

**Owners' perceptions of factors that constrain the survival and growth of small, medium
and micro chemical manufacturing businesses in Kwa-Zulu Natal, South Africa**

BY

Njabulo Blessing Mdlalose

Submitted in partial fulfilment of the requirements for the degree of

MASTERS IN BUSINESS ADMINISTRATION

University of Kwa-Zulu Natal

Graduate School of Business and Leadership

Supervisor: Prof. T. Pelsner

June 2019

DECLARATION

I Njabulo Blessing Mdlalose declare that:

- The research reported in this thesis, except where otherwise indicated, is my original work.
- This thesis has not been submitted for any degree or examination at any other university.
- This thesis does not contain other persons' data, pictures, graphs or other information, unless specifically acknowledged as being sourced from other persons.
- This thesis does not contain other persons' writing, unless specifically acknowledged as being sourced from other researchers. Where other written sources have been quoted, then:
 - a) their words have been re-written but the general information attributed to them has been referenced;
 - b) where their exact words have been used, their writing has been placed inside quotation marks, and referenced.
 - c) Where I have reproduced a publication of which I am author, co-author or editor, I have indicated in detail which part of the publication was actually written by myself alone and have fully referenced such publications.
 - d) This thesis does not contain text, graphics or tables copied and pasted from the Internet, unless specifically acknowledged, and the source being detailed in the thesis and in the References sections.

Signed:



ACKNOWLEDGEMENTS

I wish to express my sincere appreciation and gratitude to the following individuals, without whose assistance, this study would not have been possible:

- Prof. T. Pelser
My supervisor who made sure that he constructively criticised and helped to correct where necessary at all times.
- Ms VX Ngubane
My boss, mentor, colleague, friend and my unofficial Co-Supervisor. For the support and words of encouragement throughout this journey. I couldn't have done it without you.
- Ms NP Duma
My friend. For the support and assistance throughout this journey. At times I wanted to quit, but you made sure I remain focused and encouraged to complete. I am forever indebted to you.
- My family
For always supporting me, I missed some very important family gatherings due to this degree. Thank you for always being there for me.
- Respondents/Participants to my study
Without your responses this exercise would not have been a success
- Everyone who has always supported me in any way throughout this journey. Thank you.

Abstract

The Small Medium-Sized Enterprises (SMME) sector in South Africa is viewed as critical in improving the current dire economic conditions the country is facing. This perception of an SMME sector that actively contributes to the economy of the country is not unique to South Africa, hence entrepreneurship support programmes have been adopted internationally as policy intervention towards economic development. This research study also points out that a healthy SMME sector, characterised by a growing and sustainable enterprises requires active and focused support from SMME-supporting agencies. The study objective was to establish factors that owners of chemical manufacturing SMMEs in KZN perceive as constraints towards the growth, survival and sustainability of their small businesses. It also recommends solutions on how SMME support agencies can address these constraints thereby empowering SMMEs to contribute towards economic growth, job creation and minimizing societal inequalities. The study used a mixed methods approach as a research methodology technique and used simple random sampling as a tool for the collection of quantitative data and purposive sampling for the collection of qualitative data. The factors that constrain chemical manufacturing SMMEs growth, survival and sustainability were categorised as those that relate to resource limitations (financial, human in particular skills shortages), market factors (those that relate to globalisation and access to markets) and regulatory and compliance factors. Furthermore one understands how South African SMMEs are also faced with insurmountable business challenges that prevent growth in business and growth in our economy. Therefore, the study investigated the factors implicated in the entrepreneurial debacle faced by SMMEs in South Africa.

List of figures

Number	Description	Page
3.1	Research Design	33
4.1	Geographical Location	45
4.2	Owners perceptions of constraints that cause their business not to survive, grow and be sustainable	53
4.3	Alignment of constraints to the services offered by support Agencies	54

List of Tables

Number	Description	Page
3.1	Distribution of questionnaires	34
4.1	Age Profile of Small Medium Micro Enterprises	43
4.2	Gender profile	43
4.3	Highest grade/Class passed	46
4.4	Type of work experience	47
4.5	Type of business	48
4.6	Size in number of staff/members	48
4.7	SMMEs Annual Turnover	49
4.8	Core function of business	50
4.9	Interacting with the Mangosuthu University of Technology – Technology Station in Chemicals	51
4.4.1	Convergence coding matrix	63-66

Contents

DECLARATION	ii
Abstract	iv
List of figures	v
Number Description Page	v
List of Tables	vi
Number Description Page	vi
CHAPTER 1 – INTRODUCTION	1
1.1. Background	1
1.2. Motivation for the study.....	2
1.3. Significance	2
1.4. Problem Statement.....	3
1.5. Research Questions and Hypotheses.....	4
1.6. Objectives of the study	5
1.7. Research Methodology	5
1.8. Definition of Key Terms.....	7
1.9. Location.....	7
1.10. Research Assumptions and limitations	7
1.10.1. Assumptions.....	7
1.10.2. Limitations of this Study.....	8
1.11. Dissertation Outline	8
1.12. Conclusion.....	9
CHAPTER 2 – LITERATURE REVIEW	10
2.1. Introduction	10
2.1.1. Role of SMMEs in the SA Economy	11
2.2. Background to the Chemical Industry.....	12
2.2.1. Global Chemical industry – lessons for the SA Chemicals SMME Sector.....	12
2.2.2. South African chemical industry	14
2.3. Factors that constrain chemical manufacturing SMME survival and growth	17
2.3.1. Introduction to factors	17
2.3.2. Globalization	17
2.3.3. Legislation and Employment and access to skills	25
2.3.4. Access to equipment and facilities	26
2.3.5. Access to finance	27
2.3.6. Access to technology	28

2.3.7. Access to adequate and reliant Electricity and water supply	29
2.3.8. Government support	29
2.4. Conclusion	31
CHAPTER 3 - RESEARCH METHODOLOGY	32
3.1 Introduction	32
3.2 Research Questions	33
3.3 Methodology (Research Method and Study Design)	34
3.4 Location.....	35
3.5 Research Design.....	35
3.6 Quantitative data collection	37
3.6.1 Sample and Sampling Procedure	37
3.7 Qualitative data collection	38
3.7.1 Semi-structured interviews.....	38
3.7.1.1 Criteria for selection:	39
3.8 Data Analysis Criteria	39
3.9 Data Quality Control	40
3.9.1 Validity	40
3.9.2 Reliability.....	40
3.9.3 Trustworthiness: Credibility and member checking	41
3.10 Ethical Considerations.....	41
3.11 Conclusion.....	42
CHAPTER 4 – PRESENTATION OF RESULTS.....	43
4.1 Introduction	43
4.2 Data Analysis in Mixed Methods	43
4.2.1 Importance of Integration on Mixed Methods	44
4.2.2 Triangulation of quantitative and qualitative results	44
4.3 Presentation of Results	45
4.3.1 Quantitative Data	45
4.3.1.1 Biographical data	46
4.3.1.2 Education	49
4.3.1.3 Work Experience	49
4.3.1.4 Entrepreneurship	51
4.3.1.5 Entrepreneurship support and perceived constraints	53
4.3.2 Qualitative data	57
4.3.2.1 Interviewee’s profile	58
4.3.2.2 Perceived constraints for SMMEs survival, growth and sustainability	58

4.4 Data Analysis	66
4.4.1 Convergence coding matrix	66
4.5 Conclusion	70
CHAPTER 5 - DISCUSSION, RECOMMENDATIONS AND CONCLUSION	71
5.1 “Introduction”	71
5.2 Summary of results	71
5.3 Discussion of the results	72
5.3.1 Resource Factors / Constraints	73
5.3.1.1 Access to Finance	73
5.3.1.2 Access to knowledge and skills	73
5.3.1.3 Access to Equipment and/or Manufacturing facilities.....	73
5.3.2 Markets Factors/ Constraints.....	73
5.3.2.1 Access to Market/Competition	73
5.3.2.2 Legislation and Compliance	74
5.3.2.3 Globalization	74
5.3.3 Government support for SMMEs.....	74
5.4 Managerial Implications.....	74
5.4.1 Importance of understanding diversified support needs of entrepreneurs in KwaZulu-Natal South Africa,	75
5.4.2 Owners of SMMEs should constantly engage in skills development and participate in business networks.....	75
5.4.3 Business compliance	76
5.4.4 Re-invest to the business in order to be able to grow.....	76
5.5 Recommendations	76
5.6 Conclusion.....	77

CHAPTER 1 – INTRODUCTION

1.1. Background

The economy of South Africa is described as an emerging economy on global standards and an efficiency economy by the Global Entrepreneurship Monitor (GEM: 2001). The South African government has adopted the promotion of the SMME sector as one of the critical instrument in driving economic and creation of jobs for the massive unemployed individuals. This study is concerned with factors, real or as perceived by owners, that constrain the survival of in the chemical manufacturing SMMEs. According to the White Paper on a National Strategy for the Development and Promotion of Small Business in South Africa states: “The stimulation of small, medium and micro enterprises must be seen as part of an integrated strategy to take the South African economy onto a higher road – one on which is diversified, productivity enhanced, investment is stimulated and entrepreneurship flourishes” (South African Government, 1995). The National Development Plan Vision 2030 (2012) considers SMMEs as instrumental in promoting the growth of the economy, addressing inequality and reducing poverty. In July 2014, the President of the Republic of South Africa, again putting the agenda of small business development on the forefront, proclaimed a new Department of Small of Business. This vision is still carried through as evident from the 2017 Revised Strategic Plan of the Small Business Department (Department of Small Business, 2017), which recognises the role of SMMEs and cooperatives in contributing to transformational economic growth and in South Africa. This is accompanied by the realisation by the Department of Small Business that small businesses are better positioned to turn the economy around compared to large enterprises and have an even greater importance on employment and key drivers of economic advancement. This study is concerned with understanding the factors constraining the growth, survival and sustainability of chemical manufacturing SMMEs.

Before going further into the literature, it would help to provide an understanding of the chemical sector. This will not only provide an international perspective, but the aim is to bring the definition to a localized context for further development. According to the study conducted by Small Enterprise development Agency (Research study to identify needs, opportunities and challenges in the chemicals and plastics sector: Jan 2013) The government, through the Department of Trade and Industry (DTI), identified plastics and chemical sector as a sector with growth potential and opportunities for development particularly for SMMEs. The chemical industry is the fast-growing sector that of which needs to be explored in depth as it

holds many vast opportunities and the awakening of this industry enables one to look further on the opportunities at hand. Amongst the key opportunities presented in this study, is the broader African market. The SA chemical industry exports to Africa at 14% p.a. since 2000, and increasing this output will have a major positive impact on the country as well as significant economic development in the region. Increasing the growth and anticipation of chemical manufacturing SMMEs has the potential of expanding the current chemical industry exports from South Africa are to Africa.

1.2. Motivation for the study

The National Development Plan argues that small business can open new opportunities to create jobs as well as be a route to economic empowerment (The real Economy bulletin: September 2017). SMMEs are the country's hope of addressing the ever rising unemployment rate and the country's economy.

Worldwide research shows that SMEs in the chemical industry are a major provider of employment, contribute significantly to the county's GDP, and are the source of most innovation and new products. It is therefore vital to the broader chemical sector that the SME component be supported (Blueprint Strategy and Policy (Pty) Ltd: February 2005)

This study is concerned with factors as perceived by the chemical manufacturing SMMEs in KZN as constraints that hinder growth and sustainability of the small businesses. The study collates these constraints and evaluate their impact on small business in the province, and provide recommendations on how these can be mitigated in future. The study intends to contribute to the improvement of support being offered to SMMEs in turn ensuring growth and sustainability for the industry and the country can decrease the unemployment rate and grow the country's economy.

1.3. Significance

This study will benefit the South African chemical manufacturing SMMEs by providing the following:

- 1.3.1. Identification of the constraints as perceived by SMMEs and mitigation measures (either new or requires more emphasis)

- 1.3.2. Assist in assessing the current and available support programmes services offered whether they benefit the intended SMMEs
- 1.3.3. Provide a platform for strategic learning for future support programmes & policy development and
- 1.3.4. Assist SMMEs in the future to receive more structured support that will directly benefit their survival and growth.

1.4. Problem Statement

According to the Blueprint strategy and Policy (Feb: 2005) Chemical SMEs in South Africa face a number of challenges. This assertion is verified by a number of researchers and publications. Different challenges have been identified by a number of researchers. There is consensus in some of these challenges.

Fatoki and Mazanai, 2011:208 assert that in South Africa, seventy five percent (75%) of start-up enterprises do not withstand operations longer than two years. This assertion however can be attributed to various challenges and different authors and researchers identify and rank different challenges as major. Important to note some are challenges that SMMEs can control i.e) lack of skills, access to finance etc however others are due to the south African and global economy i.e) globalization; political instability etc. Notwithstanding the above, south Africa does not fare well in comparison to other developing countries in terms of SMME. According to the Global Entrepreneurship Monitor 2016/17 reported that South Africa's persistently low levels of entrepreneurial activity relative to other countries participating in GEM.

South Africa's main social problems remain its extremely high income inequality and employment (29.1% - STATSSA: Q3 2019) challenge. A study conducted by Abor and Quartey (2010) estimates that 91% of formal business entities in South Africa are SMEs, and that these SMEs contribute between 52 to 57% to GDP and provide about 61% to employment.

It is against this background that the research endeavoured to probe what owners of chemical manufacturing SMMEs in KZN perceived as constraints to survival and growth of their small businesses, the study intends to expand on the knowledge that is already available and contribute to improved support service offered to SMMEs.

1.5. Research Questions and Hypotheses

Research questions or hypothesis are developed from research problem (Choga and Njaya, 2011). Whereby Borg and Gall (1990 cited in Tichapondwa 2013: 163), define a hypothesis as an educated guess about possible differences, relationships or causes. Research questions seek to establish relationships that exists amongst different variables in the study, whereas hypotheses are statements of the expected relationships amongst the identified variables. This study would concentrate on the following hypotheses/research questions:

Question1: What do owners of small chemical manufacturing enterprises perceive as constraints to the growth, survival, and sustainability of their businesses?

Hypothesis 1: Owners of SMME perceive access to resources (finance, infrastructure requirements), access to markets (competition in the market from the big business) and the economic and legal environment as key constraints to their success (survival, growth, and sustainability)

Question 2 Are SMME support centres well equipped to address factors that owners of chemical manufacturing enterprises perceive as constraints to their survival, growth, and sustainability?

Hypothesis 2: SMME support centres are adequately equipped to address factors that are perceived by owners of chemical manufacturing businesses as constraints to their survival, growth, and sustainability

Question 3: How can the SMME support centres improve their services?

Hypothesis 3: SMME support centres can learn about the factors that owners perceive as constraints to their success through constant engagement (customer feedback and lessons learnt) to inform and improve their services offering.

Question 4: Why these constraints exist? (This is the question about understanding the environment in which SMMEs operate). Which constraints are contextual factors influenced by the environment (economic, legal, political climate, educational landscape, race, and rural/town/urban spatial arrangements).

Hypothesis 4: The SA economy (unemployment and poverty) and past political environment resulted in individuals becoming entrepreneurs out of necessity as opposed to drive, capability, entrepreneurial orientation or education.

1.6. Objectives of the study

The objectives of this study are:

- 1.6.1. To establish what the owners of chemical manufacturing SMMEs in KZN perceive as factors that constrain growth, survival and sustainability of their small business
- 1.6.2. To establish whether owners of chemical manufacturing SMMEs believe current support offered by SMME support agencies addresses their perceived factors that constrain growth, survival and sustainability of their small businesses
- 1.6.3. To draw up recommendations on how SMME support agencies can enhance support offered to SMMEs
- 1.6.4. To ascertain the influence of the perceived factors and contribute to the improvement of shaping future support service offerings

1.7. Research Methodology

The research methodology section is concerned with the methodological approach that was employed in undertaking this study. Researchers agree that the focus (aims, and objectives), of the research study provides key determinants of the ideal methodology to be followed in conducting research (Denzin (2009); Blaxter & Malcolm (2006) and Creswell (2003)). The study goals point to the data to be collected, how it would be analysed and appropriately interpreted. This study aimed at understanding the factors that are identified by owners of chemical manufacturing SMMEs as constraints to growth, survival and sustainability of their small businesses.

In assertion, a desktop literature study was conducted in order to identify the key perspectives on entrepreneurship (SMMEs), SMME support agencies and the economic development in South Africa. The study used the database of SMMEs supported by the Mangosuthu University of Technology - Technology Station in Chemicals (MUT-TSC) during the period 2017/18.

The main tenets of research methods, as stated by Kothari (2004: 8), asserts that research methodology provides a systematic and logical way of solving the identified research problem. Research methodology is better understood as a science behind scientific research studies. It presents the sequential logical stages that are usually undertaken in the process of studying the research problem.

In addition, the researcher has to design a particular methodology for the identified and specific research problem and may not be transferrable to a different problem and context. The researcher has to also evaluate why one would use a particular set of tools, methods or materials. With that said, it also helps expose precisely how the scholar came about with the findings of the research decision and option before they are implemented. From what is stated above one can also add that research methodology has many dimensions as its scope is wider than that of the research method. Therefore according to Parajes (2007), the methodology section is the most important as it explains each step that undertaken in conducting research. In other words, the nature of the phenomenon being studied determines the methodology to be used. This study adopted a mixed method approach. According to Hesse-Biber (2010) this method involves the mixing of both quantitative and qualitative research methods. The aim for using this method of research is to understand better the research problem rather than using each method separately.

