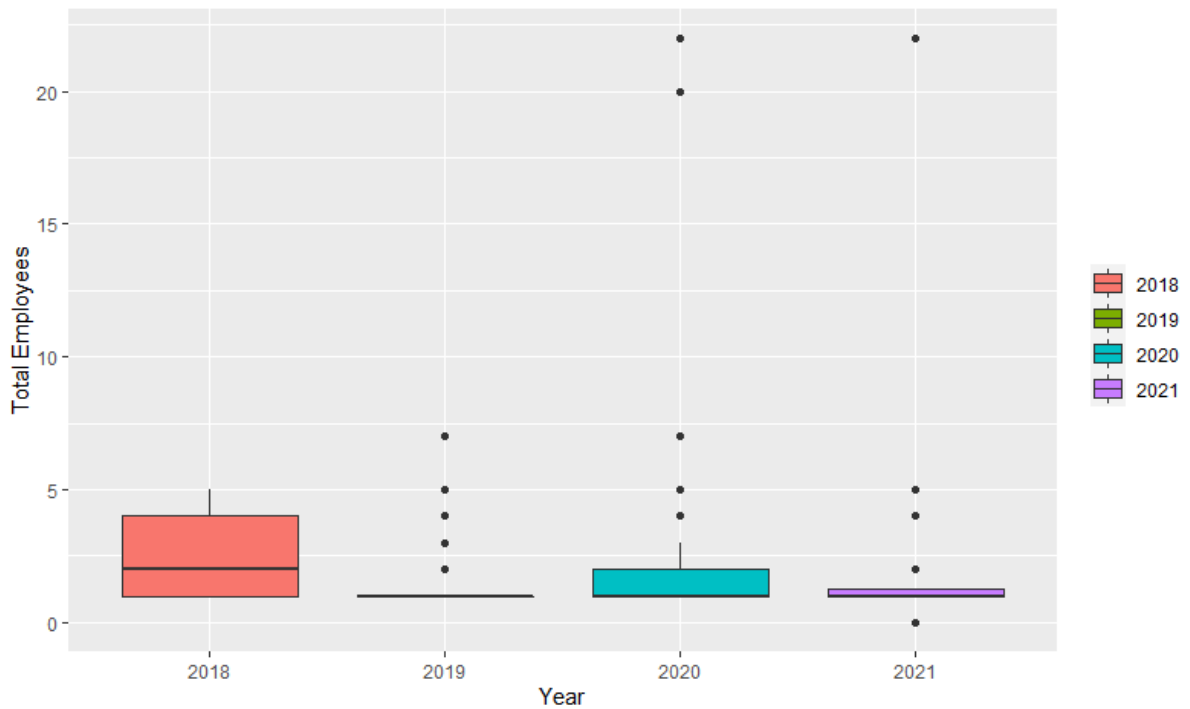
4.3.2 Employment distribution over the 4-year period

Figure 3: Employment distribution over the 4-year period

The analysis as per the figure above shows that in 2018 the SMMEs performed better than in all the other years under review, and the graph was highly positively skewed. This finding is in line with the study objective that set to establish the attributes of SMEs incubated under the InvoTech incubation programme. The positively skewed distribution is a distribution where the mean, median, and mode of the distribution are positive rather than negative or zero, i.e., data distribution occurs more on the one side of the scale with a long tail on the right side. It is also known as the right-skewed distribution, where the mean is generally to the right side of the data median. The year 2019 showed a huge decline in terms of employment numbers and this is contrary to the belief that small enterprises are top employment generators, contributing high rates of job creation in emerging economies. The year 2020 marked a significant increase in employment numbers and the distribution was positively skewed. The impact of Covid was felt in 2021, which was once again marked by a decrease in employment numbers, though the graph was compact and less volatile. On the other hand, the researcher can argue that the

marked decline in employment numbers was due to the fact that the manufacturing businesses, agrobusinesses and construction businesses benefitted from the diffusion of technology and thus adopted technology which resulted in retrenchments.

