UNIVERSITY OF KWAZULU-NATAL

IMPACT EVALUATION OF ENTREPRENEURIAL SUPPORT PROGRAMMES: A CASE STUDY OF THE MANGOSUTHU UNIVERSITY OF TECHNOLOGY-TECHNOLOGY STATION IN CHEMICALS.

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DECLARATION

I .Veronica Xolile Ngubane declare that

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ABSTRACT

Entrepreneurship is generally regarded as a tool for socio-economic development, and in SA it is regarded as a vehicle for poverty reduction, employment creation and economic development. Entrepreneurship support programmes are interventions or initiatives designed to enhance competitiveness of entrepreneurs and in particular Small, Medium and Micro Enterprises (SMMEs). The SA government has established a number of agencies and institutions whose main function is to develop the SMMEs through various forms of support. Amongst these entrepreneurship programmes are those that are geared towards improving innovation, technology usage and adoption amongst SMMEs. The desired outcomes of these initiatives are encouraging and escalating technological innovation in order to enhance economic growth and the standards of living for all South Africans. At the core of these initiatives is developing and exploiting technological innovations.

This research study aimed at evaluating the impact of the entrepreneurship support programmes on the intended beneficiaries which are SMMEs. The impact evaluation of entrepreneurship support programme was conducted through a case study of the MUT-TSC, a centre that provides technological support to chemical manufacturing SMMEs. The study revealed that this technology transfer centre is meeting the needs of the SMMEs by providing access to facilities, infrastructure and information and support to SMMEs at affordable cost. It also revealed that the indicators that are used by implementing agencies during monitoring and evaluation exercises are effective indicators of impact on beneficiaries. The study also revealed that the services of the technology transfer centre results in desirable and positive impact on the technological aspect of the SMMEs. This implies that there is a direct link between outputs that are measured (success indicators) and desirable outcomes (positive impact) of the programme on the targeted beneficiaries.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Entrepreneurship is regarded as a solution to socio-economic challenges of unemployment, different kinds and levels of poverty and stunted economic growth. The NEDLAC (2005) report indicates that SMEs contribute to job creation, increase the country's GDP and promote innovation. According to Ndabeni (2008), "SMMEs are increasingly becoming a major feature of economic development policy in both developed and developing countries because of their labour-absorptive capacity and their contribution to poverty alleviation and employment creation". (Ndabeni, 2008, p.1) Entrepreneurship is about the development of new enterprises and growth and expansion of existing businesses. This is vital for sustainable growth of the economy. As indicated by Peters and Naicker (2013, p.15), the South African industrial sector is dominated by SMMEs in terms of numbers of entities. Given this importance of entrepreneurship to economic development and growth, governments throughout the world are engaged in programmes that are aimed at supporting entrepreneurship. The Department of Trade and Industry's Integrated Strategy on the Promotion of Entrepreneurship and Small Enterprises, clarifies that government's responsibility is that of "fostering an enabling environment for the creation and growth of small enterprises" (DTI, 2006 p.3) This is evidence of the recognition by government that if the SMMEs are viewed as agents of change they will need to be supported as they will not be able to achieve these goals (of poverty alleviation and creation of employment) if they are on their own. As asserted by Ligthelm (2008), SMMEs have the potential to alleviate the high levels of unemployment in South Africa. SMMEs in South Africa also have an added political responsibility to promote government policies like Black Economic Empowerment, a system through which government hopes to create an equitable distribution of wealth, which further exerts strain on their limited resources.

The purpose of this research study is to undertake an impact evaluation of entrepreneurship support programmes that are designed to nurture SMME growth and sustainability. The World Bank (2008) describes impact evaluation as an assessment of "changes in the well-being of individuals, households, communities or firms that can be attributed to a particular project, programme or policy." This addresses the issue of impact that results from the outputs of these entrepreneurship support programmes. Impact evaluation is about the changes or difference in the receiving environment or population as a result of a particular intervention. Its goals are to attribute observed changes on the receiving environment to a

particular project or intervention. The receiving environments, in this case study, are the SMMEs who are the intended beneficiaries of these programmes.