The choice of research methodology used, according to Hesse-Biber (2010), is influenced by the following:

- Heightened validity due to data collection variation
- The research question is answered from various perspectives
- Gaps to the information / data collected are eliminated
- Prior-assumptions by the researcher are reduced in the event that one methodology does not provide all the required information

In this study, mixed methods was chosen as the appropriate research method that can appropriately answer the research questions. However, anticipated ethical issues in this study and methods that will be applied to ensure ethical compliance of the study are below:

- **Plagiarism:** This research study is being supervised by a competent and experienced research supervisor from the University of KwaZulu-Natal. This research proposal was assessed and approved by this university's Research Ethics Committee, a body responsible for ensuring ethical compliance.
- **Confidential Information of participating SMMEs:** A confidentiality agreement will be signed with all participating SMMEs ensuring confidentiality in how their information will be handled.

1.8. Definition of Key Terms

Small Micro and Medium Enterprises (SMME): firms that have a rather minor share of their respective market, managed by a single owner/founder or in a personalised manner through medium of a formalised management structure, and independent in terms of forming a part of a large enterprise.

SMME Support agencies: these are national and provincial department agencies designed to provide support to entrepreneurs, innovators and small businesses with the necessary resources, skills, and/or expertise to ensure their growth, survival and sustainability.

1.9. Location

The study focused on clients serviced by the SMME support centres around Durban, a city in KwaZulu-Natal, South Africa. The database that was utilized to access respondents was that of the Mangosuthu University of Technology – Technology Station in Chemicals (MUT-TSC).

1.10. Research Assumptions and limitations

1.10.1. Assumptions

In this study, these are the assumptions made:

- 1.10.1.1. Chemical manufacturing SMMEs in KwaZulu Natal have perceived constraints not addressed by the current services offered by SMME support centres

1.10.2. Limitations of this Study

Limitations that are relevant to this study are:

- 1.10.2.1. Failure to obtain gate keepers letters from other SMME support agencies in KZN to access their SMME database
- 1.10.2.2. Limited database of SMMEs supported by the Mangosuthu University of Technology - Technology Station in Chemicals
- 1.10.2.3. Owners of chemical manufacturing SMMEs citing that their business demand all their time as a reason for not returning questionnaires to the researcher

1.11. Dissertation Outline

Chapter One: Introduction

The chapter introduces the research project. It highlights the background, motivation of the study, lays out the problem that was investigated, identifies the research objectives, questions and hypotheses. Finally briefly describes the research methodology used in the study.

Chapter Two: Literature Review

This chapter reviews available literature relating to the study. It starts by highlighting the role of SMMEs in the South African economy, then gives background to the Chemical Industry and narrows it down the South African perspective. It then delves down to the factors that constrain SMME growth, survival and sustainability.

Chapter Three: Research Methodology

This chapter outlines the research methodology that was used in this research. It details the methodology employed, data collection techniques and tools, data analysis and data quality control.

Chapter Four: Presentation of Results

The chapter presents the results from the data that was collected and analysed by the researcher. Then these results are analysed.

Chapter Five: Discussion, Recommendations and Conclusion

In this chapter the researcher discusses the results from the study, puts forward recommendations and concludes the study.

1.12. Conclusion

This chapter outlined the entire research study and highlighted all the different factors that led to this study being conducted. It went on to illustrate what the study intends to discover based on objectives outlined. The following chapters will go in depth on aspects like the literature review and the actual methodology that was followed while the study was conducted.

CHAPTER 2 – LITERATURE REVIEW

2.1. Introduction

This literature review chapter explores the literature that underpins the basis for this study. An attempt will be made to present the origin of the chemical industry from a global perspective and subsequent giving the local South African dynamics. The magnitude and relevance of the chemical industry to the world will be presented and how it impacts on the global as well as local economic development efforts. The chemical industry is also important, from a South African perspective, on the SMMEs development as it is one of the oldest local industries and emerging entrepreneurs have access to information through academic exposure or working experience. It is this exposure that makes the chemical industry one of the entry points for SMMEs in South Africa. According to the Chemical Sector SDG Roadmap (2018: 9), the chemical sector consists of over 4 trillion dollars of business thus employing plus minus 20 million people from a direct and indirect stance. The reasoning is based on the fact that, without the chemical sector, the food, clothes, travel, and technology all consists of variables that are formulated from the chemical sector itself. That is why, “in 2015, the United Nations established a set of goals to end poverty, protect the planet and ensure prosperity for all. Each of these 17 Sustainable Development Goals (SDGs) includes specific targets to be achieved by 2030. Achieving the SDGs requires the efforts of governments, the private sector, civil society, communities and individuals”, (Chemical Sector SDG Roadmap; 2018: 8). The aim of these SDG’s seeks to provide growth and prosperity for all. Such variables are “no hunger, good health and well-being, clean water and sanitation, affordable clean energy, decent work, economic growth, industry innovation, infrastructure, sustainable cities” (Integrated Development Programme (IDP) of municipalities in South Africa), communities, climate action, life below water and responsible consumption and production, (Chemical Sector SDG Roadmap; 2018: 6). Hence the roadmap serves as a form of backward mapping to thus provide learning and future development for industries within Africa. As this focus area is about the chemical industry, the challenges need to be visualized within the lens of the South African context. Clarity will be brought into this development to thus give a concise discussion of how globalization has helped link itself within South Africa.

According to Masutha et al, (2014: 141), In order to address several major objectives for post-apartheid reconstruction and development the SMME economy should be considered as a vital

element. This assertion is also relevant more so in economic reconstruction and development which aims at an inclusive economy and alleviation of poverty. Furthermore, support and promotion of the SMME economy is seen as a key and vital driver for employment creation. This is even more critical, given the context of the stunted economic growth and limited ability of large corporations to create increased employment opportunities.

The SMME sector in South Africa is currently operating in a manner that is of a survival mode. Focus is on increasing revenues for survival with limited resources for strategic, long-term project planning and implementation. This chapter will also look at the opportunities that exist for SMMEs within the broader chemical industry. Opportunity analysis is also coupled with the effort to understand obstacles and how these can be minimized, managed or eradicated even. This chapter also builds on the philosophy that supporting SMMEs will have positive impacts on building and creating further opportunities for communities and for future generations.

2.1.1. Role of SMMEs in the SA Economy

The economy of South Africa is described as an emerging economy on global standards and an efficiency economy by the Global Entrepreneurship Monitor (GEM). The South African government has adopted the promotion of the SMME sector as one of the critical instrument in driving economic and creation of jobs for the massive unemployed individuals. This study is concerned with factors, real or as perceived by owners, that constrain the survival of in the chemical manufacturing SMMEs. According to the White Paper on a National Strategy for the Development and Promotion of Small Business in South Africa states: “The stimulation of small, medium and micro enterprises must be seen as part of an integrated strategy to take the South African economy onto a higher road – one on which is diversified, productivity enhanced, investment is stimulated and entrepreneurship flourishes” (South African Government, 1995). The National Development Plan Vision 2030 (2012) considers SMMEs as instrumental in promoting the growth of the economy, addressing inequality and reducing poverty. In July 2014, the President of the Republic of South Africa, again putting the agenda of small business development on the forefront, proclaimed a new Department of Small of Business. This vision is still carried through as evident from the 2017 Revised Strategic Plan of the Small Business Department (Department of Small Business, 2017), which recognises

the role of SMMEs and cooperatives in contributing to transformational economic growth in South Africa. This accompanied the realisation by the Department of Small Business that small businesses are better positioned to turn the economy around compared to large enterprises and have an even greater importance on employment and key drivers of economic advancement. This study is concerned with understanding the factors constraining the growth, survival and sustainability of chemical manufacturing SMMEs.

Before going further into the literature, it would help to provide an understanding of the chemical sector. This will not only provide an international perspective, but the aim is to bring the definition to a localized context for further development. According to the study conducted by the chemical industry is the fast-growing sector that of which needs to be explored in depth as it holds many vast opportunities and the awakening of this industry enables one to look further on the opportunities at hand. Amongst the key opportunities presented in this study, is the broader African market. The SA chemical industry exports to Africa at 14% p.a. since 2000, and increasing this output will have a major positive impact on the country as well as significant economic development in the region. Increasing the growth and anticipation of chemical manufacturing SMMEs has the potential of expanding the current chemical industry exports from South Africa are to Africa.

2.2. Background to the Chemical Industry

2.2.1. Global Chemical industry – lessons for the SA Chemicals SMME Sector

The global chemicals industry is one of the most significant industries, producing a multitude of products satisfying a vast range of needs in widely varying markets. The industry generates a healthy proportion of GDP in most countries and is usually one of the biggest providers of employment. Global trends in chemical production are linked to the levels of consumption in the economies' middle class. Chemical products are, inter alia, the basic input for apparel, electrical appliances, and the automotive industries. The main industries using products from the chemical industry are wood and furniture, electronics, house appliances, transport equipment, rubber and plastics, building, textiles, pharmacy, food processing, fertilizers, printing and paper, and final consumption. There is virtually no consumer product which is not dependent on the chemical industry for raw material input", (Blueprint strategy & print; 2005: 20).

The current trends in the global chemical industry involve major shifts in the nature of product orientation and production capabilities as companies relocate and target new customers and foreign markets. Some chemical manufacturing plants are coming to the end of their economically viable life, locally and internationally. There is a new trend of identifying China, Malaysia, India, and Eastern Europe as alternatives for new investment in chemical plants, as opposed to the developed countries. As a result, China and India are experiencing a massive expansion, to meet the chemical products' demand of the developed world. There is a substantial increase in demand for consumer products that are based on chemicals. This move to the east is motivated by the desire to minimize the cost of transportation by moving production to closer to sources of input materials (Blueprint Strategy & Print; 2005: 16).

According to Erixon (2018: 4), the period of globalization commenced in earnest in 1980 coupled with changes in foreign direct investment. According to the Blueprint Strategy & print (2005: 16), before this period chemical manufacturing was characterized by small-scale operations. It further states that these were largely focused on local and regional markets. Older industries (textiles and paper) introduced innovations and processes that dominated the industry for 60 years from 1850 before the emergence of industries such as aluminum and oil refining. An increase in the research and development (R&D) initiatives provided a platform for companies to explore and expand their horizons in terms of product, process and market diversity. The Blueprint Strategy & Print; (2005: 17) records three waves (Kondratieff cycles) or periods of innovations in the chemical industry. During this period the main processes were the electrolysis, syntheses, and Solvay and products were largely inorganics, fertilizers, and dyes. Inputs were mainly coal and mineral-based resources. Catalysis and specialty chemicals emerged in the second wave (1935–1965) of innovations in the chemical industry, accompanied by plastics, petrochemicals (including agricultural products) and medical chemistry (penicillin, antibiotics). The current wave (1990 -2020) in chemical technologies involves biotechnologies, green chemistry, nanotechnology and specialties in life sciences.

This overview is critical for SMME growth considerations as it presents the development of the chemical industry as a mode that has taken an upswing and downswing. The success and sustainability of SMMEs depend on their ability to understand the trends and capability to formulate future survival strategies.

SMMEs can also learn from this in conjunction with understanding products life cycle where there is an introduction, stability, and stagnation. SMMEs need to constantly gauge and position themselves for sustainability. Porter, (1986) notes the patterns of international competition differ significantly from industry to industry, and this is due to the unique combination of competitive, economic and technological pressures characterizing each industry.

These pressures may lead to global integration (Bartlett et al, 1989 Dunning, 1980), where companies are forced to navigate the coordination and distribution of multiple value-added operations over a number of countries. The life cycle of products differs according to the needs and development of economies at that time. Makhija et al, (1997: 682) distinguishes between value-added activities as those governed by tangible assets for example, (raw materials, goods-in-process or components and finished products) and intangible assets for example (the application of firm-specific knowledge such as proprietary technologies, management and marketing skills, brand equity and production know-how). This phenomenon allows for product adaptation and global integration of new ideas, products and industry continuation, thereby creating new and bigger opportunities for SMMEs. A key conception of this section dealt with gaining further knowledge and articulating meaning on how the chemical industry has developed and affected global economies over time from a global perspective. A more localized context is being presented below.

2.2.2. South African chemical industry

The objectives of this section of the literature review is to present and describe the length and depth of how the chemical industry in South Africa has developed. According to Van Zyl (2008: 16), “the South African chemical sector is the largest of its kind in Africa and is highly complex and diversified.” South Africa being the largest country in Africa to produce and manufacture chemicals, one gets a concise understanding that which broadens the complexity of the industry that is typically labor-intensive and consists of the formulation of product processes and its integration. There are eleven (11) subsectors that developed and classified in line with the Standard Industrial Classification (SIC), and these being liquid fuel, primary polymers and rubbers , commodity inorganics and organics, bulk formulated chemicals,

pharmaceuticals , fine chemicals, pure functional & specialties, consumer formulated, plastic products and rubber products . Even though these sub-sectors are not fully operational in South Africa, it provides SMMEs with a glimpse of the potential the country. The Departments of Trade and Industry and Energy are working together in developing these subsectors.

The chemical industry sector is generally regarded as a highly technical and environmental unfriendly segment. Therefore, one will demonstrate what the chemical industry comprises of by asserting a philanthropic scope. This will have financial and resource implications for the SMMEs.

2.2.2.1. The historical perspective

The chemical sector has been in South Africa since the emergence and discovery of diamonds and gold in 1868. This was followed by major international investments in explosives that were necessary for the development of the mining industry. The chlor-alkali industry emerged followed by the industrial specialty and fine chemicals. Chemical manufacturing companies are mainly located in Gauteng, KZN, and Western Cape. With each province taking a share of 47%, 18%, and 16% respectively. (Majozi & Veldhuizen 2015). The nature of this study as per the proposal is to help identify the current chemical sector challenges that are being faced by the SMME chemical sector in South Africa.

The underlying literature aims to expand on the chemical industry in South Africa whereby, the aim is to understand the status of the chemical industry from the date of origin and also the impact it has in the country. One will examine the key constraints as well as the challenges faced by this industry in particular. The South African chemical industry dates back as far as the 19th century, this era could be justifiably interpreted as the South African industrial uprising, as this led to the proliferation of industries that perpetually altered the way South Africans would live and work, Majozi & Veldhuizen (2015: 46). The chemical industry is an apex industry, contributing to downstream value chains both internal and external to the industry itself, the performance of the chemical sector surpasses that of any other sector, be it the manufacturing sector to emphasize, 2,7 percent of the GDP, 1,2 percent of labour, 8, 8 percent of all exports versus and 13, 4 percent of all imports (note the trade deficit), Penfold (2015: 3).

2.2.2.2. The Upstream Chemical sector in South Africa

The upstream chemical sector is generally technology-intensive in the manufacturing of basic chemicals as raw materials/feedstock. Upstream operations and production processes are typically understood and known to be capital driven and managed through complex automated process-control systems. These world-class plants operate at high efficiencies to meet the demand for volumes and quality. This sector is not well regulated and politically positioned to support and accommodate SMMEs except in the cases of access to their downstream associated products like the liquid-fuels and essential oils in the fine-chemicals sub-sectors (DTI, 2018). In South Africa, a few players, and instances of single producer for some product categories characterize the upstream chemical manufacturing. Some product examples and major manufacturing operations in South Africa for the sub-sectors that exercise part of the upstream chemical sector are converted further down. To illustrate this point, there are only six major players in liquid fuels products (diesel, petrol, jet fuel, paraffin, and liquefied petroleum gas), and these players are Chevron (Caltex), Engen Refinery (Enref), Natref (Sasol Joint Venture (JV) with Total SA and Sapref (Shell and BP) . These are imported crude oil refineries and synthetic fuels manufacturers (Sasol Synfuels and PetroSA). Regulations and high infrastructure and compliance requirements make this subsector inaccessible to SMMEs. The few biofuels-producing farmers do not even pose real competition for these large corporations and most of them are producing for their own use. Biodiesel-SA is the only company that produces biodiesel, from used cooking oils, that supply the public with an alternative fuel for their vehicles. The implementation of the Biofuels Industrial Strategy might create new small agricultural-based production plants. This is strategy of the Department of Minerals and Energy (DME). Development of Biofuels, therefore, presents a potential for entry of SMMEs in this highly contested and sophisticated chemical space.

2.2.2.3. The Downstream Chemical sector in South Africa

Downstream chemical role-players turn raw materials/feedstock manufactured in the upstream into intermediate and final products (DTI, 2018). This sector is governed by operations involving the treatment of upstream products like lubricants blending. However, the downstream chemical sector has lacked in terms of providing an adequate landscape for resources that can be used within a local context. To provide a historical glance as to why this

is the case, armament development provides an ideal example. This example will also demonstrate how research holds an important element within any sector for future development. “The roots of South Africa's military industrialization may be traced back to fledgling attempts at defense production initiated in the 1920s and 1930s which were consolidated in an expanded program for the production of ammunitions to support the Allied war effort during World War II”, (Rogerson; 1990: 242). In 1963 promulgation of a voluntary ban on armaments being supplied to South Africa, by the United Nations, resulted in the bulk of SA’s arms needs being catered for through imports, with the United Kingdom as the main supplier. The main reasoning is due to the influence that was exerted by South Africa, the military was key in politics, social and spatial decisions and in particular introduction of homelands systems under the apartheid government (Rogerson; 1990: 241). As it has been pointed out in the case of China, the chemical debacle not only exists in the past but to date it helped shape the South African industry landscape.

2.3. Factors that constrain chemical manufacturing SMME survival and growth

The current literature analyses also seek to outline these various challenges as factors that impact on the sustainability of SMMEs and thus giving a view recommendations for review policy. This preamble revolves around the conception of factors influencing SMME development of in the chemical sector in South Africa

2.3.1. Introduction to factors

At the core of this study is the need to identify factors that, as perceived by owners, lead or constitute key constraints on the survival and growth of their chemical manufacturing businesses.