4.3.3 Sales performance by gender
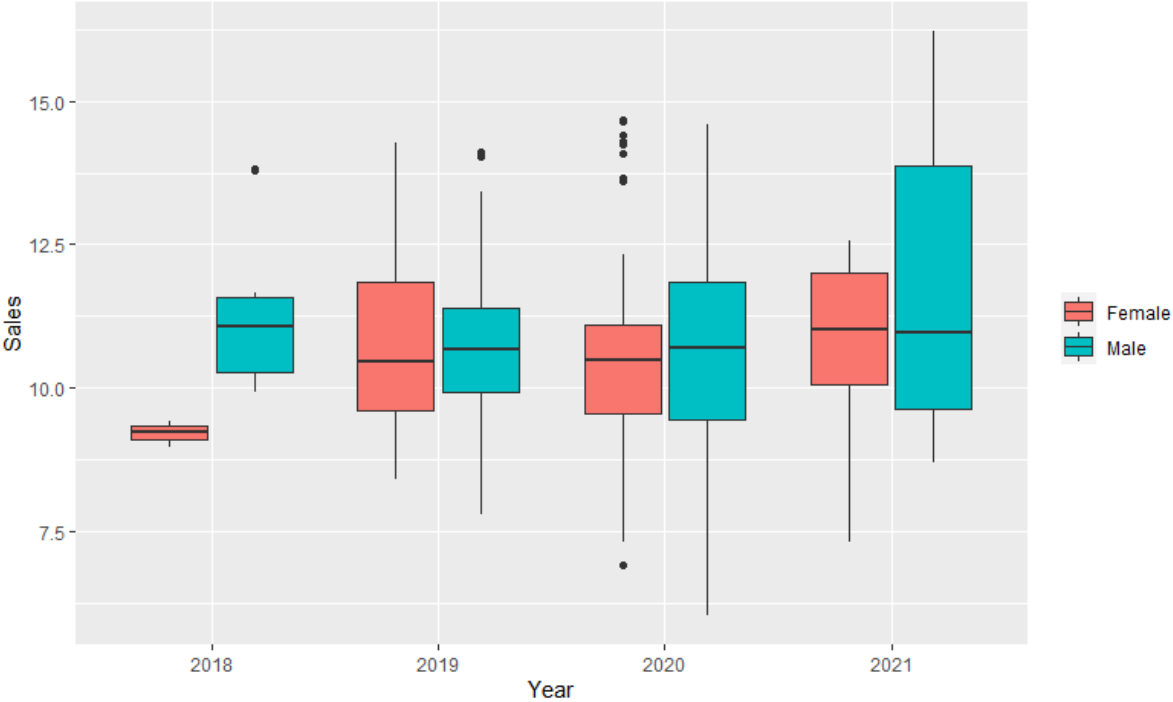
Figure 4: Sales performance by gender

Besides sales the study endeavoured to establish the attributes of SMEs incubated under the InvoTech incubation programme. The findings show that the gender had an effect on the performance of SMMEs that were under incubation. The analysis as per the figure above shows female-owned enterprises performed dismally in 2018 as compared to their male counterparts. Even though they performed better as compared to the female entrepreneurs in 2018, the majority of the male business owners did not fare very well because the larger percentile was below the median. 2019 saw a marked improvement from female-owned enterprises, but they were volatile. The male-owned incubated SMMEs' sales were stable. The female-owned enterprises experienced more low performers and the male owned enterprises were evenly balanced but volatile. There was a slight improvement in

the performance of the female-owned businesses in 2021 while the number of high performers increased in their male counterparts. The graph was positively skewed.

4.3.4 Sales performance by geographical zone
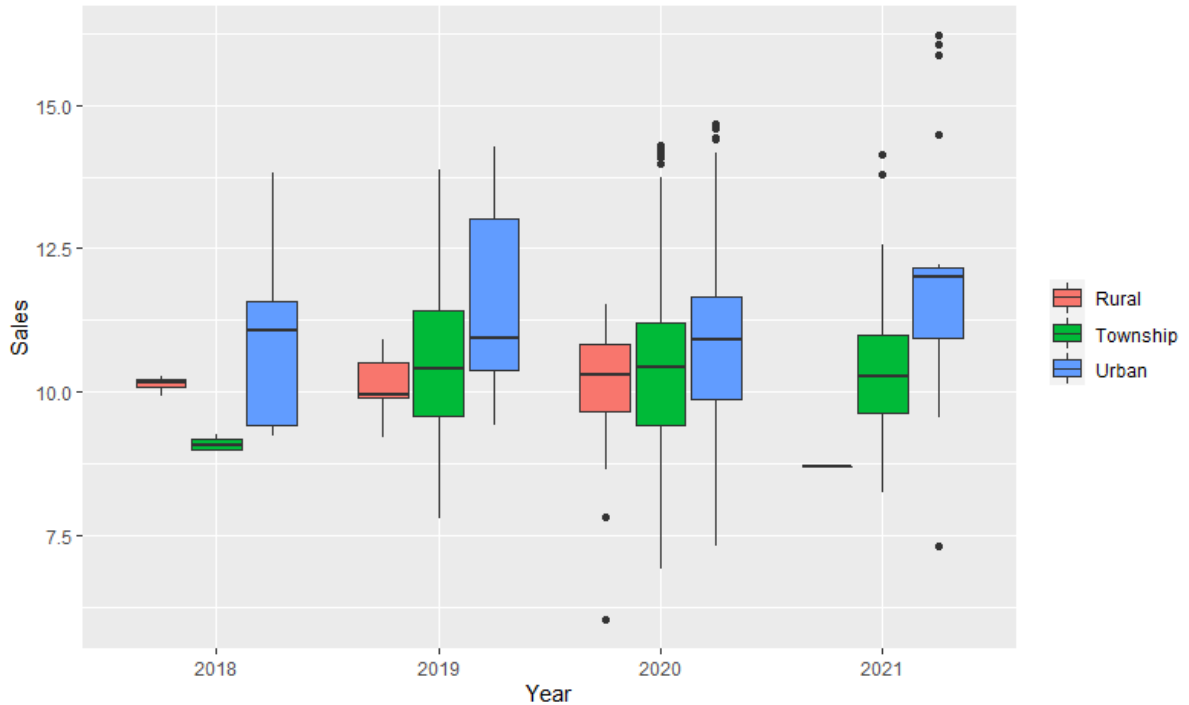
Figure 5: Sales performance by geographic zone