2.3.2. Globalization

An earlier section was dedicated to understanding the global chemical industry sector and its challenges and outlining the constraints and opportunities for SMMEs.

Globalization has not only allowed the successful integration of networks, but it has allowed fast interaction and integration of resources. This has not only portrayed a positive development within third world countries. It has created a vision and mission for small enterprises to support

and seek out the raw variables that can allow growth for businesses in South Africa. Africa as a whole has used the various independence that has been won to develop ideas and businesses that can help bridge the gap of inequality and poverty as a whole. According to Lewis (2001; 42), the 1990s, saw a dramatic increase in South Africa's "openness" which led to trade liberalization. The growth and structural transitions realized were partly attributed to the important role played by international markets and linkages. It is worth noting that the acceleration in integration and re-integration of the South Africa was only realized after the democratization in 1994.

To further reiterate this study, globalization is seen as the savior of the economy breaking barriers and ensuring a much larger and a greater economy for developing and developed economies. Globalization has by far for many years in the past decade opened a platform to not only the growth of the economy but the growth of small businesses and also provided many disadvantaged homes in developing countries the chance to manage poverty by breaking barriers. Thus, one does not only focus on the economic stance of globalization but also to further reiterate, globalization has reached as far as the most crucial factor in business for women and broken the stereotype that business is meant to be managed by men, one opens globalization as a tool that changed the mandate of gender equality.

2.3.2.1. Impact of Globalisation in Small Businesses in the Chemical Industry

According to McMahon et al (2014; 215), globalisation in the South African economy conveys new encounters in the way in which influential's have to manoeuvre their business. The global economy has converted, and will continue to become more assimilated, bestowing a business environment characterised by a global interdependence of resources, suppliers, product markets and business competition (cited in Khoza, 2009; Shokane, Stanz & Slabbert, Yin, Lee & Wang, 2014). Thus like other emerging countries arriving at the global arena South Africa is required to swing from its contemporary internally fixated economic practices to open - market practices (Magner, 2008; Shokane et al., 2004) and omit the comprehensive environmental facets of society (Chipunza & Gwarinda, 2010; Geldenhuys & Veldsman, 2011; Mokgolo & Modiba, 2012). Thus, if South Africa is to efficaciously make its streak as an imminent nation it must surge its competitiveness, expand its economy, advance access to capital, grow small business and work collectively to participate in the global negotiations that shape the world trading system (Cetron & Davis, 2008).

“Globalisation in business has diversified opportunities in the business world. The swelling of business demand has strained thespians in the market place that has had notable bearing in economies. Most industrialised developed economies’ growth in the world has thrived through well-managed and strengthened Small Medium Enterprises (SMEs). Conceding SMEs have been the key drivers of economic enhancement in most embryonic economies, the economic impact of globalization has affected their opulence positively and negatively. To provide an inner view on how globalisation has affected the evolution and ability to sustain Small Medium enterprises, one takes a deeper look at how it has impacted small business to no longer be able to grow (Mwika, Banda, Chembe & Douglas 2018; p6).

To further reiterate the gross impact globalisation has, not only in the facet of the country but cities too are conceited. Globalisation is distressing the city’s economy, its social and cultural life, its political realisation and its physical form. Thus repercussions for cities in Southern Africa include financial distress favouring coastal cities, the accelerating demise of traditional life, the stagnation and loosening of the grip of the State and the growth of competitive urban regions (McLachlan, 2001).

According to Brand South Africa (2017; 8), the chemical industry has shown reliance and potential to compete in the global economy. Thus being said the chemical industry has been moulded by the political and regulatory environment which created an attitude of seclusion and protectionism during the apartheid eras. This inclined to foster an internal approach and an emphasis on import replacement in the local market. In addition, it also invigorated the building of small-scale plants with aptitudes geared to local demand, which inclined to be uneconomic. Two conspicuous traits embody the South African Chemical Sector. Firstly, while its upstream sector is rigorous and well developed, the downstream sector- although diverse- remains underdeveloped. Secondly, the synthetic coal and natural gas based liquid fuels and petrochemicals industry is prominent, with South Africa being world leader in coal-based synthesis and gas-to-liquids (GTL) technologies. Thus being South Africa’s chemical industry is of extensive economic connotation to the country, contributing 5% to the gross domestic product (GDP) and approximately 25% of its manufacturing sales.

As a small business owner, globalization grants a prospect for growth and investing abroad. Although many small businesses are learning how globalization can ominously magnify and impact how their business manoeuvres, some are still hesitant to clasp this new business opportunity. Therefore globalization and investing are equivalent in many ways and work coherently together simultaneously; the implementation of both require money, effort, research and time. Both involve inaugurating relationships, partnering, concentrating on consumers, putting monies out to test the market, visiting a target market for development, and most importantly enhancing long term objectives and after positioning the small business (Emerson, 2014). In addition small business need to find clear and precise objectives that will sustain business and also grow business, with that being said, in order for small business to prevail, they need to keep up with globalisation and be able to keep up with every digital trend in the horizon. A few steps that can assist small business that are considering investing in globalisation.

- Research new and emerging economies or better position your small business for development and progression.
- The internet serves as a high end tool as a resource to conduct research.
- Review costs or production, export/import costs (including taxes, shipping and import duties)

2.3.2.2. Impact of Open Trade

Accession to the WTO, negotiation of a free trade area jointly marks the increasing international trade opportunities and blooming economy. In addition to the above quote, the global chemical industry is known to be one of the most significant industries in the global stance, as it produces a multitude of products and satisfying a wide range of needs across many markets. The industry generates a significant and yet healthy proportion to the GDP in most countries and is also recognized and known to be the largest provider of employment.

In contrast to the previous assertion, one needs to understand that, "manufacturing has undergone far-reaching restructuring under trade liberalization and increasing international integration. At the same time, the tightening of macroeconomic policy to reduce the government budget deficit and higher interest rates aimed at reducing inflation has meant that demand has been weak and investment by firms has remained at very low levels. With greater competition from imports, and weak overall growth rates, manufacturing employment levels

fell sharply as firms sought to increase productivity in a contractionary environment", (Machaka et al; 1996: 4). This can be seen in the closing down of the textile and manufacturing sectors in Newcastle thus many people losing their jobs. It has further added to the decline of services through cheaper imports that are coming in from China.

Small, medium, and micro enterprises (SMMEs) have the potential to drive economic growth and employment in South Africa. Nevertheless, this probability is not being recognized. A few and even lesser firms survive each year, and numerous of those that do survive are incapable to propagate revenues or employment. According to the Enterprise of Observatory of South Africa an average of 31 companies with taxable income of less than R10 million close down on a weekly basis, and therefore making it hard to increase the number of employees as SMMEs grow older. Thus being said the major contribution towards so many high failure rates are countless and intricate. Furthermore resulting small business enterprises being trapped in a cycle of limited bargaining power, cash flow constraints, leading to major skills gaps and having to operate in a taxing regulatory environment. Therefore causing a great exacerbation in the following:

- Tight margins (may differ with industry form) and pitiable terms of trade as a consequence of bargaining power constrain cash flow;
- Pitiable cash availability exacerbate challenges in resources; adequate human and other skills requisite for growth;
- The privation of sufficient resources and aptitudes as well as inadequate systems and processes to backing growth means prevailing, infrequent resources are deployed to address not only on business operations, but also significant regulatory compliance;
- Thus in turn further hinders companies' ability to grow and create jobs. This eventually confines companies of scale, in addition one can note that this reduced the ability to improve margins, setting off the cycle once more.

The aforementioned challenging factors can be said are not unique to the South African SMMEs, their enormousness unquestionably is. Unlocking the potential of SMMEs, therefore needs SMME development to focus on constructing the suitable factors for companies to not just subsist but to extensively propagate. One can therefore go on to explore the recommended interventions to facilitate SMME growth in SA:

- Abilities that allow people to contribute in the economy must be .stimulated as a part of the school curriculum. At its most rudimentary three Rs" of reading, writing, and

'arithmetic, which appear to be extensively absent in young work seekers. Of course, a greater emphasis on quantitative skills through a focus on science, technology, engineering and mathematics (STEM) disciplines would more sustainably prepare new entrants to the job market for an ever more modern, skills-intensive economy. Further, the curriculum should provide for subjects such as business studies that combine basic bookkeeping, marketing and economics.

- Government and regulatory bodies should detect opportunities to reduce regulations for SMMEs and more commonly ensure that regulations are suitable to the size of operations. Large businesses tend to have the resources to navigate their way through extensive regulations, while SMMEs have to employ greater relative financial and human resources to comply. This diverts attention from critical business functions, which in turn affects business survival rates. SMMEs should be exempted from provisions of broad-based black economic empowerment.

In addition, SMMEs have the impending to subsidize ominously to the employment, income generation and asset accumulation. Unlocking this potential requires implementing innovative reforms to make South Africa truly open for business (Ansara, Endres & Mothibatsela, 2019)

2.3.2.3. Multinational Corporations

A perspective that is also of major importance is that which is played by culture as well. In this case, countries that are based on the core need to assert their industrial culture upon receiving countries to thus further their endeavors. This speaks to the expansion of multinational corporations (MNCs). The home country only serves as a base of operation which then helps to monitor, implement and evaluate the overall performance of the new strategies that are being conducted in the various new countries, (Kolk et al; 2004: 175-176). An important element that one needs to reiterate is that "on one hand, An MNC may be a single organization that coordinates its operations in a global platform or may be comprised of a number of organizations that operate in distinct national environments (Kolk et al; 2002: 276-277). Therefore the actual global reach, economies of scale and global sourcing may be determined by singular or stratified strategies. This may result in the instance whereby one country may not want to comply with certain laws and protocols that are put in place to help protect those countries that are susceptible to exploitation. An example is Exxon and Chevron thus based in the United States of America of whom has a firm belief in aggressive expansion for profit gain.

However, European based companies such as BP and Shell comply with the Kyoto Protocol that countries have to sign into, to thus allow the necessary protection of gases that may be hazardous for the receiving country. The above points not only seek to strengthen the discussion of positioning SMMEs, but to best understand the chemical industry, its major role-players, and to give relevance to the factors that shape this industry.

In South Africa one should cogitate how its partnership with the US can be fortified by the sustenance of multinational companies. In this context, it is informative to scrutinize not only the role of multinational companies have frolicked in accelerating economic assimilation over the last quarter of the century and of which of the future. In addition through trade, foreign direct investments and international transmission of knowledge and technology, multinational such as General Electric (GE), Ford and Microsoft have forged strong businesses in partnership (just to name a few) across Africa, and in particular, in South Africa. With a great and vast initiatives that illuminate the importance of developing SMEs that embrace the intentions in the National Development Plan (Business Report, 2014)

2.3.2.4. BRICS effect and in particular China

The world economic politics have led to the ‘modus operandi’ that has allowed policies to be influenced in a manner that is putting Africa and China at arm’s length for business dealings. In South Africa, this can be seen through the formation of BRICS, which are thus relations between, Brazil, Russia, India, and China. This link not only allows integration, but policies such as the Growth Employment and Redistribution (GEAR) policy have allowed a more liberal and flexible economy for trade and investment to flourish. The elements of interest in the success of China include backward and vertical integration, state resources and energy security, partnerships and joint ventures and parent satellite investments. The backward and vertical integration for Chinese companies in extractive industries involves acquiring upstream assets in order to secure resources and commodities from other countries. This is evident in Sinopec's large investments in Sudan and Angola's oil sector. This is accompanied by the expansion of Chinese companies into downstream activities such as China National Offshore Oil Corporation's (CNOOC) movement into retail, petrochemicals and power generation. Chinese companies are supported by state resources and energy security. This includes access to state capital thereby allowing these organizations the acquisition trail in Africa, Latin

America, and the Middle East. The government continues to support the purchase of international energy assets by providing both finance and tie-in development projects that appeal to leaders in these countries. In value terms, the energy sector will continue to account for the bulk of Chinese international investment over the short to medium term. Through the facilitation of partnerships and joint ventures, China facilitates linkages with existing firms, both Western and non-Western, as its corporate strategy abroad. This in part reflects the recognition that there are technological and managerial gains for Chinese MNCs, as well as possible inroads into the political establishment of countries with which it has only limited ties. Petro China's tie-in with Total in Inner Mongolia and Sinopec's joint venture with Sonangol are examples of this phenomenon. Through parent satellite investments: This involves the selective use of listed satellite companies or subsidiaries to acquire resources but are to use unlisted parent companies when deemed more appropriate (such as the need to rapidly secure a deal). China's MNCs are establishing a wide presence in the global economy, for instance, in the information and communication technology (ICT) area, TCL, Lenovo, and Huawei Technologies. They are attempting to develop an independent presence, but the vast majority continue to be under the control of the parent company in China", (Alden et al; 2006: 86).

To further reiterate the impact of BRICS on small medium and micro enterprises, according to A.Job (2013;) a three memoranda of understanding (MOU) was signed by the Industrial Development Corporation (IDC) and partners from China , Russia and Brazil during the fifth BRICS Summit held in Durban. Minister of Economic Development Ebrahim Patel stated that South Africa is equipped to mate with investors from other BRICS countries to inflate its manufacturing base and support the development of small business. He further on stipulated the expansion of the support to small business enterprises and treaties with state financial institutions from Brazil and Russia will permit them to learn amongst and from each other. Not only does it allow an exchange of support and growth to small enterprises, the agreement with Brazil also affords for impending benefits to the local economy.

In addition The Banking Association South Africa memorandum also stipulates SMEs foster divergence through their development of new and unsaturated sectors of the economy. Furthermore, to enhance innovative and technology- based small medium enterprises can provide a platform for local, regional and international growth, especially in Brazil , Russia, India, China , and South Africa(BRICS) economies. SME's are measured as a significant

contributor to the economy as carterers for deflating unemployment, exclusively since the formal sector continues to shed jobs.

2.3.3. Legislation and Employment and access to skills

Scholars, policy-makers, and researchers need to reframe their minds in accordance with how SMME's are coming about within policy and lawmakers debates regarding interventions for the case of South Africa. While SMMEs are regarded as vehicles for economic growth and job creation (National Development plan Vision 2010³), the laws regulating employment are not supporting this view

The other feature of the South African market is rigid labour laws that were designed to address the challenges of the past under the apartheid system. The introduction of minimum wages and other benefits and privileges for employees puts an added financial strain on SMMEs. These benefits also talk to the allowed duration of temporary employment, forcing SMMEs to take responsibility of salaries too early in their development stage. The inability to meet the ever-increasing demand on financial resources of companies results in frequent industrial actions. This affects SMMEs negatively as these protests may be accompanied by cuts in electricity and water supply or inaccessible workplaces.

The United States of America estimates that each chemical industry job fosters about 7.5 jobs elsewhere in the economy (Penfold, 2015): 4. South Africa is experiencing one of the highest unemployment rate in the short history of its democracy. This puts a dire need for the government to facilitate, encourage and ensure the growth of the chemical sector in South Africa due to its potential to grow and stimulate the entire economy GDP and GNP. The potential multiplier effect for South African circumstances remains unknown. Markets and market measurement need competitiveness to be improved radically and ostentatiously to secure the chemical industry community and many lives of which depend immensely on the proliferation of the chemical industry. It is of utmost importance for the government to support and develop chemical manufacturing SMMEs. The positive changes within this sector will improve employment also through the replacement of imports while increasing the skills base within the country. The added economic advantage of import replacements is increasing the

GDP of the country and improving technology and opportunities for innovation. For a young democracy, this will also have an immense societal economic impact.

Orbeta, Jr, (2002; 1) argues that globalization also has an impact on the labour market as it affects the level of elasticity and structure of labour demand while dictating relative wages. All of these have broad implications on SMMEs and their ability to attract and retain high-skilled employees while competing globally. With globalization, the economy tends to relate even more closely and in depth to the comparative advantage brought by that country's existing infrastructure and technological capabilities, natural and human resource endowments. This comparative advantage also depends on the historic extent to which the country's economy has repetitively competed internationally (ILO 1996). Globalization impact does affect the skills sets equally across industries, hence Orbeta, Jr, (2002: 3) argues that the total impact on economic growth, compensate for its effect of unemployment.

The South African market is also characterized by shortages of skills, especially in the artisan and engineering sectors. The challenges to import required skills are exacerbated by the weaker currency.

2.3.4. Access to equipment and facilities

According to Sirola (2017; 1), industrial chemistry is defined as “the manufacturing art concerned with the transformation of matter into useful materials in useful amounts.” The chemical industry is one of the largest industries to change the lives of many in South Africa for decades. With the South African rooted in primary sectors (agriculture and mining), the chemical industry is collective the largest sector in SA. This is in spite of the latest trend towards growth in tertiary sectors like services industry including tourism. The South African market comprises of small local markets mainly in the provinces of Gauteng, Western Cape, and KwaZulu-Natal. Competitiveness and barriers to trade vary from one industry to another with the chemicals industry being one of the most affected industries. Access to equipment and facilities is one of the major barriers to entry in the chemical industry. With the shrinking of

time and space, SMME manufacturers need to consider less costly alternative sources of production that will influence major shifts in business trends thereby allowing proper integration and market competitiveness. However, this can either result in progressive results that will position the SMME as a global player or the destruction of firm productivity's as this may prove to be a huge financial risk.

2.3.5. Access to finance

According to O' Rourke and Williamson (2002), globalization refers to the international commodity markets across nation's integration. Globalization impacts the labour markets on two-folds. The first one being promoting movements (trade) of finished goods and critical services across borders, and secondly, increasing flow of production inputs (capital, labour and technology) across borders. As was anticipated other aspects of globalization that are there, are the expansion of markets, the social interaction of people is another major impact of globalization, it is not regarded as having a major bearing on this particular study. To be regarded as ideal global economic players, SMMEs will have to compete with large organizations on the quality of finished and access to the high-end labor force, capital, and technology. All these requirements need the one commodity that is limited to SMMEs and that is finance.