The analysis as per the figure above shows that the SMMEs in the rural areas performed better than their counterparts in township settings, but both were compact, meaning that they were less volatile. The urban-located SMMEs performed better than their counterparts but they were negatively skewed and highly volatile, as most of the SMMEs were below the median. In 2019 the township was balanced and volatile, while the percentile of well-performing businesses increased for both rural and urban businesses, and the two were also highly positively skewed. The year 2020 was more homogeneous in terms of performance for all incubated SMMEs, whatever their location. The ugly effect of Covid was felt in 2021, mainly for the rural enterprises. This may be due to the fact that the rural business did not receive the government Covid relief grants or perhaps they used the grants for daily upkeep at the expense of the business. The township businesses

remained balanced in 2021 because the government encouraged and supported township economies. Even though the rural enterprises showed a marked improvement in 2021, the graph was highly negatively skewed.

4.3.5 Sales performance by entrepreneur's age
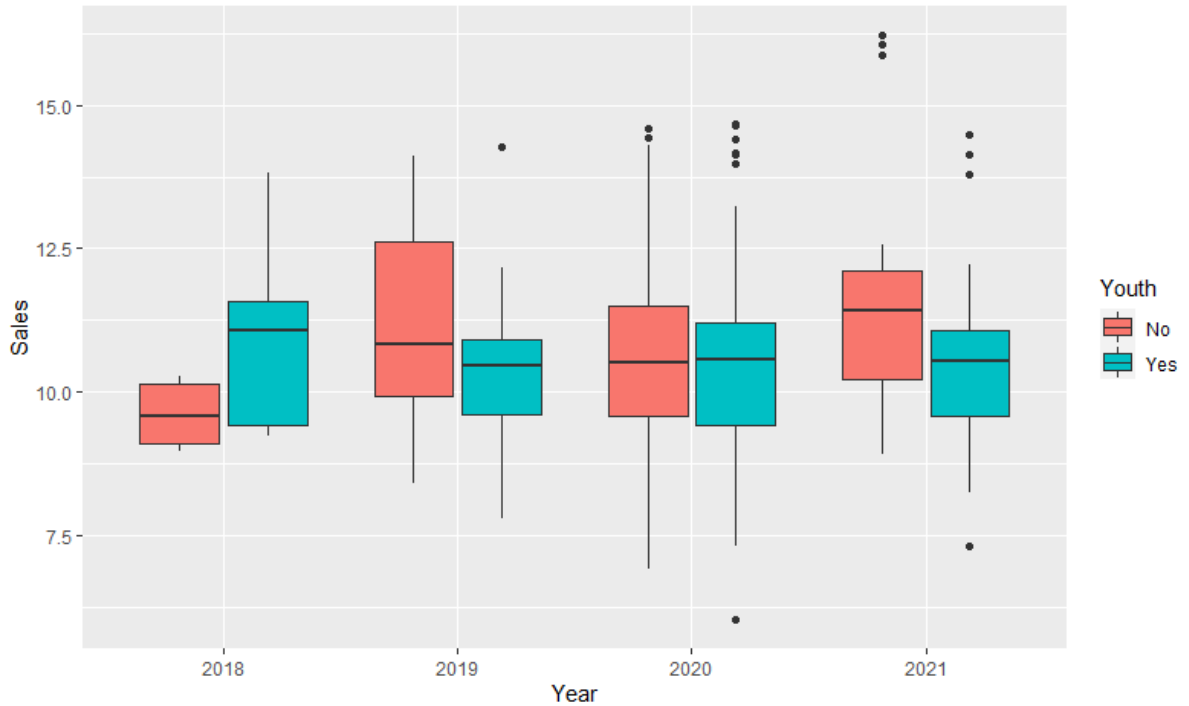
Figure 6: Sales performance by entrepreneur's age

The analysis as per the figure above shows that the graph for the youths was balanced, while the firms owned by non-youths were negatively skewed in 2018. The firms owned by the older entrepreneurs continued to out-perform the youth-owned enterprises during the period under review. The trend analysis also brings to the fore the fact that the youth-owned business was negatively skewed during the 4-year period under study. The year 2019 was positively skewed for the older entrepreneurs, while the period 2020 to 2021 was relatively balanced in terms of performance. The poor performance by the youth-owned businesses could have been due to the fact that the youth did not master the art of making more sales and their businesses fizzled out. The seniors leveraged more from BI as compared to the youth.

4.3.6 Sales performance by sector
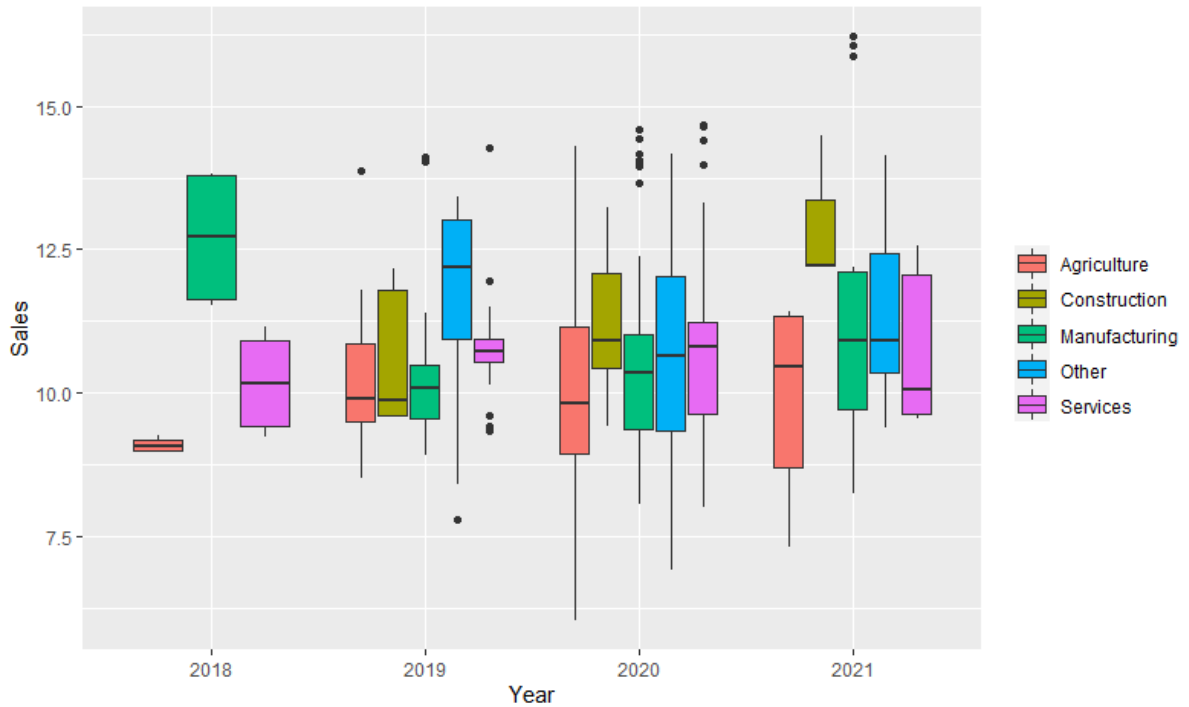
Figure 7: Sales performance by sector

To comprehend the aforementioned consolidated tendency, the incubates were analysed according to their five principal subsectors. The incubated agriculture firms performed poorly as compared to other sub-sectors. Manufacturing SMMEs outperformed all the other sectors and there was a balance between good and bad performers, but it must be noted that the sector was volatile. In 2019 construction and agriculture performed relatively well and they were positively skewed. Manufacturing performed poorly but was less volatile.

The trend in 2021 shows that manufacturing and services performed badly, because they felt the impact of the lockdown. However, the construction sub-sector is positively skewed because the sector was not affected by the lockdown. Others remained stable and less volatile. Construction continued with its upward trajectory in 2021 and was highly positively skewed, together with services and other, while manufacturing was stable and balanced in terms of performance. On the other hand, agriculture was highly negatively

skewed in 2021. This could have been due to wrong intervention measures applied to the sector.

Having established the distribution of the dataset over the four-year period using boxplots, the researcher then explored the linear relationship between sales performance by firm age based on owner's gender.