Importing raw materials has embedded costs on duties and excise, including port costs, taxes and administrative fees. The chemicals sector is generally regarded as having a negative impact on the environment, and subsequently a number of legislative frameworks have been introduced to regulate operations in the sector. Compliance with these regulations bears an extra burden on the finances of the SMMEs.

To strengthen this point, one needs to understand that the striking presence of Chinese MNCs on the global and in particular South African space, is changing the landscape of opportunities and scale of challenges for SMMEs. Large companies, which once had virtually undisputed command over the chemical industry while controlling serious financial resources coupled with the requisite political ties which allowed them to dominate the South African market, now face challenges by a multitude of entrant international firms, led by the Chinese corporations. "These highly competitive and strongly supported by the state Chinese corporations, are

embarking on an acquisition drive that is capturing key resources and market share across the developing world”, (Alden et al; 2006: 83).

2.3.6. Access to technology

The very nature of the chemical industry, in terms of raw materials and equipment, revolves around import, export, outsourcing and offshoring of various commodities and resources. The level of technological advancements that have taken place have not only allowed the flexibility of employment, but resources come and go at a pace that is far beyond that of a local context, (Jones; 2006: 2).

The other challenge faced by the chemical manufacturing SMMEs is access to feedstock. Most chemical raw materials are imported from overseas, notably China. This implies that SMMEs financial planning is compromised by fluctuations in international stock exchanges and volatile markets. This becomes even more critical when SMMEs require additional feedstock to support new development, as these may not available locally or will have to import at high costs. The lack of development of local feedstock is a major challenge to product and technology development, which affects SMMEs the most. This leads to a lack of or inadequate downstream value addition.

IGEAT (2008: 8) reaffirms this point by stating that, the vulnerability in this instance occurs through the differentiation between the core, which holds the highest technology and well-developed forms of infrastructure versus the semi-periphery and periphery. The variance occurs through space-time diffusion thus meaning that a hierarchy exists from the top to the bottom. In addition, "while new sectors and technologies tend to concentrate on the core areas, the old and less technological sectors diffuse in the peripheral countries, as soon as they become 'Taylorisable' whereby, as soon as the production processes become simple and transferable enough to be delocalized either to other parts of the local labour force or globally", (IGEAT; 2008: 8-9). Thus simply put, globalization has allowed the integration of cheap sources to be transferred to countries that are deemed less viable as appose to the core countries. An important element that I need to get across is that "the acquisition and diffusion of knowledge or technology are of great importance for economic development, as the adoption of new techniques, machines, and production processes is a key determinant of productivity growth.

Given that most research and development (R&D) and innovation are undertaken in high-income countries, most developing economies must rely largely on imported technologies as sources of new product knowledge. This is not to say that no R&D is undertaken in developing countries. However, a considerable amount of follow-on innovation and adaptation does occur there, contributing to the global stock of knowledge", (Hoekman et al; 2006: 1). This is where the South African debacle comes into play to thus localize this transition from a global perspective to a local one. It is not advised to bring in the current republic that is studying without clear clarification as to what occurred within the international scenario.

2.3.7. Access to adequate and reliant Electricity and water supply

The chemical manufacturing industry is heavily reliant on water and electricity. South Africa is experiencing challenges in ensuring a constant supply of these two major commodities. Big companies have invested in alternative sources including recycling of water, reconfiguration of processes and renewable energies. Limited resources dictate that this luxury is not economically feasible for the SMME sector. Electricity and water supply interruptions result in failure of the SMMES to meet customer demand and may result in reputational damage and loss of clientele. This unavoidable affects the bottom line in profits and the sustainability of these businesses. Losses of clients also imply extra costs and effort in the marketing and recruitment of new clients. This further compromises their competitiveness even within local markets. A point that one seeks to point out is that the level of government support in terms of entrepreneurship programs is undermined by the failure to provide basic infrastructural requirements for the industry. SMMEs, therefore, become a sector that seems to be getting exploited yet is being empowered all at the same time.

2.3.8. Government support

According to Mathibe et al (2011: 102), for the past three decades international business enterprise support services had to deal with changes on how they develop and support SMMEs. Whilst funding agencies and international companies expect SMMEs to create employment opportunities for the marginalized leading to economies expansions, the approach to business support services was not being fully explored (Tanburn 2006). As a measure of redress of the

past imbalances in SA, this has been evaluated through the development and construction of institutions including the Small Enterprise Development Agency (SEDA) Ntsika, Umsobomvu Youth Fund (UYF) Khula enterprises and incubators coming into effect within the 21st century.

The challenge pointed out by Helmsing (2001) is that even though liberalization is trending internationally allowing for goods and capital flows, local regions and districts' industrial activity is still dominant. This phenomenon and its implications can be explained by various frameworks. Krugman's new economic geography emphasizes externalities, such as those linked to labour markets and up skilling, expert contributions required by firms, and technology ripple-effects (see, for example, Krugman, 1998a and b)", (Machaka et al; 1996: 3). The main tenets rest on the fact that the government seems to be focused mainly on big enterprises due to this trade liberalization, which is why a new form of industrial policy needed to be formulated through the white paper of 1995. Government support for SMMEs has been marred with challenges ranging from ineffective use of consultants, little or insufficient cooperation amongst departments and lack of due diligence on the design of appropriate services that support and sustain SMMEs. A need for vigorous risk-based interventions and rational policy-inputs are considered essential for all SMME supporting government departments and at all spheres of government, coupled with the need for better coordinated, (Penfold; 2015: 5-11). The government plays a key role in regional and global harmonization of trade between nations. Local business forums can also assist to some degree towards and where appropriate, in easing of trade and international freight movement. Essential government interventions include industrial community level co-operation to minimize the impact of load shedding.

China is an example of consistent growth and development through the use of alternative sources that were long ignored by those countries that are already successful (Europe & Western Countries). It is for this reason that developing economies like South Africa should consider alternative energies as leverage points to build the economy. Heinzlbecker (2005: 39) forwards this point as a need for organizations to build either from a top-down model or a bottom-up, but the main point is to gain traction in terms of new knowledge, gain access to barriers that were long forgotten, logistics improvement, standardized field that allows progress, educational learning and harmonization through new partnerships.

2.4. Conclusion

The chapter has given us a holistic picture of the chemicals industry. We can now move further and explore the research methodology that was utilized in this research study.

CHAPTER 3 - RESEARCH METHODOLOGY

3.1 Introduction

The research methodology section is concerned with the methodological approach that was employed in undertaking this study. Researchers agree that the focus, aims, and objectives of the study are key determinants of the ideal methodology to be followed in conducting research (Creswell 2003; Blaxter & Malcolm 2006 and Denzin 2009). The study goals point to the data to be collected, how it would be analysed and appropriately interpreted. This study aimed at understanding the factors that are identified by small business owners as constraints in their success and development.

The main tenets of research methods, as stated by Kothari (2004: 8), asserts that research methodology provides a systematic way of solving the research problem. It is better understood as a science behind scientific research studies. Research methodology presents the sequential logical steps that are usually undertaken by the researcher in the process of studying his research problem.

In addition, the researcher has to design a particular methodology for the identified and specific research problem and may not be transferrable to a different problem and context. The researcher has to also evaluate why one would use a particular set of tools, methods or materials. With that said, it also helps expose precisely how the scholar came about with the findings of the research decision and option before they are implemented. From what is stated above one can also add that research methodology has many dimensions as its scope is wider than that of the research method. Therefore according to Parajes (2007), the methodology section is the most important as it explains each step that undertaken in conducting research. In other words, the nature of the phenomenon being studied determines the methodology to be used.

3.2 Research Questions

Given that this study was designed to use the mixed methods both the research questions and hypotheses were developed to guide the data to be collected to address the identified research problem. To further understand and analyze the identified research problem, the concepts of SMME growth, survival and sustainability are introduced as ‘success’ constructs in this study. These constructs are understood as growth (increase in sales, markets, and revenue); sustainability (business that is able to meet its present needs without compromising its future) and survival (ability to operate a business entity over a longer period time, arguably five (5) years

Question1: What do owners of small chemical manufacturing enterprises in KZN perceive as constraints to the growth, survival, and sustainability of their businesses?

Hypothesis 1: Owners of SMMEs in KZN perceive access to resources (finance, infrastructure requirements), access to markets (competition in the market from the big business) and the economic and legal environment as key constraints to their success (survival, growth, and sustainability)

Question 2 Are SMME support centres in KZN well equipped to address factors that owners of chemical manufacturing enterprises perceive as constraints to their survival, growth, and sustainability?

Hypothesis 2: SMME support centres in KZN are adequately equipped to address factors that are perceived by owners of chemical manufacturing businesses as constraints to their survival, growth, and sustainability

Question 3: How can the SMME support centres in KZN improve their services?

Hypothesis 3: SMME support centres in KZN can learn about the factors that owners perceive as constraints to their success through constant engagement (customer feedback and lessons learnt) to inform and improve their services offering.

Question 4: Why these constraints exist? (This is the question about understanding the environment in which SMMEs operate). Which constraints are contextual factors influenced by the environment (economic, legal, political climate, educational landscape, race, and rural/town/urban spatial arrangements).

Hypothesis 4: The SA economy (unemployment and poverty) and past political environment resulted in individuals becoming entrepreneurs out of necessity as opposed to drive, capability, entrepreneurial orientation or education.

3.3 Methodology (Research Method and Study Design)

According to Surbhi (2006), research methodology can be best understood with regard to a particular problem. The logic behind the choice of methodology is a well-formulated, holistic or chronological way of understanding the problem at hand. The methodology chosen should create a clear picture with regards as to why the specific methods have or need to be appointed as will be shown in the choice of methodology for this study. With this argument in mind, the main encompassing method that would be the best fit for this study is the mixed method approach. This study is informed by the view that quantitative and qualitative research methods are not mutually exclusive approaches to research but their usefulness can be enhanced by applying both paradigms. Meaning that, as a way forward, research needs to utilize both these methods to come to a more conclusive method that will provide for further studying.

The mixed method served this study well as it also integrates products of policy and government intervention, as ascertained by Creswell (2009: 206) who attest proposal developers or scholars of policy products would not only utilize but time the engagement of both qualitative and quantitative data collection tools. The utilization of mixed methods provides a platform for evaluation of various techniques experiments, tests or surveys) which can be employed, and the applicable tools (questionnaires, interviews) to be used. Quantitative and qualitative techniques can be used concurrently or in a sequential manner.

If a sequence is used it is important to decide on which techniques will be undertaken first. Morse (1991 cited in Creswell, 1991: 211) states in this instance that, "a sequential explanatory design is typically used to explain and interpret quantitative results by collecting and analyzing follow-up qualitative data. It can be especially useful when unexpected results arise from a quantitative study". Hence, the results that have arisen or have yet to occur with the evaluation of that methodology may result in a drastic or unexpected change of the findings of that study.

3.4 Location

The study focused on clients serviced by the SMME support centres around Durban, a city in KwaZulu-Natal, South Africa. The database that was utilized to access respondents was that of the Mangosuthu University of Technology – Technology Station in Chemicals (MUT-TSC).

3.5 Research Design

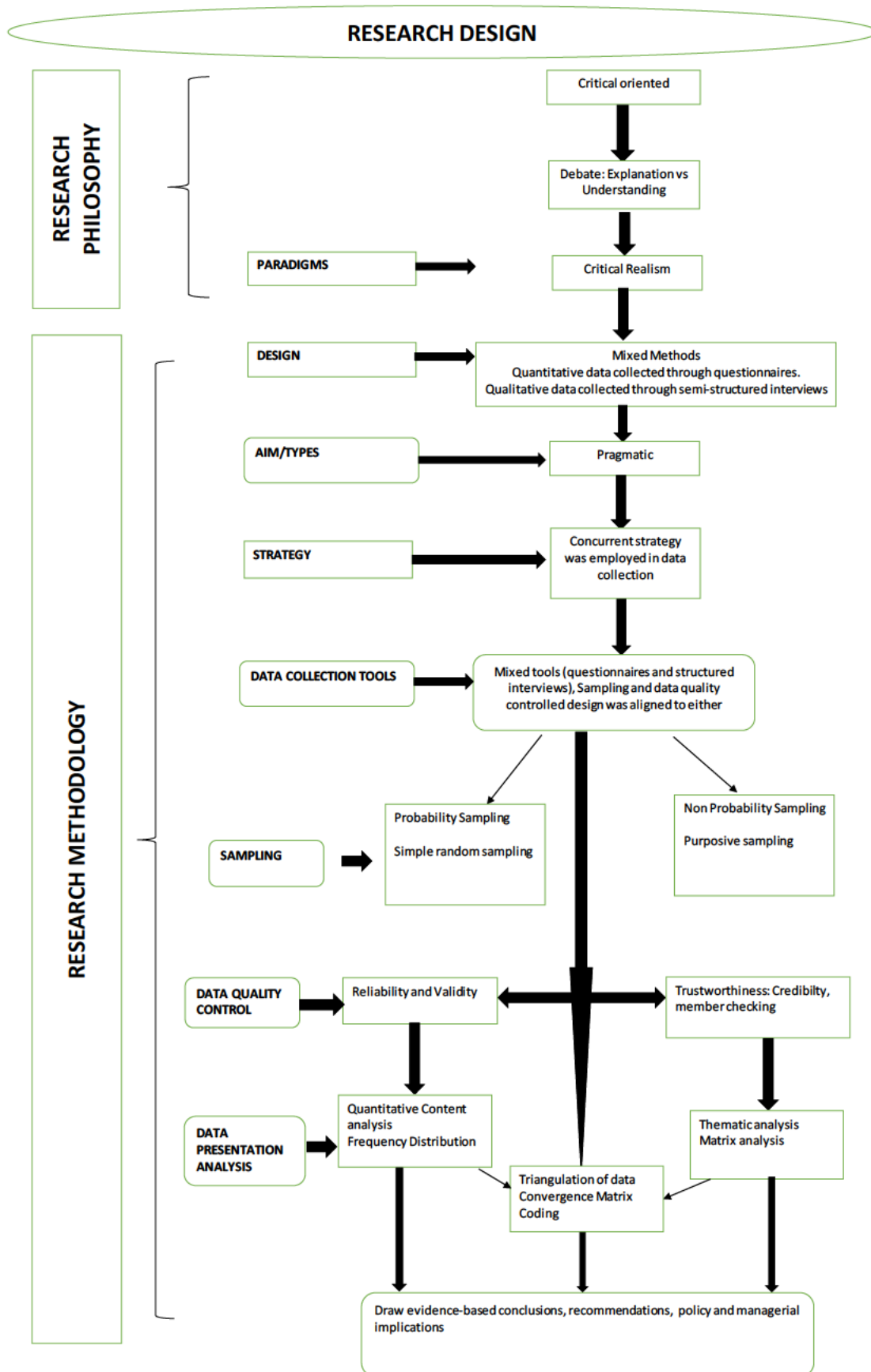
According to Mackenzie & Knipe 2006 “It is the choice of paradigm that sets down the intent, motivation and expectations for the research. Without nominating a paradigm as the first step, there is no basis for subsequent choices regarding methodology, methods, literature or research design.” It is with this in mind that the chosen paradigm that was nominated for this research is described and how it relates to the study.

The term 'paradigm' may be defined as "a loose collection of logically related assumptions, concepts, or propositions that orient thinking and research" (Bogdan & Biklen 1998, p.22) or the philosophical intent or motivation for undertaking a study (Cohen & Manion 1994, p.38).

The pragmatic paradigm places "the research problem" as central and applies all approaches to understanding the problem (Creswell, 2003, p.11). With the research question 'central', data collection and analysis methods are chosen as those most likely to provide insights into the question with no philosophical loyalty to any alternative paradigm.

In this particular study Critical Realism (CR) was chosen as the appropriate paradigm, CR can be defined and understood as a branch of philosophy that distinguishes between the 'real' world and the 'observable' world. The 'real' cannot be observed and exist independent from human perceptions, theories, and constructions. The world as we know and understand it is constructed from our perspectives and experiences, through what is 'observable'. Thus, according to critical realists, unobservable structures cause observable events and the social world can be understood only if people understand the structures that generate events. The figure below shows the research design that has been followed in this research study. The diagram shows the layout of the research philosophy and research methodology employed in this study.

Figure 3.1: Research Design



3.6 Quantitative data collection

The sample population for this research study contained chemical manufacturing SMMEs in the Province of KwaZulu-Natal (KZN). These are detergents manufacturing SMMEs that were serviced by the MUT-TSC in the period 2017 & 2018 as part of the project “SMMEs and Co-Operatives development programme which was done in partnership with KZN EDTEA.

The method selected for the collection of data was the mixed methods. Data was collected by use of both qualitative (selected SMMEs interviews) and quantitative (questionnaires) techniques. According to Royse (2011: 167) questionnaires are a uniform way to collect data that produces the desired data. The questionnaires were issued to SMMEs who are the clients of the MUT-TSC regarding their experience as chemical manufacturing SMMEs and what they perceived as constraints that hinder growth, sustainability and survival of their businesses.