4.3.7 Age based on owner's gender
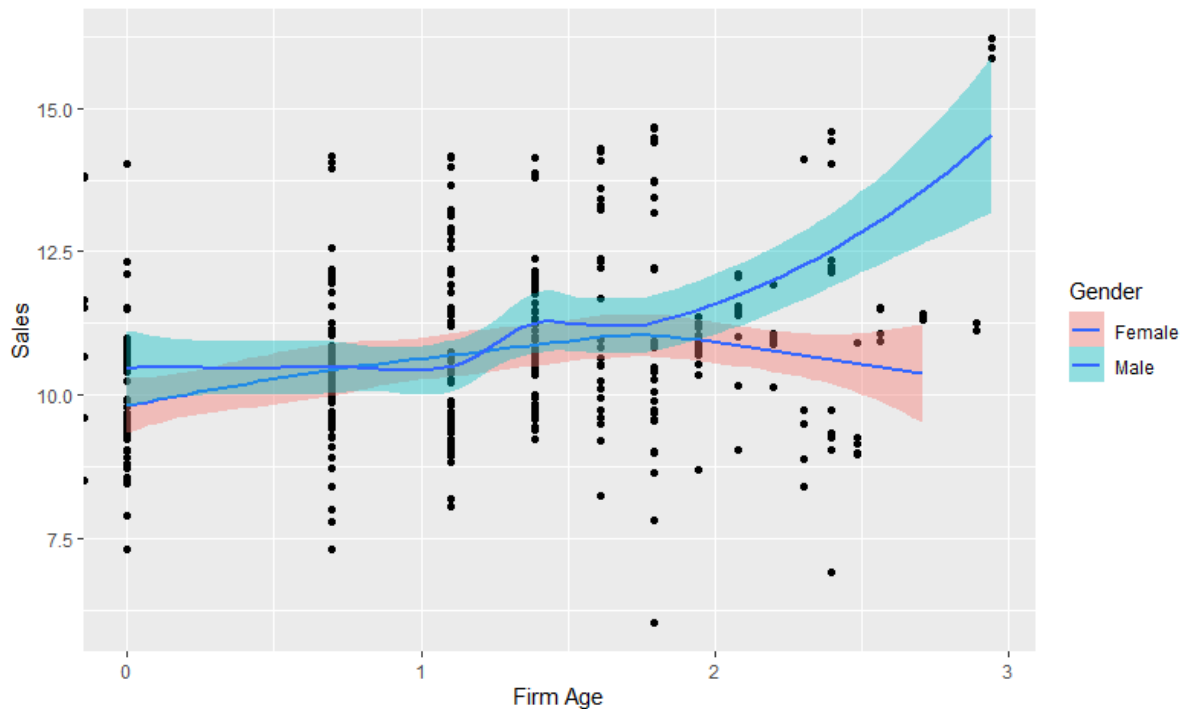
Figure 8: Sales performance by firm age based on owner's gender

The graph above shows that as firm age increased, the sales performance of males improved. This is a total opposite to the performance of their female counterparts, which shows that the performance of female-owned enterprises deteriorates with firm age. The performance of male business owners can be attributed to the fact that male-owned businesses become stable as they grow older while the females tend to be less involved in these businesses as they grow older. The male business owners leveraged on the experience and technical expertise they acquired from the incubator.

4.3.8 Sales performance by geographical zone
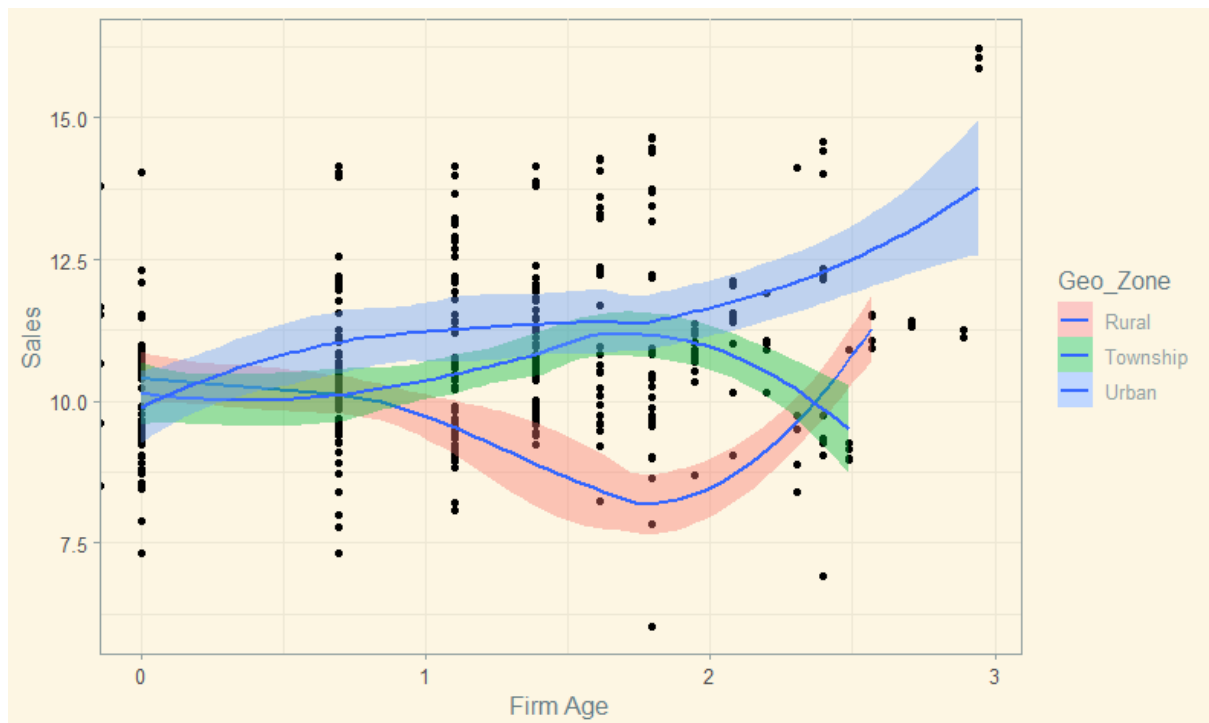
Figure 9: Sales performance by geographical zone

For rural based enterprises: In the early years of incubation, a firm's sales performance is poor before it bottoms out and starts to increase with company age, hence exhibiting a convex relationship between the two variables.