3.6.1 Sample and Sampling Procedure

Simple random sampling was used as a probability sampling tool for this research. The MUT-TSC is an entrepreneurship support centre that is mandated to support SMMEs in the chemicals and related industries. The targeted population was envisaged to be the total number of SMMEs supported by MUT-TSC for the year 2017/18. For the purposes of this study a total sample of 80 SMMEs from the total of 113 SMMEs supported by the MUT-TSC were issued with the questionnaires, however, 25 SMMEs responded. An example of the questionnaire is attached Appendix A, SMMEs were advised about the aim of the research study, participation terms, anonymity, and confidentiality before they were issued with the questionnaires either by email or handed whilst they were at the MUT-TSC offices. Table 3.1 below shows the distribution and responses of questionnaires to SMMEs.

Table: 3. 1 Distribution of Questionnaires

Type of distribution	No of Issued	No Received back
Emailed	10	3
Issued on hand	70	22
Total	80	25

The questionnaire was designed and divided into five (5) sections, and these are biographical data, educational data, work experience, entrepreneurship data, and owner's perceptions on the constraints that hinder business growth, sustainability and survival.

Biographical data section collected data about SMMEs age, gender, area of residence and if this and the area of business was the same, the information would be used to profile SMMEs and determine spatial demographics. The second section looked at the education of the SMMEs to determine their highest levels of education. The third section collected information about the SMMEs work experience. The section looked to establish the kind of experience and exposure to the chemical industry if any, the SMME had prior to starting his or her own business. The following section collected data on entrepreneurship, in order to assess the reasons for starting their businesses and determine whether it was necessity or opportunity driven, also whether the SMME has their own manufacturing facilities. The last section collected information on the SMMEs perceptions on what hinders growth, sustainability and survival of their businesses, what they propose can be done to eradicate these constraints and any other perceptions for improved support in terms of the kind of services that SMME support agencies should be offering.

3.7 Qualitative data collection

This study utilised mixed methods in collecting data and as indicated above, questionnaires were utilised in soliciting quantitative data. The section below describes the use of semi-structured interviews in soliciting qualitative data.

3.7.1 Semi-structured interviews

According to Mabry (2009: 223), researchers often choose a purposive sample because it is informative and information about what happened, how and why it happened can be extracted from the units of analysis with some degree of certainty. The interviewees were selected purposively based on their characteristics as opposed to randomly as stated by Vanclay (2012). According to Royse (2011: 264) interviews are fewer in number however broad in nature so that they can elicit a narrative from the individual being interviewed.

The interview schedule was pre-tested with one client and modified accordingly. Open-ended questions provided the opportunity to learn from respondents about their experiences and

perceptions regarding what they perceived to be constraints to the growth and sustainability of their SMMEs. The structure of the interview questions in some degree ensured that similar information is gathered from all participants. The Strength of semi-structured interview protocols is the ability to generate comparable data from all of the respondents whilst it also allows for discussion of the individuals perceptions and experiences

3.7.1.1 Criteria for selection:

Two interviewees were identified by the researcher on the basis of their experience as chemical manufacturing SMMEs and the will to reflect on their perceptions, years of existence as a business and structure of their operations. As explained in 3.2 above the researcher used the identified success constructs (growth, survival and sustainability) to carefully select the interviewees that would offer the researcher an in-depth view on the research project and allow the researcher to understand and analyse the research problem.

3.8 Data Analysis Criteria

Mixed methods research data analysis relates to the type of research strategy you choose for the research study and offers high-level guidance on how data will be collected and analyzed. It is for this reason that the criteria for analysis of results need to expand as a link to the research problem and chosen research methods. Data analysis criteria also take into consideration, the tools that were used in collecting data. This section intends to clearly define which analysis was used within the quantitative (descriptive and inferential numeric analysis) and the qualitative (description and thematic text) approaches that were employed in this study.

Quantitative data was presented in tables and graphs (pie charts) for analysis. Frequency distribution was used in reference to the way observations of a given variable behave in terms of its absolute, relative or cumulative frequencies (Duguila et. al. 2014). To synthesize information contained in a categorical variable the number of observations in each category of the variable is counted, and absolute frequencies recorded. Over and above the absolute frequencies, percentage values were also presented to account for relative frequencies.

Qualitative data was analyzed through explanation building and analyzing for themes following the thematic analysis approach. Thematic analysis “involves the identification of emerging

patterns and categories from iterative reviews of the dataset, a process which marshals evidence for developing and warranting findings” (Mabry . 2009). The goal of a thematic analysis is to identify themes, or patterns that the data reveal as important or interesting, and relate these themes to respond to the research questions of the study (Maguire & Delahunt (2017):3353). Expressing patterns and formulating explanations into themes as a form of analytical induction allows for precise data categories (Curtis and Curtis 2011). The formulation of the methodology also needs critical evaluation with regards to how it will impact all the findings that may unfold within the data analysis. This chapter also aims to highlight how important characteristics of accuracy, reliability, and validity of data and results will be maintained. Analysis of qualitative data incorporates processes of analysing data that is aimed to identify patterns of an established relationship between data and methods used.

According to the USA GAO (1990) validity of the results, regarding cause and effect, is developed from agreement amongst the different types of data sources, coupled with the systematic elimination of alternative explanations. Verification in mixed methods can be achieved through an examination of findings collected from both qualitative and quantitative methods for consistency. Several researchers (Mills, Eurepos and Wiebe (2010), Morra and Friedlander (1999) GAO, (1990)) identified strategies ideal in conducting the said comparisons by identifying and matching patterns and through explanation building, develop themes.

3.9 Data Quality Control

3.9.1 Validity

To ensure validity, in this study, the draft questionnaire and semi-structured interview guidelines were reviewed by the researcher and submitted to the Research and Ethics Committee of the University of KwaZulu-Natal. The comments received were all incorporated on the final instruments used to collect data. Triangulation through the convergence coding matrix was used where data collected from different methods was compared for confirmation. These concepts are further discussed below.

3.9.2 Reliability

Triangulation of data collected from questionnaires and semi-structured interviews was utilized to ensure the reliability of the data collected. Themes that emerged from both qualitative and

quantitative data were analyzed for agreement, dissonance or silence using the convergence coding matrix. In instances of silence or dissonance further explanations were provided under discussion of results in Chapter 5.

3.9.3 Trustworthiness: Credibility and member checking

Shenton (2004: 64) argues that one of the most important factors in a research study that assists in establishing trustworthiness is credibility. Credibility is the link between the research study's findings and reality, this it does by establishing the truthfulness or facts of the findings. The study employed triangulation and member (or participant) checking as a technique for determining credibility. In triangulation, the researcher used the convergence coding matrix technique to identify agreements, silence and dissonance within the collected data both quantitative and qualitative.

This research study also employed member or participant checking as a second important technique to ensure credibility of the qualitative research findings. Using this technique required that data, interpretations, and conclusions are shared with the interview participants. This aspect gave interviewees an opportunity to verify the correctness of data captured and to provide additional information where necessary.

Triangulation, as a credibility technique, involves using multiple methods, data sources and/or theories in order to develop a more complete understanding of the phenomenon being studied. Triangulation ensures that research findings are robust, rich, comprehensive, and well-developed

3.10 Ethical Considerations

In this study the researcher adhered to all regulations governing ethics in research at the University KwaZulu Natal (UKZN). Proof of ethical clearance is attached (Annexure A)

The researcher clearly explained to the all the different participants/respondents, aims and benefits of the study. Wassenaar (2008) explains that this is essential within the ethical dictates. Participants and/or respondents were assured of receiving a copy of the study upon completion. In the study, all semi-structured interviews were recorded and transcribed and analysis was conducted. This commitment is also validated by (Guba and Lincoln 1989: 293) as "the single most critical technique for establishing credibility"

3.11 Conclusion

This chapter described the methodology used in this research study by firstly highlighting the theoretical basis through literature review and secondly by detailing how data was collected, analyzed and controlled. It also reported on the advantages of using mixed methods and how this approach assisted in improving the quality data as well as in fully responding to the research questions. The full analysis of data is presented in Chapter 4.

CHAPTER 4 – PRESENTATION OF RESULTS

4.1 Introduction

In chapter 3, the researcher gave a detailed account of the research methods employed in this research study. In this chapter results from all the data collected using the instruments and methods as described in the previous chapter are presented and analysed. Both qualitative and quantitative data from SMME questionnaires and individual interviews. Quantitative data (questionnaire responses) is presented first and analysis followed by the qualitative data (interviewee responses) are presented and analysed. This research study is solely based on primary sources of data. Finally triangulation of data using the convergence coding matrix is used to compare qualitative and quantitative findings to determine if there is agreement, silence or dissonance in the findings.

Data analysis should incorporate application of techniques and procedures that assist with extracting and describing information and in the process detecting and describing patterns, testing hypotheses, making decisions about the significance, use, and implication of the data relative to the research problem and searching and interrogating what data means (Tichapondwa (2013) and Rose and Sullivan (1993). Tichapondwa (2013: 142) extends the argument to positioning data analysis as the activity that involves a number of processes and technicalities. One could explicitly indicate that the data analysis will clearly clarify what the research data is and what it intends to unfold in the study.

4.2 Data Analysis in Mixed Methods

According to Ahuja et. al. (2015:42) and O’Cathain et.al. (2010) there is an increase in researchers using designs that combine qualitative and quantitative methods to collect data, generally referred to as mixed methods. According to Ahuja et. al. (2015:42), “mixed methods studies allow a more synergistic, flexible and comprehensive evaluation of complex issues when compared to individual quantitative and qualitative studies”. Combining qualitative and quantitative methods allow for the examination of different aspects of the overall research question. For the purpose of this study, semi-structured interviews with established entrepreneurs and questionnaires for emerging SMMEs were used to evaluate SMMEs perceptions of the factors that constrain their survival, growth, and sustainability.

4.2.1 Importance of Integration on Mixed Methods

According to Ahuja et. al. (2015:42), “One of the core characteristics of a mixed-methods study is the integration of data during either the study design, data collection, analysis or interpretation stages”. The most important and essential aspect of mixed methods research is having these two components (qualitative and quantitative) interact or in conversation between on one another. Failure or Lack of integration between the two components inadvertently limit the information generated by these types of studies. O'Cathain et. al (2010) even argues that without integration, the knowledge contributed by the study is equivalent to that from independent qualitative study or independent quantitative study and it misses out on the synergistic whole which is greater than the sum of the individual components.

4.2.2 Triangulation of quantitative and qualitative results

In this study, the data that was collected and was analysed separately so as to allow each component to produce its own set of results. These results are then combined using triangulation. The triangulation protocol was originally described by Farmer et al. (2006), and this method allows for presenting a joint display of qualitative and quantitative findings.

In this process, triangulation is understood to mean using different methods to study the problem and gain a more complete picture of the phenomenon. The process of triangulation occurred after the data collected was analysed separately. Firstly, qualitative results were sorted to obtain actual and/or categories from the findings and these were related to the findings obtained from quantitative data to create a convergence coding matrix. Secondly the data was cross examined to determine if there was agreement, partial agreement, silence or dissonance between the groups of data collected. An overall evaluation of convergence between findings was conducted based on this convergence coding matrix. Validity of results is enhanced if different methodological approaches produce converging results of the same empirical domain.

The results from each component of the study are listed on the same page and are evaluated for agreement (convergence), offer complementary information on the same issue (complementarity), or appear to contradict each other (discrepancy or dissonance). According to O'Cathain et al., it is also important that the research diligently look for disagreements between findings as these can be used indicators of a problem with the study. Inter-method

discrepancies may enhance the understanding of the research questions. A variety of methods have been used within health services research to explore inter-method discrepancy, namely, the Triangulation Protocol, Following a thread and mixed-method matrix. In this study, the Triangulation Protocol was used.

Triangulation Protocol involves producing a "convergence coding matrix" that will display findings that emerged from each component of this study. This was followed by an evaluation of the qualitative and quantitative results to determine if there is agreement, partial agreement, silence, or dissonance in the results. The researcher assesses how well the two finds agree (fully or partially), differ (dissonance) or show no relationship (silence). Silence arises when a theme or finding arises from one data set and not another. Silence might be expected because of the strengths of different methods to examine different aspects of a phenomenon, but surprise silences might also arise that help to increase understanding or lead to further investigations. The triangulation protocol moves researchers from thinking about the findings related to each method, to what Farmer and colleagues call meta-themes that cut across the findings from different methods.

4.3 Presentation of Results

4.3.1 Quantitative Data

The SMMEs questionnaire consisted of five (5) sections, which are outlined as follows :

- Section 1 – Biographical data
- Section 2 – Education
- Section 3 – Work Experience
- Section 4 – Entrepreneurship
- Section 5 - Entrepreneurship Support and perceived constraints

4.3.1.1Biographical data

Information collected from Table 4.1 to 4.4 was essential to create the profile of the SMME that was being studied to assist with the contextualization of the findings and therefore influence on meaning discussion, recommendation, and conclusions

Table 4.1: Age profile of SMMEs

The age profile of the SMMEs	
Under 20	0%
Age 21-29	8%
Age 30-35	28%
Age 35-39	20%
Age 40-49	24%
Age 50-60	16%
Age 60+	4%

According to the National Youth Policy, (2009, p.12) youth in South Africa is defined as “those falling within the age group of 14 to 35 years”, It is worth noting that 36% of the responses from Table 4.1 are in the youth category.

Table 4.2 : Gender profile

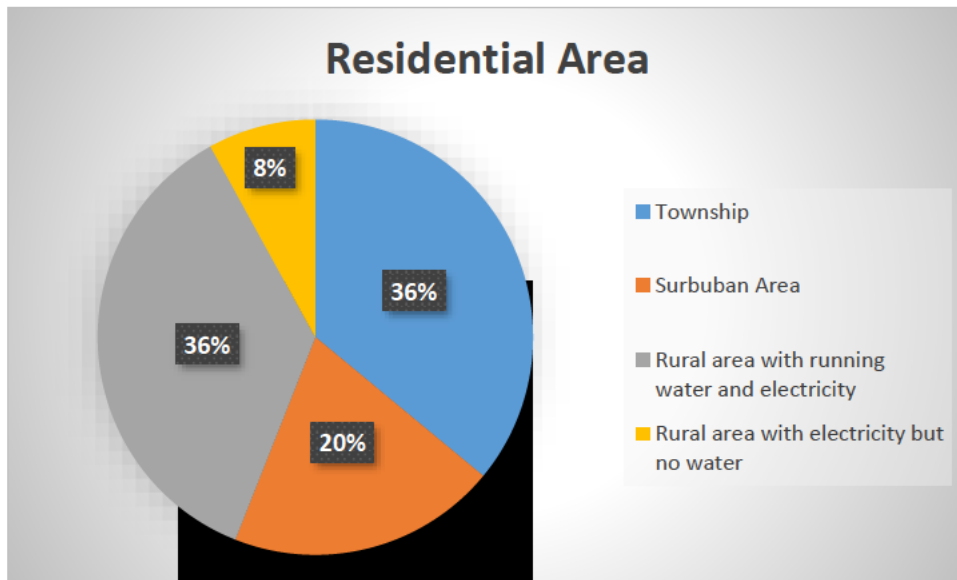
The gender profile of the SMMEs	
Female	56%
Male	44%

Respondents to the study were predominantly female (56 %,) as noted in Table 4.2. This is an indication of young black women participating in the economy.

Spatial demographics of the respondents

To enhance the profile of respondents thereby contextualizing the factors they consider important. A question was posed to collect data on the geographical demographics of the respondents. This information was collated and compared to the researched results present by the Global Entrepreneurship Monitor, which reported that in South Africa the ratio of opportunity-driven entrepreneurs in 1 in 16 adults in a metropolitan area compared to 1 in 167 adults in rural areas (GEM 2001: 4). This factor is coupled with the findings of the same report that rural areas' entrepreneurial activity is predominantly necessity driven (83%), when compared in metropolitan areas where it only accounts for 50%.

Figure 4.1: Geographical location



The results of the survey revealed that 44% of respondents were from rural areas as shown in Figure 4.1. Considering that townships are also regarded as underdeveloped, low-income estates designed to accommodate the working class during apartheid South Africa, the percentage of those SMMEs that reside in townships can be regarded as facing similar challenges to rural entrepreneurs. South African townships are characterized as areas that predominantly underdeveloped and underpinned by unemployment, poverty and high crime rate (Pernegger and Godehart, (2007)). This translates to 80% of the respondents were residents of areas characterized by limited access to critical resources. The factor of geographical location is important if one considers the business requirements for a chemical manufacturing facility. The literature review revealed that access to a consistent and adequate supply of water and electricity is critical for the manufacturing processes in the chemical industry. The results presented in Figure 4.1, therefore, suggest that about 80% of the respondents are faced with a limited chance of growth as their infrastructural requirements cannot be adequately met within their environment of operation. Mr. Cassel Mathale, Deputy Minister of Small Business Development, Vhembe SMME Summit in Thohoyandou, Limpopo, South Africa, 2018), explained that his department is focusing on supporting businesses in rural and township areas, as these are the most destitute organizations.

4.3.1.2 Education

Table 4.3: Highest grade/class passed

The literature review revealed that the chemical industry, as an open global field requires expertise in the area of chemical technology and processes. The respondents were asked to report their highest academic levels. This was considered essential to gauge their ability to comprehend the technological and scientific requirements of the industry. The chemical industry also regarded as having a high potential to pollute the environment. It, therefore, skill sets in the fields of health and safety and risk management coupled with an understanding of the relevant legislation and compliance standards.

Highest grade/class passed at school	
Below grade 7	0%
Grade 7 – 11	16%
Grade 12/Matric	84%

Table 4.3, revealed that twenty-one (21) (84%) of the respondents had completed matric, which is the highest school level. From the 21, eighteen (18) (86%) went on to further their studies at a higher education institution with only thirteen (13) (62%) completing their qualifications. Responding to reasons that led to non-completion of studies, many were presented with finance (71%) pitched as the main reason.