The opposite is true for township enterprises. In the early years of incubation, the sales performance is better than rural-based firms, then it bottoms out and gradually decreases over time, thus demonstrating a concave relationship between the two variables

Incubated urban enterprises exhibit a positive relationship between sales and company age and this strengthens over time. This is contrary to Zhou and Gumbo (2021a) who assed non-incubated firms and discovered that rural and urban-based firms showed an inverted U-shaped relationship between firm age and sales performance for SMMEs.

4.4 Regression Analysis

This section presents and discusses the findings that emanate from the second objective which was to identify the major performance drivers of SMMEs under the InvoTech incubation programme, that is the Generalised Least Squares (GLS) Output as outlined below:

The Generalised Least Squares (GLS) was harnessed owing to its ability to address heteroscedasticity and the problem of correlated errors when using panel data, which was the case in this study (Zhou 2022). The adopted GLS model is as per Equation (1) and following Curran-Everett (2018) all variables were log-transformed before running any further computations.

$$GLS_{model}: LN(Dam\ Level) = \beta_0 + \beta_1 LN(Precp) + \beta_2 LN(Temp) + \varepsilon_{it} \qquad (1)$$

Where β 00 is the model intercept, β_1 and β_2 are variables that affect performance and incubation and ε_{it} is the model error term. In essence, the GLS estimator transformed the traditional ordinary least squares (OLS) linear regression model, through which β-coefficients were obtained with a transformed version of the former, represented as per equation (2).

$$\beta_{GLS} = (X^T \Sigma^{-1} X)^{-1} X^T \Sigma^{-1} y \qquad (2)$$

Where Σ is a positive definite covariance matrix containing (non-) constant variances on the diagonal and one or more covariances not being equal to zero on the off diagonals. Based on Equation (1), it means that should the β_1 coefficient be significant and positive then the support for incubator effectiveness is confirmed.

B₀	10.203***(0.635)
Firm Age	-0.055*** (0.035)
Owner_Age	-0.024*** (0.010)
Reg	-0.578*(0.320)
Manufacturing	-0.469(0.310)
Services	-0.615**(0.312)
Construction	-0.334(0.474)
Agriculture	0.555(0.359)
Township	0.257(0.389)

Urban	1.067***(0.391)
Female	-0.409*(0.222)
Incubation_Time	-0.122(0.130)
Meet_type	0.015(0.177)
Total workers	0.041(0.034)
Obs.	382
RSE	1.477

For the GLS model: Heteroskedasticity-robust standard errors in parentheses, ***significant at 1% level of significance, ** significant at 5% level of significance, *significant at 10% level of significance

Firm age: in the early years there is a significant relationship between firm age and sales before it strengthens over time. Firm age negatively impacts on SMME performance @ 1% level of significance. Zhou and Gumbo (2021a) noted that firm age did not have a major effect on the sales performance of SMMEs under incubation.

Owners age- owners age has a negative effect on sales performance at 1% level of significance. This is supported by Radipere and Dhliwayo (2014) who also found out that a company's age is no longer a major determinant of its success after 20 years of establishment. This is contrary to the common belief that 'wisdom comes with age', where the entrepreneurs are expected to learn from their mistakes as well as the accrual of knowledge from the incubation process.

Pty registration has a negative effect on sale performance at 10% level of significance. Although business registration is one of the selection criteria to enrol into the BI, it however has no effect of the sales performance of the business entity (Rogerson 2017; Lose 2021).

Being in the **services sector** has a negative effect on the sales performance of SMMEs at 5% level of significance. However Darus, Yunus and Rahman (2017) do not support the above notion, because many SMEs lack a very good performance assessment when compared to big enterprises.

Urban location positively impacts on the sales performance of SMME at 1% level of significance, compared to those based in rural areas and townships. This can be supported by the findings of Gituma (2017) who evaluated the connection between location and sales success. It was found that most of participants believe that urban channels of distribution provide higher yields than their rural counterparts. Zhou and Gumbo (2021b) also noted that urban-based companies have developed the capabilities and expertise to boost sales performance.