The data collected revealed low levels of academic qualifications, and it worth noting that these are well aligned with the geographical location of these enterprises.

4.3.1.3 Work Experience

South Africa is a country marred with a challenge of the high unemployment rate. Statistics SA (2019) reported an unemployment rate of 27.6% in the first quarter of 2019. This high unemployment rate, which is rated as the highest in 15 years (StatsSA, 2019) is typical of the economy that is not growing at a sufficient rate to create and sustain jobs. In this scenario there

creates a situation where entrepreneurship becomes an alternative to unemployment and retrenchment.

Table 4.4 Type of work experience

Type of work experience	
Temporary/Part-time work while at school	23%
Temporary/Part-time work after finishing school	5%
Full-time employment after finishing school	64%
Volunteer work while at school	0%
Volunteer work after finishing school	9%

Table 4.4 presents the data collected on the work experience of respondents. The data collected reflected that 88% of the respondents had in some form of work experience before embarking on their entrepreneurial journey. It is worth noting that the respondents that reported on having some form of work experience, are the ones that furthered their studies, thus providing a clear link between higher education and the likelihood of employment. The above table depicts that 64% of respondents were either retrenched or had their employment terminated before becoming entrepreneurs. This observation is aligned with the GEM (2001) reported that revealed that most emerging entrepreneurs in South Africa are necessity driven. This is an important factor given that the survival rate of entrepreneurs in SA is very low. The special report by Mail& Guardian revealed that the failure of SMMEs in SA within the first three years is as high as 80% (Mail&Guradian, 2017). The findings reported here could be evidence in support of the explanation that this high failure might not be solely related to business failure but the availability of employment opportunities leading budding business owners to jobs than entrepreneurship.

4.3.1.4 Entrepreneurship

The South African business environment is highly regulated, and for enterprises to conduct business the first requirements is ensuring appropriate registration with the Companies and Intellectual Property Commission (CIPC). Without appropriate registration, companies cannot conduct business in South Africa. The status of organizational registration was also considered key towards success as it indicates its readiness to conduct business.

Table 4.5: Type of business

Type of business	
Close corporation (CC)	31%
Private Company (PTY) LTD	54%
Co-Operative	15%

Table 4.5 illustrates the type of business the respondents have registered. Note these are small businesses with 32% of clients indicating they have only been in operation for a year and only five (5) respondents indicated to have been in business for more than five (5) years.

Table 4.6: SMME size in number of staff/members

Size of your SMME in numbers of Staff/Members	
Only yourself	28%
Two	12%
Three	20%
Four	0%
Five	20%

More than Five	20%
----------------	-----

The National Development Vision 2030, identifies unemployment as a damaging factor in the development of South Africa and targets an unemployment rate of 6% by 2030 NDP, Vision 2030 (2012:144). The estimates are given by this Plan, and based on the current population growth rate is that 11 million jobs will have to be created to meet this target, most interestingly identifies the SMME sector as the creator of 90%, or 9.9 million, of those new jobs.

Table 4.6 indicates 40% of the respondents had 5 or more people involved in their businesses. This is ten (10) SMMEs out of the twenty-five (25) respondents, five (5) responded and said they 5 members including themselves and five (5) responded they had in excess of five (5) including themselves.

Table 4.7: SMMEs Annual Turnover

Annual Turnover	
Less than R50 000	76%
R51 000 to R100 000	8%
R101 000 to R150 000	0%
R151 000 to R200 000	8%
R201 000 and above	8%

According to Table 4.7, 76% of the responses indicated an annual turnover of less than R50 000.

Core Function of the business

The notion of survivalist entrepreneurs raises the possibility of entrepreneurs starting a number of ventures with the hope of making a success with one of these. SMMEs tend to focus on what is currently making the news or is described by media, in particular, as having opportunities. To address this concern respondents were asked to indicate their business focus. Responses are summarised in Table 4.5.

Table 4.8: Core function of business

The core function of your business	Percentage
Manufacturing and/or Detergents and/or Cleaning services	40%
Chemicals and Other	32%
No response	4%
Other	24%

The information in Table 4.8 above reflects the core business that the respondents business focuses on. Only 40% of the respondents are focused on chemical manufacturing and related businesses. The majority of the clients are engaged in other business activities, with 4% being unable to disclose their other activities. The lack of focus also conforms to the concept of being survivalist as opposed to opportunity-driven.

4.3.1.5 Entrepreneurship support and perceived constraints

This part of the questionnaire was focused on establishing the factors perceived by owners as constraints to their success as determined by growth, survival, and sustainability.

The role of government in business support is regarded as that of creating an empowering ecosystem for entrepreneurs and Small, Medium Micro Enterprises (SMMEs) to operate and thrive. In return are expectations for SMMEs to create jobs, contribute to the GDP and alleviate poverty. This relationship between government and SMMEs was also articulated by the Deputy Minister of Small Business Development, Cassel Mathale, (Vhembe SMME Summit in Thohoyandou, Limpopo, South Africa, 2018). He further stated that businesses and entrepreneurs experience challenges in formalizing and expanding their business due to lack or limited access to resources.

The government support for SMMEs is heralded by the National Development Plan, Vision 2030, which, by 2030 envision a South African (SA) economy that grows by 5% annually. According to this vision, SMMEs will be responsible for 60-80% of this envisaged economic

growth through the expansion of their businesses (NDP, Vision 2030 (2012.144)). This articulation makes it clear that for this vision to be realized, SMMEs should grow and expand. This study is concerned with factors that could constrain this expansion. The South African government established an independent Department of Small Business Development in 2014, which was then tasked with this mammoth task of developing and supporting small businesses. It is worth noting though that the current respondents are associated with programmes of both the Departments of Science and Technology's Technology Innovation Agency (TIA) programmes, and Trade and Industry's both Small Enterprise Development Agency (SEDA) and South African Chemical Technology Incubator (CHEMIN) programmes. This study's population consists of entrepreneurs who, in one way or the other, are receiving support from these SMME support agencies. The questionnaire was designed to identify their constraints to business growth by asking questions relating to their needs that necessitated requesting support from these agencies.

One of these support centres is the Mangosuthu University of Technology's chemical manufacturing SMMEs incubator, the Technology Station in Chemicals (MUT-TSC). This unit is part of the TIA's Technology Stations' Programme (TSP). This programme (TSP), has units across the country that are focusing on specific technologies and provide services and access to high technology facilities to SMMEs in that sector. The MUT-TSC provides chemical technology support to enterprises in the business of manufacturing chemicals and related products. The offering of the MUT-TSC relates to technological support (product and process development and improvement), testing and analysis (through accredited laboratories), facilities (through its accredited pilot manufacturing plant and laboratories). The centre also provides training, consultation, and technology demonstration. To understand factors that owners perceive as constraints to their growth and survival, respondents were asked to indicate the reasons that compelled them to visit this SMME support centre. Table 4.9 presents the findings:

Table 4.9: Interacting with the MUT-TSC

Interacting with MUT-TSC	%
Skills-related support	52

Technology needs	28
Access to facilities	8
Other – (non-specific)	4%

The respondents as shown in Table 4.9 interacted with MUT-TSC mainly because they needed skills (52%) with 28% of respondents requiring technological interventions. Only 8% of the responses indicated that they visited the centre to address their needs for facilities, especially given that in response to owning chemical manufacturing facilities, an overwhelming 92% indicated that they do not have their own manufacturing facilities. This anomaly can be understood from the perspective that most SMMEs needed skills and information hence, they would not have known or aware of the kind of facilities and compliance that is required for chemical manufacturing. This kind of information and support is what is also provided post-training by the MUT-TSC. This study, therefore, reveals the importance of having SMME support centres with manufacturing facilities like MUT-TSC are crucial to their survival, growth, and sustainability.

When respondents were asked to specifically identify constraints or challenges that cause chemical manufacturing SMMEs not to survive or grow, the respondents highlighted access to finance, facilities, markets; a lack of knowledge skills and support. The results are presented in Figure 4.2.

Figure 4.2: Owners perceptions of constraints that cause their business not to survive, grow and be sustainable

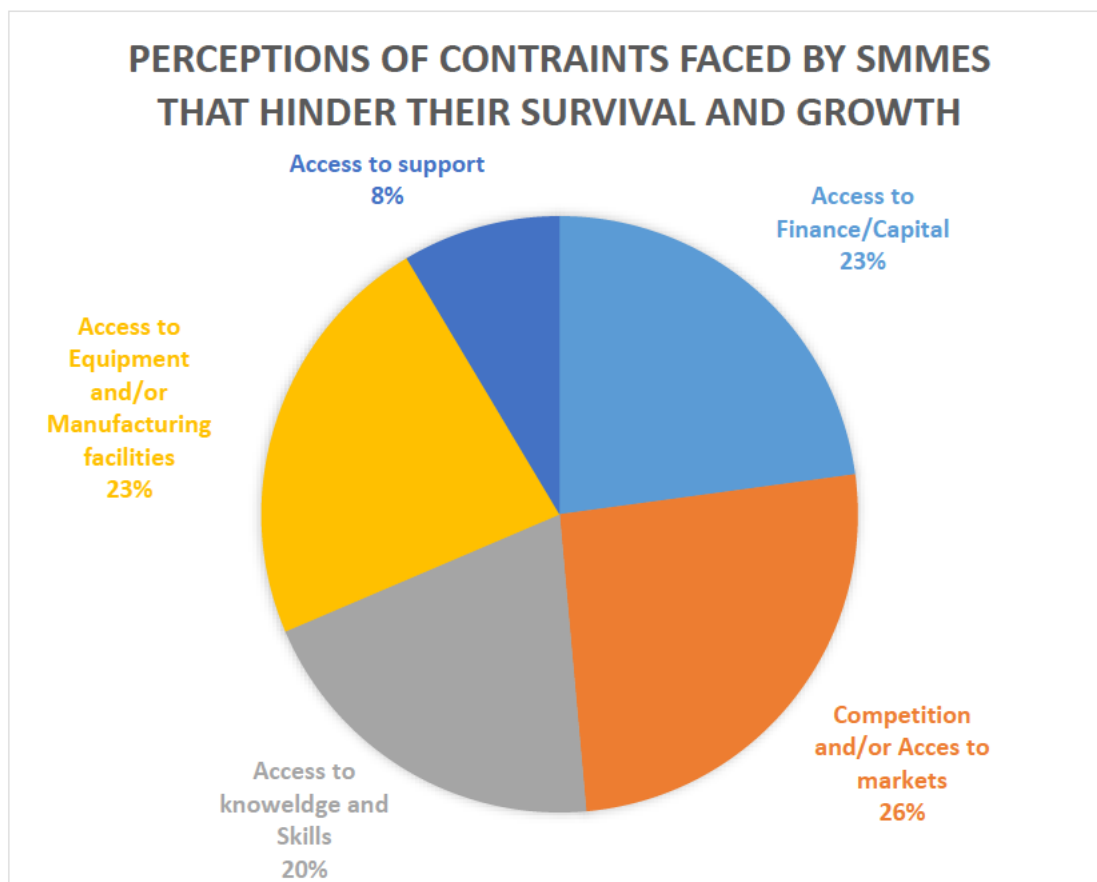
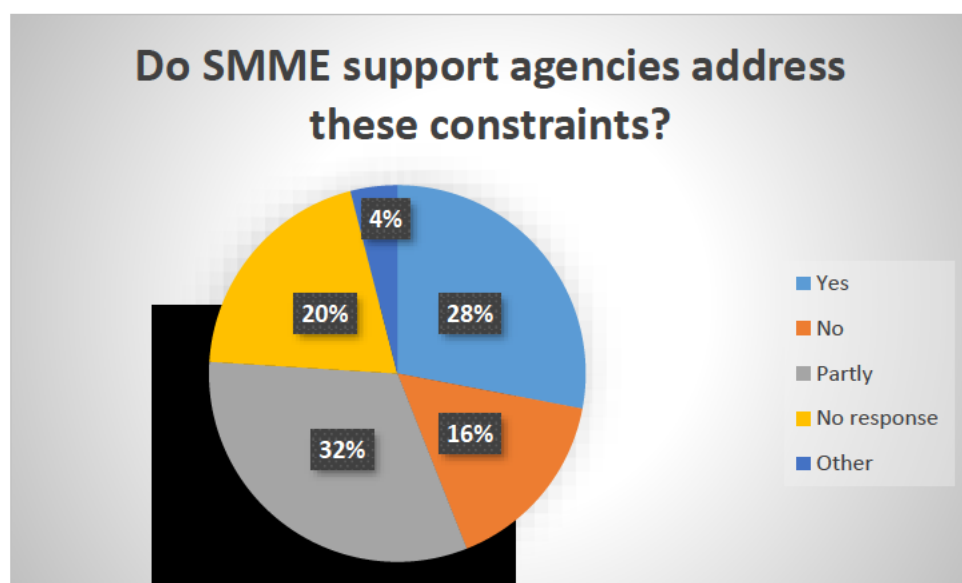


Figure 4.2 illustrates the perceptions of the SMMEs of what are the constraints that hinder their businesses survival, growth, and sustainability. The major challenge as perceived by SMMEs is competition or access to markets. Respondents cited cheaper products that are in circulation and their inability to have their products sold in retail stores due to the requirements that they cannot meet. 23% of the respondents cited finance and 23% cited access to equipment and manufacturing facilities. The chemical manufacturing business is a capital intensive business and getting it off the ground requires some sound investment. From the above it appears SMMEs do not see the support and/or SMME support agencies as a constraint to their businesses survival, growth and sustainability as only 8% cited lack of support as a factor.

Figure 4.3: Alignment of constraints to the services offered by support agencies



The researcher explored further the perceptions of SMMEs, asking if they thought the current SMME support agencies services offered addressed their perceived constraints. The response was 32% agreed partly and 28% answered yes.

4.3.2 Qualitative data

The constraints that are faced by the SMMEs were solicited through the utilization of a structured interview schedule. The interview aimed at gathering information pertaining to what the respondents' expectations were when they interacted with a support agency, for instance, the MUT-TSC and other SMME support agencies.

Similarly to the quantitative data, the interviewees were profiled and identified by the researcher as best candidates to reflect on how they have managed to grow their chemical manufacturing businesses. Data presentation followed the structure of the interview schedule, (attached as an Annexure is fully transcribed interviews). Interviewee responses italicized and indented.

4.3.2.1 Interviewee's profile

Two interviewees were identified by the researcher for the collection of qualitative data. They are both small business owner's that have managed to survive, grow their business over time and their businesses are currently sustainable.

4.3.2.2 Perceived constraints for SMMEs survival, growth and sustainability

The interviews results are presented below under the relevance to the identified factors

- **Access to market/Competition**

Access to markets is key to business success since it implies having access to customers who will buy the product and thereby generating revenue. Competition, therefore, is generally regarded as the rivalry between companies manufacturing similar products for access to the market. Competition happens around the product that is being sold, the place where products are sold, available means of promotion (or marketing the product), and the price requested for the product. The literature reviewed for this study had identified competition and access to markets as one of the factors contributing to failure amongst SMMEs

When the interviewees were asked to give their opinions (perceptions) on the ease (or difficulty/constraints) in penetrating the chemical manufacturing industry, responses were:

Interviewee 1 *"Route to the market I think like in any industry it is not that easy. It is not a business that you might have hope and dream that you are just going to start and start having customers start to flow in. It's one that you develop your customer base slowly but surely and I am then working in a market which my competitors are predominantly by far and wide and of course they have been around for much longer than I and there's a tendency that people they trust more the product coming from them than the local ones"*

Interviewee 2 *"The other challenge we normally pick up again is the competition because with the bigger companies when they secure raw materials because they buy in bulk they get certain discounts which are not applicable to us, as we are not buying volumes as they are. And when*

it comes to competition our prices will not be the same because we are actually getting the raw materials much more expensive than them. Those are some of the challenges that we encounter in the business”

The interviewee also added that:

“That is what we normally pick up in the industry and the trust from the clients itself as manufacturers where you will find that you make the exactly the same dishwasher as the oppositions but because it is done on the township and it is done by us as black entrepreneurs there is a question that is it really a good product and so on.”

The interviewee 2 also highlighted the strategies employed that assisted in sustaining the business as:

“but basically I think most of all is to identify your niche markets, give them the best service that you can offer to them because sometimes where our strong or our advantage are between us and the bigger businesses is that our turnaround time is more faster than them.

I think if we can put more efforts on the service and put more efforts on the quality of the product, the price can follow after and I think you can maintain those clients. Because they are clients that can phone in and need the product within 24 hours. Those are the customers that we need to focus on and we need to give them the best service and the other thing is to understand that the money that you get from your clients it is not profit it can be used as your working capital because those are the other issues that we come across where you get the order and when you get paid”.

The interviewee identified the above as a constraint for SMMEs, going further to explain the cost implications that affect the price of the SMME products making SMME product to be expensive and not affordable, and the fact that it is not a known brand making it worse.

- **Access to finance**

Access to finance is recorded in the literature as a general problem faced by SMMEs. The myriad of reasons has been forwarded to explain this challenge including lack of collateral, inadequate business planning and inability to sell the idea to potential funding institutions.

In responding to the question of what they perceive see as the constraints or challenges that cause the SMMEs to fail, responses were:

Interviewee 1 *“I think the other thing is that once that person is set to cash flows, you get a big order, you can’t supply it. You go to your banks your banks tell you no. You go with your order to the banks which I had done before and the banks take two weeks to come back to you. Now you have to make other means to make sure that you actually deliver on that order which that order at most was the hope that it would give you that breakthrough.”*

Interviewee 2 *“Basically as we are operating at the location. Mostly, is the financial institutions doesn’t have much confidence in businesses that are in townships. And when you are coming with a proposal to operate at the township they become hesitant on the idea as I started the fund that I started with was my retrenchment package because I had an idea but when I am introducing the idea to the banks to ask for funding I had resistance from them”*

Interviewee 2 also added;

“The other challenge that we normally find ourselves in is that the payment terms for SMMEs is not as quickly as they are supposed to because the guys that are in the departments they rather take more responsibility to bigger companies than us because they do not take us seriously”

The interviewee cited the difficulties that come with not being able to access finance, he made an example about his own first major order which amounted to R80 000/R86 000 and how he could not access finance to be able to deliver the order make a breakthrough

- **Access to knowledge and skills**

As discussed above technical infrastructure requirements are coupled to the relevant technological know-how in assessing the likelihood of success in the chemical industry. The lack of technical academic background was well documented from the results of the quantitative data.

Interviewee 1 *“Just a quick background, I studied marketing with Natal tech. At that time it was called Natal Technikon.”*

The interview further added that:

“And I suppose the difference for me was I was already in it at the time. So more than anything. Look from; let me say this that key for me was that TSC gave me good basic chemicals because I don’t have that background. It gave me a good basic foundation on the process of manufacturing and just basic chemistry which I did not have. I did not have before.”

Interviewee 2 *“We started the business in 2001. My background, I studied chemical engineering at Mangosuthu Technikon but I finished off at ML Sultan by then. It is now all DUT. When I started the business I was actually retrenched from the company that I used to work for which was Syndachem but because of the passion of what I was doing, I decided to start my own business. Based on the Umlazi industrial part, manufacturing and supplying cleaning equipment and chemicals.*

Basically, we have been operating for the past 17 years, growing day by day. Although there are challenges in the business w” are still working and still enjoying the journey. Thank you.”

“Ja, definitely I think we don’t need to be skilled only on production. I think also in cash handling we need those skills and the management skills are also very important because the other challenge that we normally have as SMMEs is that we are all-rounders because we are not able to have an accountant in house an HR person in house, a production manager in house and so on and so on. Those are some of the skills that we have to know so that we will be able to catch up on each of these and have a background of what is happening into the business”

And further stated:

“Training is a critical factor yes definitely yes because it opens broad minds. As I was saying I have got a chemical engineering background but we didn’t have an accounting background and finance background and a human resource background but they had to catch up on the way.”

Interviewee 2 also felt that there is a need to educate employees as their knowledge can be detrimental to the business, he stated that:

“And talking about that the employees doesn’t understand the profits and the turnover. And those are the things you need to share with them because they think if the driver is going for a delivery and they have an invoice of R100 000 will think that the company has made R100 000 today and they count and they think why is this guy telling us there is no money. Because I have done three deliveries this month and all of them where above R100 000 that means you do have R300 000 on the table. Those are the challenges that we also encounter in the business but we will keep on pushing.”

The interviewee did not have much to say with regard to the lack of knowledge and skills. He did, however, allude to the fact that chemical manufacturing business or any other business requires more than just understanding production, there are Human Resource issues, Finance issues, business compliance and certification issues that you as a business owner are required to know and perform for your business to be sustainable.”

- **Access to equipment and/or manufacturing facilities**

The chemical industry is reported as being heavily reliant on technological inputs such as equipment, analytical and testing apparatus as well as technical knowledge. It has been noted as well in the literature review that these requirements are costly and are described as one of the entry barriers for SMMEs.

Interviewee 1 *“I had to now start making soap from scratch using Amapini and stuff you know”, “Born literally from those drums which I bought from the market to iPini”*

Interviewee 2 *“Two is with the equipment that we use for mixing and manufacturing of the detergents basically you normally find them abroad maybe in China and so on.*

They look cheap when you are doing the quotation but with the transport and the logistics it becomes very expensive. And when there is a problem for breakages and so on it becomes more problematic but if maybe we can have more companies that manufacture or maybe they are but they are not exposed as we used to because now we now we normally go to the internet to

check the product that we need via the internet then locate them overseas, that is the other challenge."

- **Government support**

The literature review also highlighted the need for government support and intervention, if the SMMEs are to respond to the mission of being enablers to economic growth, job creation and in addressing inequality. The population that was identified for this study was based on the SMMEs that are receiving support from local SMME-supporting agencies.

Interviewee 1 *"What is needed an incubation that is going to pull most if not all of the resources that a businessman starting up needs."*

- **How well do government-funded SMME support centres address the constraints?**

Interviewees were asked to indicate their perceptions on the support they received from government-funded programmes and its ability to mitigate the perceived constraints

Interviewee 1 *"I had some help from SEDA regarding my first tanks and they assisted me it was...about R550 000 to purchase my first tanks."*

Interviewee 2 *"I think in some of the issues they do, like SEDA, for instance, they do assist in these incentives or grants that are available on the product testing and so on. But the problem also is they are engaging in themselves. Are they are running out of funds because they do have good programs but if they do not have funds there is nothing that they can do. I think they also get affected on assisting businesses with their own challenges because there are so many applications that go through and if you are following them up they will tell you that they have got a backlog of the applications and so on. Although good programs are there there are also challenges coming from the government itself that they wish to assist but they can't."*

The interviewee added that:

“I think I was very happy when the government introduced an SMME minister which I was thinking they are going to address all these issues where the SMMEs are battling with but those issues were not addressed as our expectation.”

The interviewee 1 was fortunate to start his business immediately after resigning from his corporate senior role in a multinational company and had finance he could use to fund some drums to kick-start his business. He explains however that it took him some time to access funding to purchase his first mixing tanks through assistance offered by the small enterprise development agency (SEDA). He did however hit a snag as he explains it took him about six months before he could use these due to not having the knowledge and expertise about the layout of his manufacturing facility, he then visited MUT-TSC and viewed their facility layout.

The interviewee feels that support is there and that in some instances it is too basic. He also expressed a feeling that there is no follow through after SMME support agencies offer you support you practically on your own. He cited that the MUT-TSC training was good but too basic for him and the level he was in at that stage of his business. The South African Chemical Technology Incubator (Chemin) offered the same training he had received from MUT-TSC and adding the most useful support he gained from Chemin at that stage was a R20 000 loan paid to a supplier for him to purchase raw materials. SEDA bought him tanks which he could not use for seven months. In all these instances he argues there was no follow-through had there been it would have made life easier for SMMEs. He expresses his opinion that is quoted above, saying that the constraints would be addressed by the incubator he proposes.

- **Reciprocity of relationship between government and SMMEs - Job Creation**

As discussed in the literature review, the South African National Development Plan Vision 2030, (2012) identified SMMEs as the vehicle for economic growth, job creation and mechanism to redress the imbalances of the past. Interviewees believe that they are positively responding to the role of creating jobs. This is evident in the response below:

Interviewee 2 *“But I think we do have an impact in the society because we do employ people who are also be able to assist their families”,*

- **Globalization**

Interviewee 2 *“The other challenge we normally pick up again is the competition because with the bigger companies when they secure raw materials because they buy in bulk they get certain discounts which are not applicable to us, as we are not buying volumes as they are. And when it comes to competition our prices will not be the same because we are actually getting the raw materials much more expensive than them. Those are some of the challenges that we encounter in the business”*

The interviewee further added:

“Yes, basically one is the exchange rate which affects us a lot because from the suppliers of the raw materials because we buy locally from the people who import and also wants to make their profit and the big business buy directly from China or from wherever the raw materials are and they cut the middle man. We get affected by the middle man which adds their own mark ups and supply us, that is one.

Two, the exchange rate because they normally when the guys are buying overseas if the exchange rate is higher the raw materials just sky rocketed. What normally happens is that even our suppliers you cannot budget for the raw material actual prices because they fluctuate on a monthly basis because the pine oil for instance or the sleds that you buy this month, next month you will find it at a different price because if the rand changes they automatically take the prices up without our concern and it cuts off our budget.

And the challenge becomes when you are going to your client because you cannot tell your clients on a monthly basis that your prices are changing. That's affect our clientele because you have to stick to your price. Maybe you can do your price increase once or twice a year. But with the fluctuations of the raw materials from the supplier, it affects our profit margins”

- **Legislation and Compliance**

Interviewee 1 *“Perfecting that product starts to become a little more challenging because you have to constantly manage the quality of the product versus your input costs. Those two go together. Some people will not necessarily understand that but if you are going to commercialise it you have got to balance it to quality of the product versus your input costs. So that becomes a bit more technical in terms of what...”*

Interviewee 2 *"And to go through the certification of the products as much as it is very expensive to certify your product but you find those are the requirements which need cash flow injection towards the approvals of the products and testing. Those become a challenge to us as SMMEs but although we do overcome those challenges in most cases, if South African Bureau of Standards (SABS) could subsidize those SMMEs when they are doing their testing and so on it will be much better."*

4.4 Data Analysis

4.4.1 Convergence coding matrix

Table 4.10: Convergence coding matrix

Findings	Interview Findings	Quantitative Results	Convergence Assessment
Access to market/Competition	The respondent highlighted this a major constraint citing product quality and cost as the main concern.	The respondents indicated competition is problematic but mainly amongst themselves as SMMEs	Partial agreement

Access to finance	The respondent believes that finance is not easily accessible but SMMEs need to find means to survive till they can access it	Respondents believe that finance is not accessible hence their businesses do not survive or grow	Agreement
Access to Knowledge and skills	The respondent believes that the training that is provided by the MUT-TSC is sufficient to starting a business but too basic to sustain the technological needs of the enterprise. Also believes that training offered by support agencies need to offer complete kind of support to a start-up enterprise.	Respondents indicated that they still need further technical training to entrench their understanding of chemicals manufacturing and they consider this to be an important success factor	Agreement
Access to Equipment and/or Manufacturing facilities	The respondent was fortunate to have funds to fund	Respondents expressed favour for support	Agreement

	the initial basic manufacturing equipment, however, he agrees that this is a problem and hinders success	agencies like the MUT-TSC that can provide manufacturing facilities	
Access to support	The respondent argued the support currently offered by the SMME support agencies lacks follow through.	Respondents expressed satisfaction with the current support being offered	Dissonance
Government support	From the Interviews, it was deducted that government support exists however, lack of coordination amongst the various agencies may lead to unnecessary delays or translate to SMMEs losing business or major clients. Thus hindering business	-----	Silence

	growth and survival		
Globalization	The respondents reflected that the impact of globalization affects their prices the most thereby hampering their ability to compete on price	-----	Silence
Legislation and Compliance	Interviews reflect that compliance in terms of quality of products and access to appropriate facilities is a critical factor in business growth and survival however limited access to financial resources makes it an impossible goal to achieve.	Respondents indicated that one of the main reasons they utilize government-funded facilities (MUT-TSC) is to gain access to accredited facilities (Laboratories and manufacturing plant). This is a critical success factor for this group of emerging entrepreneurs as this study has revealed that 92% of them do not have their own	Agreement

		manufacturing facilities.	
--	--	---------------------------	--

4.5 Conclusion

This chapter focused on presenting and analyzing data that was obtained from SMMEs through questionnaires and interviews. At the core of this study is to identify factors that owners of chemical manufacturing companies perceive as constraints to their survival and growth. The study revealed that the most important constraint for SMMEs is access to market and competition from established businesses. The main contributing factor is that SMMEs cannot compete on price and quality given their limited access to resources. The second constraining factor as identified in this study is access to facilities and finance (both at 23%). To be able to compete SMMEs have to deliver on time, within budget and at the right quality. Resource limitations imply that they cannot supply the required volumes of the right quality and still make a profit. It is also worth noting that even SMMEs themselves are conscious of their low level of skills and the need to receive support to address these.

CHAPTER 5 - DISCUSSION, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

The previous chapter presented the results of data that was collected, through quantitative and qualitative techniques in order to solicit the factors owners of SMMEs perceived as constraints towards the growth and survival of their businesses. The analyses of the results revealed factors limiting the sustainability, growth and survival of the chemical manufacturing SMMEs sector. The summary of the findings is presented below.

5.2 Summary of results

Question1: What do owners of small chemical manufacturing enterprises perceive as constraints to the growth, survival, and sustainability of their businesses?

This research study revealed that owners of small chemical manufacturing enterprises perceive the eight (8) factors as key constraints to the growth, survival, and sustainability of their businesses. These factors are access to resources (finance; manufacturing facilities/equipment); access to markets and competition factors; access to technology/knowledge and skills; access to government support; globalization and legislation and compliance.

The study revealed that access to market/competition ranked high followed by access to manufacturing facilities/equipment and access to finance, however, the study also revealed that constraints or perceived constraints were subject to SMME educational background, years of operation/experience (personal and business).

Question 2 Are SMME support centres well equipped to address factors that owners of chemical manufacturing enterprises perceive as constraints to their survival, growth, and sustainability?

It was deducted from the analysis of data that SMMEs feel that support agencies are well equipped to address the factors that constraints to their survival, growth, and sustainability. However, the SMMEs believe that the support is not well coordinated amongst the different agencies. This spells out the need for support agencies to coordinate their services such that SMMEs can receive holistic support that can propel them to survive, grow and be sustainable.

Question 3: How can the SMME support agencies improve their services?

The study revealed that SMMEs will benefit from streamlined service offering amongst SMME support agencies. This supports the view that technical support that is available through centres like the MUT-TSC should be streamlined to talk to the business and financial support that is offered by agencies like SEDA. The timing of support is also critical to ensure alignment of resources and business needs, funding is linked to appropriate equipment and training to the required skills.

Question 4: Why these constraints exist? (This is the question about understanding the environment in which SMMEs operate). Which constraints are contextual factors influenced by the environment (economic, legal, political climate, educational landscape, race, and rural/town/urban spatial arrangements).

The study revealed that the perceived constraints are also subject to educational background, years of operation, experience (personal and business). Dissonance can then be explained in that respondents to questionnaires with limited education industrial exposure expressed satisfaction with the manufacturing training, and would actually prefer that it runs over longer period of time. It would appear that they found the programme challenging to some degree. However those who have academic qualifications found the programme helpful enough to get them started by too basic for business growth. Business growth, according to interviewees related to improving their manufacturing processes and their range of products. Limited ownership of facilities also highlighted by the respondents while interviewees own chemical manufacturing facilities and are looking for specialised support, hence the proposal for incubation was forwarded by one of the interviewees.

5.3 Discussion of the results

This study aimed at determining factors that owners of chemical manufacturing SMMEs in KZN perceive as constraints to growth, survival and sustainability of their small businesses. According to the USA GAO (1990) cited in Ngubane (2015) validity of the results in relation to the cause and effect is developed from the agreement amongst different types of data sources, coupled with systematic elimination of alternative explanations. Verification in case studies can be achieved through examination of evidence collected from multiple sources of data for consistency. Several researchers (Mills, Eurepos, and Wiebe (2010), Morra and Friedlander (1999 GAO,(1990)) identified strategies ideal in conducting the said comparisons as patterns matching, thematic review and explanation building. Techniques used for the three strategies

include: graphical displays of data, tabulation of event frequencies, and time series or chronological patterns.

However one will there collaborate the following factors that have been conducted in the study. The study revealed that there are eight (8) factors that limit the competitiveness of SMMEs. These eight critical factors are access to markets, financial resources, relevant skills, equipment and facilities, as well coordinated government support. These factors can be grouped in two three (3) categories. The first category is concerned with limited access to resources. These critical resources are finance, skills, equipment and facilities (laboratories and production facilities). The second set of factors are those that are linked Markets and they include globalization and competition. The last set is government support.

5.3.1 Resource Factors / Constraints

5.3.1.1 Access to Finance

The data collected is in agreement on this being a major factor. SMMEs believe that if finance was accessible they would be better positioned to grow and sustain their businesses

5.3.1.2 Access to knowledge and skills

This was a common utterance from all the respondents be it at different levels and for different aspects. However what is clear is that SMMEs feel that insufficient knowledge and skills is a constraint to their growth and they believe more can be done by SMME support agencies in terms of their service offering to address this aspect.

5.3.1.3 Access to Equipment and/or Manufacturing facilities

The chemical manufacturing business is one that requires equipment/manufacturing facilities to be able to grow. Data revealed 92% of the respondents did not have their own manufacturing facilities and this is on major constraint that SMMEs face.

5.3.2 Markets Factors/ Constraints

5.3.2.1 Access to Market/Competition

The convergence coding was partial agreement. The data revealed though this is a factor, but the SMMEs view different aspects of access to market/competition to be a constraint

5.3.2.2 Legislation and Compliance

Qualitative data revealed this as a constraint. SMMEs are expected to produce on small scale the same quality as established brands for a cheaper price. However this is not possible due to economies of scale therefore SMMEs end up with an expensive product that consumers do not purchase due to trust (unknown/no name brand) and price.

5.3.2.3 Globalization

The reality of globalization and its impact on business is also a factor in the success of SMMEs. This study revealed that respondents to questionnaires were silent on the issue of globalization. However, interviews revealed that the globalization, in the form of import raw materials that arrive in high volumes and cost for SMMEs introduces the middle man (wholesalers of raw materials) thereby increasing input costs for SMMEs. The higher input costs minimizes profits that can be generated by the business. For SMMEs this challenge is coupled with the fluctuations in local currency which impacts negatively on budgets and longer term contracts SMMEs find themselves locked in prices they quoted while they suffer from increases due to the weakening currency. The dilemma of local currency fluctuations combined with import duties is also highlighted as a challenge in sourcing appropriate equipment from international suppliers. Equipment and facilities are also identified as key constraints to business growth.

5.3.3 Government support for SMMEs

The literature revealed that access to technological skills is a critical success factor for the chemical manufacturing industry.