Being Female: female-owned enterprises performed poorly as compared to their male counterparts at 10% level of significance. Zeb and Ihsan (2020) noted that even though female entrepreneurs are making the effort to start up some businesses and working to expand them in order to achieve independence, they underperform in contrast to males when it comes to sales performance. This may be due to the fact that men have better managerial expertise as compared to their female counterparts (Shava 2018).

Total employment had no effect on sales performance, which was completely unexpected, because of the adoption of technology by incubated firms. One of the objectives of technology hubs is the transfer and diffusion of technology into the incubated firms. This therefore shows that incubation had a positive effect on the firms. The sub-sectors that could have been seriously affected by mechanisation are agriculture, manufacturing and other, which could have translated into job losses through retrenchments. The non-productivity of the huge pool of staff can be attributed to poor management of the human resource (Teo *et al.* 2022).

4.5 CHAPTER SUMMARY

The section utilised raw data gathered from the survey of SMMEs in the database of the InvoTech BI, which is sponsored by DUT, the Mangosuthu University of Technology and SEDA. Before analysis, the data was first cleansed and coded. SPSS was used to analyse the data and reach various findings. Cronbach's alpha was run to test the reliability and validity of the constructs. Subsequent t-tests for equality of means were also run to examine the statistical significance of variables and to test the hypotheses. The chapter was divided into two discussion segments. The first part presented

descriptive statistics, which mainly focused on the first objective, while the second part of the discussion focused on the second objective, and the results were discussed in line with the existing literature. The final part ran a logistic regression test to investigate the business incubation programme and its effect on entrepreneurs in the InvoTech incubator. The data was pictorially presented and discussed.

5 CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This dissertation concludes with a summary of the study that examined the InvoTech company incubation programme and its impact on KZN entrepreneurs. The study conducted a thorough literature review in which SMEs and incubation as a concept were explored independently in order to acquire a clear grasp of both. In developing the research objective, the study was thus influenced by the review of the literature in terms of its theoretical foundations and quantitative research methodology. Therefore, this section begins with an evaluation of the objectives, followed by the conclusion and suggestions.

5.2 SYNTHESIS OF THE STUDY

Overall, this study determined that SMMEs are essential to the growth of the economies of emerging and industrialised countries. Governments from all over the world are relying on the SMME sector to help struggling economies, combat poverty, unemployment and underemployment, and unjust income distribution. SMEs naturally offer a less complicated route to accomplishing the aforementioned goals and serve as the breeding grounds for disruptive innovation. It was acknowledged that budding enterprises play an even bigger role in emerging nations like South Africa. Numerous issues hinder their development, expansion, and success. In this regard, the study found that numerous solutions have been put forward in an effort to aid SMME survival and growth. One suggestion made to prevent the decline of SMMEs was BIs.

The major purpose of business accelerators is to support the establishment and expansion of firms, with the idea that this would result in the generation of jobs and economic growth. Consequently, the purpose of the incubation process is to raise the standard of life for all local and neighbouring citizens. Technically, the business accelerator may be considered as a source of guidance for start-ups with the main purpose of 'hatching' new businesses. The same 'hatching' notion is thus used for the

incubation of small enterprises in order to expedite the creation of new initiatives and increase their probability of success.

5.2.1 The attributes of SMMEs under incubation programs

A cursory review of the literature demonstrates that every incubation must follow particular practices to aid entrepreneurs. BI picks recipients during pre-incubation. How a business incubator picks enterprise to incubate is crucial to its success, and this may vary based on its goal and aims. Incubation would begin with shared space, access to common infrastructure, and common service facilities. Monthly workshops boost incubatee networking. Constant monitoring and engagement between incubation managers and start-ups allow both to use network services to enhance the latter's networks. Post-incubation, incubatees are assumed to have all necessary information: well-specified new items, repeatable manufacturing, clearly defined target markets, suitable human resources, and early-stage finance signify graduation and departure.

5.2.2 The performance drivers of business incubation programs that affect SMMEs

Without rigorous and globally-acknowledged techniques and indicators for measuring business incubation results, it is very hard to develop a definitive impact assessment of a programme like InvoTech. The following performance indices are derived from a review of the literature on business incubation: revenues, finance, venture capital funds, innovation, alliances, transfer of technology, job creation, increased sales, revenue growth, patent applications filed, alliances, transfer of technology, employment creation, research and development productivity, and abilities. These are all crucial to the longevity, growth, and success of any business, organisation, or network. The study's findings indicate that InvoTech uses the same procedures and standardised measures to judge the performance of its incubatees. Variables like location, firm age, and gender of the entrepreneur have a very significant effect on sales performance.

5.3 Conclusions

Early-stage SMMEs get specialised assistance from business incubators. They are essential to the health of the SME sector in South Africa, since they target the fundamental reasons for early-stage company failure. The study has shown that BI incubation has a positive effect towards helping SMMEs to survive and blossom. Various factors, like gender and age of the entrepreneur, geographical location, the sector to which the SMME belongs and firm age have an effect on the success of the firm pre- and post-incubation. It was within this scope that this study endeavoured to investigate the InvoTech business incubation programme and its effect on entrepreneurs. The study has also brought to the fore the fact that the sales performance of the incubatees varied through the period under investigation. Despite the instability in performance, the most important thing that came out from the study is that the number of enterprises did not decrease significantly, affirming the fact that BIs play a crucial role in the survival of the SMMEs. The SMMEs were also affected by the Covid 19 outbreak, but they showed some resilience.

The establishment of a one-stop ecosystem connects universities, information banks, office parks, aspiring entrepreneurs, venture capital firms, advisors and entrepreneurial coaches, with a targeted community outreach and government collaboration with all interested parties is shown to have a significant impact on employment creation, the development of high-growth enterprises, and the incorporation of an export/globalisation strategic plan. Incorporating business plan contests to identify concepts that have the potential to become global corporations would help start-up enterprises to contribute to the growth of emerging economies.

5.4 Recommendations

➢ Modern business incubators must have a clear admissions and incubation process and observable progress and success indicators. Graduation requirements must be

similar for all incubators across the value chain. Post-graduation evaluation of operational progress may enhance survival success.

➢ Success metrics should use quantitative and qualitative approaches to evaluate business incubation factors such entrepreneur development, local economy benefits, and regional development indicators. They may be included into program design and project reporting, monitoring, and evaluation systems. Performance and impact methods should account for business incubation modalities and program design. Once the recommendations have been approved, they must be passed on to the Minister of Small Enterprise Development who will develop them into policy for all incubators in South Africa.

➢ The research also recommends that the Durban University of Technology who are the parent organisation for InvoTech must commission a study to gauge the effectiveness and quality of mentors within the BIs as a success factor of BI. The outcomes of such a study can be recommended to the MEC for small enterprise development for policy development.

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Appendices

ANNEXURE 1

LETTER OF INFORMATION

Title of the Research Study: Investigation of InvoTech business incubation program and its impact on entrepreneurs.

Principal Investigator/researcher: Nobahle Mkhwanazi, Masters

Co-Investigator/s/supervisor/s: Doctor Sylvia Kaye

Brief introduction and purpose of the study:

Outline of the Procedures: The participant, after having provided his/her consent, will be interviewed using open ended questions. The participant is free not to answer any question that he/she does not want to, for whatever reason. Questions will evolve around impact of InvoTech business incubation programs and it effectiveness on its clients after one-year completion of the program. It is estimated that the interview will not go beyond an hour.

Risks or Discomforts to the Participants: The researcher foresees no risks or discomforts to the participants as a result of taking part in the research.

Benefits: The research will enable me to publish journal articles in relation to the study and to obtain a degree. In turn, the participants will obtain access to a plan of action that will guide them in expressing their entrepreneurial journey to other upcoming or potential entrepreneurs. A copy of the study and articles will be given to the participants.

Reason/s why the participant may be withdrawn from the study: The participants may withdraw from the study at any time. There will be no adverse consequences for the participant should he/she choose to withdraw from the study.

Remuneration: There will be no monetary or other types of remuneration given to the participation for participating in the study.

Cost of the study: The costs towards the study will be borne by the researcher.

Confidentiality: In the study, the participants will be identified through pseudo names in order to keep their identity secret. The researcher will ensure that no information which has the potential to make it easy to identify the participants is included in the study.

Research-related injury: The researcher foresees no research-related injury or adverse reaction.

Persons to contact in the event of any problems or queries:

Please contact the researcher, Nobahle Mkhwanazi on 074 798 0139, my supervisor Dr Sylvia Kaye on 031 373 6860 or the institutional research ethics administrator on 031 373 2900. Complaints can be reported to the Dr Linda Z Linganiso Research & Postgraduate Support RIE on 031 373 2326 or researchdirector@dut.ac.za.

General: Participation is voluntary.

CONSENT LETTER

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Nobahle Mkhwanazi, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _____,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____   _____   _____   _____

Full Name of Participant   **Date**   **Time**   **Signature / Right Thumbprint**

I, Nobahle Mkhwanazi herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____   _____   _____

Full Name of Researcher   **Date**   **Signature**

_____   _____   _____

Full Name of Witness (If applicable)   **Date**   **Signature**

_____   _____   _____

Full Name of Legal Guardian (If applicable)   **Date**   **Signature**

The Durban University of Technology

41 M.L. Sultan Campus

Greyville

15 June 2020

Dear Ms. N. Mkhwanazi

Gatekeepers Letter – Invotech study

This letter serves to confirm your study of Invotech clients – study titled, an investigation on Invotech Business Incubation program and its effects on entrepreneurs.

We have studied the proposal and approve the commencement of the study on the understanding that we agree that you will provide us full sight of the findings of the study on completion.

We wish you well for the future.

Yours faithfully

William Goldstone
Chief Executive Officer
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