This study revealed mixed results with regard to the effectiveness of the training provided by the entrepreneurship support centre. This is listed in Table 4.8 (Convergence Matrix) as a dissonance. This can be understood when considering the level of education of the participants. Results from quantitative data revealed that respondents had limited academic qualifications and working experience. In contrast qualitative data from interviewees revealed that SMMEs who had managed to grow and run sustainable businesses had formal post-school education and corporate working experience.

5.4 Managerial Implications

Emanating from this study are four factors that are viewed by the researcher as holding a critical stake for the consideration by both managers of SMME support programmes and the owners

of SMMEs. These managerial implication range from SMME support agencies providing tailored support to SMMEs, and owners of SMMEs minimizing their constraints to skills development, business networking, compliance and improving their saving and financial investment into the business' future.

5.4.1 Importance of understanding diversified support needs of entrepreneurs in KwaZulu-Natal South Africa,

The South African economy is currently under pressure to grow and support the ever-growing population. The limited growth of the economy has an effect of increasing the scourge of unemployment which in turn results in the widening inequality gap. As this study has revealed, of the nine provinces of South Africa, KZN is the third poorest province. The impact of these economic stagnation pressures is greater in poor provinces like the KZN. The impact of this scenario on entrepreneurship support is that the pool of entrepreneurs requiring support is increasing in terms of numbers and diversity. The first difference that SMME support agencies have to deal with relate to having to support a combination of opportunity-driven and necessity-driven entrepreneurs. These two groups of entrepreneurs vary in terms of their intrinsic motivation and skills sets and as such their support-needs. Tailor made support packages are ideal, however the agencies' ability to provide these is also hampered by resource availability.

However, based on the findings of this study there is a case for managers of SMMEs support centres to redesign their models of engaging SMMEs to ensure that they meet the most pressing needs of the entrepreneurs. General support programmes should be complemented with specific and targeted supports that aims at empowering owners to addressing their critical constraints. In this way these agencies are likely to achieve the much needed socio-economic impact as opposed to offering generic one-fit-all services. However this is only possible if the focus from the government is more on impact than on numbers of SMMEs assisted

5.4.2 Owners of SMMEs should constantly engage in skills development and participate in business networks.

This study has also identified the impact of the country's weak education system on entrepreneurship as being negative. The time-and resources constraints on SMME implies that most owners might not have the luxury of engaging in formal education, however it is crucial for owners of small business to keep abreast of the developments in their specific industries. SMME support agencies are one important resource to support owners in this regard. Owners

should take advantage of the existing business networks and professional organization to sharpen their skills and remain at the cutting edge of technology and business information.

Owners of SMMEs should be members of local structures that lobby for business support by engaging relevant stakeholders. These business forums' advocacy on business survival issues provides a two-way engagement between business owners and policy-makers, governments and communities. Maintaining active membership in these forums will also provide strategic networks and access to experienced business leaders for owners of SMMEs.

5.4.3 Business compliance

In business, compliance entails aligning the company's operations governance and general management with the laws and regulations applicable to the sector, country and in some instances with international standards. Compliance also extends to observing staff, and consumers rights. While this may be viewed as a burden on the business owner, in South Africa, it is essential if the entrepreneur intends growing and sustaining the business. For manufacturing SMMEs, the burden also lies in ensuring due diligence toward the environment, and this aspect is critical in engaging and doing business with government or large corporations.

5.4.4 Re-invest to the business in order to be able to grow

To position their business better and realise growth owners of SMMEs will need to invest back to business. This study, like others referenced in the literature review, reveal that SMMEs seem to rely heavily on government support for infrastructure and facilities acquisition. The current economic conditions in South Africa are clearly indicative of the government funds that cannot adequately meet this expectation. It is therefore critical that SMME owners equip themselves with financial management skills that will assist them in investing in their businesses for growth and survival. Developing the culture of saving and financial prudence will also assist in improving their standing and access to commercial funding instruments.

5.5 Recommendations

- SMME support agencies educate SMMEs about factors that constrain survival, growth and sustainability of their businesses mitigating strategies.

- Integration of services and support amongst SMME support agencies is essential to ensure that owners receive holistic support that address their survival, growth and sustainability needs.
- Government to be an enabler and provide enabling processes for SMME support agencies to offer holistic support and produce sustainable SMMEs that will survive, grow and be sustainable.
- Customer feedback and generation of lessons learnt has the potential of playing a key role on improvement of services offered by SMME support centres.

5.6 Conclusion

The findings of the study lead to the conclusion that owners of chemical manufacturing SMMEs in KZN perceptions of factors that constrain their growth, survival and sustainability are valid and supported by literature review of previous similar studies i.e) research study to identify needs, opportunities and challenges of SMEs in the chemical and plastics sector. The study also revealed that SMME support agencies are well equipped to address constraints that hinder success of SMMEs in the chemical manufacturing sector. However lack of coordination amongst the various agencies leads to the disconnect in the service provision which therefore deprives the SMME holistic support that is otherwise possible.

References

Alden C, Davies M, 2006. A profile of the operations of Chinese multinationals in Africa, South African Journal of International Affairs, 13:1, 83-96.

Ahuja, D.; Nasr, N.; Fawcett, J.; Whitfield, M.; and Mclean, S.M (2015). Implementing a triangulation protocol for integration of findings in a mixed methods study: a worked example. [Online] Accessed: 26 June 2019. Available at: [https://www.physiotherapyjournal.com/article/S0031-9406\(15\)00186-8/pdf](https://www.physiotherapyjournal.com/article/S0031-9406(15)00186-8/pdf)

Beaureu of Economic Research (2016). The Small, Medium and Micro Enterprise sector of South Africa. [Online] available at: <http://www.seda.org.za/Publications/Publications/TheSmall,MediumandMicroEnterpriseSectorofSouthAfricaCommissionedbySeda.pdf>. Accessed: 1 October 2017.

Blueprint Strategy & Policy (2005). Promotion of Small and Medium Enterprises in the South African Chemicals Sector. [Online]. Available at: https://SME_Support_Chemicals_Final_Draft-2.pdf. Accessed: 8 July 2017

Blueprint Strategy & Policy (PTY) Ltd, 2005. Promotion of Small and Medium Enterprises in the South African Chemicals Sector. Prepared for Chemicals Summit NEDLAC.

Department of Trade and Industry (2017). Industrial development. [Online] Available at: http://www.thedti.gov.za/industrial_development/sec_chemicals.jsp. Accessed: 20 September 2017.

Department of Trade and Industry (2017). Promotion of Small and Medium Enterprises in the South African Chemicals Sector. [Online]. Available at: https://www.thedti.gov.za/industrial_development/docs/fridge/SME_Support_Chemicals_Final_Draft.pdf. Accessed 7 July 2017.

Department of Trade and Industry (the dti). (2018). The Chemical Sector. [Online] Accessed 21 March 2019. Available at: http://www.thedti.gov.za/industrial_development/sec_chemicals.jsp.

Driver, A. and Nel, J.L. (2015). *National River Ecosystem Accounts for South Africa Discussion Document*. [Online] Available at: <http://www.statssa.gov.za/wp->

[content/uploads/2016/08/National-River-Ecosystem-Accounts-Discussion-Document-FINAL.pdf](#) Accessed 14 October 2017.

Duguila, R.P., Bastos, J.L., Bonamigo, R.R., Gonzalez-Chica, D.A. and Martinez-Mesa, J. (2014). Presenting data in tables and charts. *Anais Brasileiros de Dermatologia*. On-line version ISSN 1806-4841 *An Bras Dermatol*. 2014 Mar-Apr; 89(2): 280–285. [Online]. Available at: [10.1590/abd1806-4841.20143388](http://dx.doi.org/10.1590/abd1806-4841.20143388). Accessed: 12 July 2019.

Du Plessis, H. (2016) a Roadmap for Smart City Services To Address Small Business Challenges. Master of Engineering. [Unpublished]: [University of Johannesburg](#). Retrieved from: https://ujcontent.uj.ac.za/vital/access/manager/Index?site_name=Research%20Output (Accessed: 11 August 2017).

Erixon F, 2018. The economic benefits of Globalization for business and consumers. Director of the European Centre for International Political Economy (ECIPE) a world-economy think tank based in Brussels.

Heinzelbecker K, 2005. Futuring in the European Chemical Industry. Practitioners Section, Institute of Business Administration. ISSN 1613-9615, www.businesschemistry.org

Hoekman B, Javorcik B S, 2006: Global Integration and Technology Transfer. A co-publication of Palgrave Macmillan and the World Bank.

IGEAT, 2008. The impact of globalization and increased trade liberalization on European regions. Study for DG Region Final report.

Jones R F, 2006. The Chemical Industry in the 21st Century. Franklin International LLC, 4 Kenny Circle, Broomall, PA 19008. American Chemical Society.

Journal of International Business Studies, Vol. 28, No. 4, pp. 679-710. Palgrave Macmillian Journals

Kolk A, Levy D, 2004: Multinationals and Global Climate Change: Issues for the automotive and oil industries. *Multinationals, Environment and Global Competition. Research in Global Strategic Management*, Volume 9, 171-193.

KZN Top Businesses Portfolio (2017). Manufacturing Sector. [Online] Available at: <http://kzntopbusiness.co.za/site/manufacturing>. Accessed: 4 October 2017.

Leshou, C. (2017). SEDA Strategic Overview –Conference Proceedings SABOA 2017 Conference and Exhibition. [Online] available at: http://www.saboa.co.za/index_html_files/CLESHOUSEDA.pdf. Accessed 5 October 2017.

Levy DL, Kolk A, 2002. Strategic Responses to Global Climate Change: Conflicting Pressures on Multinationals in the Oil Industry. *Business and Politics*, Vol. 4, No. 3.

Majozi T, Veldhuizen P, 2015: The Chemicals Industry in South Africa. American Institute of Chemical Engineers (AIChE). www.aiche.org/cep.

Majozi, T. and Veldhuizen, P. (2015). The Chemicals Industry in South Africa [Online] Available at: www.aiche.org/cep Accessed: 7 July 2017.

Machaka J, Roberts S, 1996. Addressing the apartheid industrial legacy: local economic development and industrial policy in South Africa – the case of Ekurhuleni. Corporate Strategy and Industrial Development research project School of Economic and Business Sciences. University of the Witwatersrand.

Maguire, M. and Delahunt, B. (2017). Doing a Thematic Analysis: A Practical, Step-by-Step Guide for Learning and Teaching Scholars. Volume, All Ireland Journal of Teaching and Learning in Higher Education (AISHE-J) Number 3 (Autumn 2017) [Online]. Available at: <http://ojs.aishe.org/index.php/aishe-j/article/viewFile/335/553>. Accessed: 12 July 2019.

Mail&Guradian, 24 February 2017. [SPECIAL REPORTS](#). Small business 101: Avoid the pitfalls. [Advertorial Feature](#). [Online] Accessed: 2 July 2019. () Available at: <https://mg.co.za/article/2017-02-24-00-small-business-101-avoid-the-pitfalls>.

Makhija V, Kim K, Williamson S D, 1997. Measuring Globalization of Industries Using a National Industry Approach: Empirical Evidence across Five Countries and over Time.

Masutha M, Rogerson C M, 2014. Small enterprise development in South Africa: The role of business incubators. In: Rogerson,C.M. and Szymańska, D. editors, *Bulletin of Geography. Socio-economic Series*, No. 26, Toruń: Nicolaus Copernicus University, pp. 141–155.

Mathale, C. (2018). Deputy Minister: Small Business Development, Cassel Mathale, Vhembe SMME Summit in Thohoyandou, Limpopo, South Africa, 16 November 2018. [Online] Accessed: 19 April 2019. Available at: <https://www.sanews.gov.za/south-africa/creating-enabling-environment-smmes-entrepreneurs>.

Mathibe M S, Van Zyl J H, 2011. The impact of business support services to SMME's in South Africa. *International business and Economics Research Journal*, Vol. 10, No. 11.

Ngubane, V.X. (2016). Impact Evaluation of Entrepreneurship support programmes: A case study of the technology Station in Chemicals at Mangosuthu University of Technology. Master in Business Administration.UKZN. [Unpublished].

Orbeta Jr, Aniceto C, 2002: Globalization and Employment: The impact of Trade on Employment level and structure in the Philippines. Philippine Institute for Development Studies.

O'Cathain, A.; Murphy, E.; and Nichol, J. (2010). Three techniques for integrating data in mixed methods studies. [Online] Accessed: 22 April 2019. Available at: <https://www.bmj.com/content/341/bmj.c4587.full.print>.

Penford, D. (2015). The South African Chemical Industry 2015. [Online] Available at: Accessed Quantec Research (Pty) Ltd (2012). Available at: www.quantec.co.za. Accessed: 13 October 2017.

Pernegger, L. and Godehart S., (2007). Townships in the South African Geographic Landscape – Physical and Social Legacies and Challenges. [Online] Accessed; 20 April 2019. Available at:<http://www.treasury.gov.za/divisions/bo/ndp/TTRI/TTRI20Oct202007/Day20120-202920Oct202007/1a20Keynote20Address20Li20Pernegger20Paper.pdf>.

Purkitt H E, Burgess S, 2002. South Africa's Chemical and Biological Warfare Programme: A Historical and International Perspective. *Journal of Southern African Studies*, Vol. 28, No. 2, pp. 229-253.

Rivers-Moore, NA, Goodman PS and Nkosi MR (2007) “An assessment of the freshwater natural capital in KwaZulu- Natal for conservation planning”. [Online] Available at: http://www.wrc.org.za/KnowledgeHubDocuments/WaterSAJournals/Manuscripts/2007/04/WaterSA_2007_04_2158.pdf. Accessed 4 October 2017.

Rogerson C M, 1990. Defending Apartheid: Armscor and the Geography of Military Production in South Africa. *Geo Journal*, Vol. 22, No. 3, a New South African Geography? (November 1990), pp. 241-250.

Scott D, Oelofse C, Guy C, 2002. Double Trouble: Environmental Injustice in South Durban. Empowering Women for Gender Equity, No. 52, Sustainable Development: An Oxymoron? (2002), pp. 50-57.

Sirola, J.J. (2017). What is Industrial Chemistry? Handbook of Industrial Chemistry and Biotechnology, pp.1-9. [Online] Accessed: 25 June 2019 Available at https://link.springer.com/chapter/10.1007/978-3-319-52287-6_1.

South African Government. (1995). National strategy for the development and promotion of small business: White Paper. [Online] Accessed: 21 March 2019. Available at: <https://www.gov.za/documents/national-strategy-development-and-promotion-small-business-white-paper>.

StatsSA (2019). [Quarterly Labour Force Survey – QLFS Q1:2019](#) [Online] Accessed; 20 April 2019. Available at: <http://www.statssa.gov.za/?p=12115>. Statssa (2017). *Poverty Trends in South Africa: An examination of absolute poverty between 2006 and 2015 report*. Available: <http://www.statssa.gov.za/publications/Report-03-10-06/Report-03-10-062015.pdf>.

Accessed: 29 September 2017

The Government for South Africa. (2013) National Development Plan 2030. [Online] Available at: <https://www.gov.za/issues/national-development-plan-2030>. Accessed: 12 September 2017.

Van Zyl R, 2008. South African Chemical Sector Report on Skills Development and The Government's New Economic Policy Priorities. Research commissioned by Department of labour South Africa. Ozone Business Consulting (Pty) Ltd in association with: Human Sciences Research Council.

31 March 2017

Mr Njabulo Blessing Mdlalose (214581754)
Graduate School of Business & Leadership
Westville Campus

Dear Mr Mdlalose,

Protocol reference number: HSS/1691/016M

Project title: Owners' perceptions of factors that constrain the survival and growth of small, medium and micro chemical manufacturing businesses in KwaZulu-Natal, South Africa

Approval Notification – Expedited / Amendment Application

In response to your application received on 07 October 2016 and request for an amendment received on 28 February 2017. The Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

Amendment:

- Change in Research Sites

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form; Title of the Project, Location of the Study must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for period of 3 years from the date of original issue. Thereafter Recertification must be applied for on an annual basis.

Best wishes for the successful completion of your research protocol.

Yours faithfully,

.....
Dr Shenika Singh (Chair)

/ms

cc Supervisor: Professor Theuns Pelser
cc Academic leader Research: Dr Muhammad Hoque
cc School administrator: Ms Zarina Bullyraj

Humanities & Social Sciences Research Ethics Committee

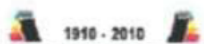
Dr Shenika Singh (Chair)

Westville Campus, Govan Mbeki Building

Postal Address: Private Bag X54001, Durban 4000

Telephone: +27 (0) 31 260 3587/8350/4557 Facsimile: +27 (0) 31 260 4609 Email: ximbap@ukzn.ac.za / shymanm@ukzn.ac.za / mohungo@ukzn.ac.za

Website: www.ukzn.ac.za



100 YEARS OF ACADEMIC EXCELLENCE

Founding Campuses:  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville

Owners perception of perceptions factors that constrain the survival and growth of Small Medium and Micro Chemical Manufacturing Businesses in KwaZulu Natal, South Africa.

ORIGINALITY REPORT

6%	2%	1%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to University of KwaZulu-Natal Student Paper	2%
2	Ahuja, D., N. Nasr, J. Fawcett, M. Whitfield, and S.M. Mclean. "Implementing a triangulation protocol for integration of findings in a mixed methods study: a worked example", Physiotherapy, 2015. Publication	<1%
3	Submitted to Midlands State University Student Paper	<1%
4	www.bmj.com Internet Source	<1%
5	www.labour.gov.za Internet Source	<1%
6	repository.nwu.ac.za Internet Source	<1%
7	ncbaeryk.yolasite.com	