This study addressed the need for a deeper understanding of the issues prevalent in the entrepreneurship support space by involving both the SMMEs and the practitioners or implementing agencies. This was achieved by using both quantitative and qualitative research methods in a complementary way. The research strategy employed was to firstly identify the needs of SMMEs as described by the beneficiaries themselves and those articulated in the entrepreneurship support programmes' objectives. Secondly, the study analysed the indicators that are described as relevant tools for determining the outputs of the technology transfer interventions on SMME development, with the intention of understanding their importance and relevance. Lastly, the study determined the impact of these outputs to all affected parties including stakeholders (agencies of government, host universities) and beneficiaries (SMMEs). The outcome of this study will assist in explaining the value that is attached to these success indicators as outputs aiming at generating the desired impact. Entrepreneurship support programmes use indicators in conducting monitoring and evaluation of the entrepreneurship support programmes, and these indicators being the important outputs leading to outcomes which then result in the desired impact on the receiving environment. These indicators are monitored frequently by programme practitioners while impact evaluation of programmes is undertaken with less frequency or not at all. It is considered essential therefore to understand the value that is attached to these indicators as monitoring and evaluation tools and their ability to predict if these indicators will ensure that the programme achieves the desired impact. This will be achieved by examining the success measures or outputs that are used by this and other similar technology transfer centres and their stakeholders as tools to monitor, evaluate and determine the impact of their interventions to intended beneficiaries, namely the SMMEs.

Organizations delivering entrepreneurship support programmes should undertake impact assessments to help them understand and evaluate the contribution they are making to the development of the targeted beneficiaries which are the SMMEs. These studies are also capable of revealing the unintended achievements as these are equally important in informing the decisions that will guide and propel the programme or intervention to new heights. At the heart of impact evaluation is quantifying the change that results from the intervention. This impact evaluation is concerned with change that is brought about by the intervention/s of the entrepreneurship support programme on the receiving environment, the SMMEs. This systematically evaluate the changes, positive and negative on the SMMEs

resulting from the interventions of the entrepreneurial support programmes, and also to assess if these changes were intended or not by the programme and whether their impact is desirable or not on the side of the SMME. For the purpose of this study, the inherent understanding of impact; whether positive or negative, is that of the resultant change in the performance, practice and/or positioning of the enterprise in the economic development continuum. The ultimate purpose is to understand the changes that are brought about by these programmes to the SMMEs whose cause they are designed to advance and promote. Impact evaluation also intends to answer the question relating to the degree to which a certain intervention changed the state of a particular domain, highlighting the long-term intended and unintended effects of the programme. The primary question is whether or not these programmes bring about the desirable changes in the entrepreneurship sphere. The converse is that it should be able to answer the question of what it would have been like in the absence of the intervention. The case of SMME support is facing another challenge of a dichotomous and yet divergent set of expectations. While there are expectations that relate to developmental issues, there is another set looking at promotion of innovation and; national and global competitiveness.

1.2 STATEMENT OF THE PROBLEM

In an attempt to develop and sustain economic growth and improving social standing of its citizens, the South African government has initiated a number of entrepreneurship support programmes. The beneficiaries of these programmes are SMMEs, who are seen as vehicles of economic development, alleviation of poverty and as instruments of job creation. There is a need to quantify the impact of the programmes on the targeted beneficiaries. A number of stakeholders are interested in the outcomes or impact of the government-funded entrepreneurship support programmes. Particularly, in addressing concerns amongst citizens on the return on investment and the socio-economic value derived from these programmes. A number of studies undertaken have shown that there is minimal impact derived from government funded entrepreneurship support programmes (Peters and Naicker (2013), Olawale and Garwe (2010), Ligthelm (2008)). There is also a need to undertake impact evaluation studies in order to inform policy and future interventions. These entrepreneurship support programmes are geared towards providing business support while others provide technological support. This study is concerned with evaluation of the impact of these programmes as vehicles for entrepreneurship support systems. Most entrepreneurship support programmes undertake Monitoring and Evaluation without the focus on impact. The majority of evaluations conducted focus on outputs and outcomes which does not lead to true accountability. This study proposes to introduce the next level of

evaluation which is impact evaluation through which one can measure the developmental impact of the programme or intervention. This will serve the purpose of suggesting changes to improve the programme and inform future policy.

This will be achieved by studying the impact of a technology transfer centre (the Technology Station in Chemicals) hosted by the Mangosuthu University of Technology (MUT), Umlazi, Durban. This case study will show why government fund entrepreneurship support programmes in support of SMMEs and cooperatives as targeted beneficiaries of these programmes and vehicles of socio-economic development. This case study will also show how entrepreneurship support programmes contribute to the development of entrepreneurship in South Africa by supporting SMMEs and cooperatives; and eventually contribute to socio-economic development of South African citizens.

1.3 PROPOSITIONS AND RESEARCH QUESTIONS

1. Entrepreneurship support programmes provide services that are needed by the SMMEs and cooperatives,
    - **Research Question 1**: How well does the set of services provided by the entrepreneurship support programme meet the needs of the SMMEs and/or cooperatives?
2. The implementing agencies of entrepreneurship support programmes have a set of indicators that they use to conduct monitoring and evaluation exercise, and these success indicators are able to predict the impact of the programme on the beneficiaries,
    - **Research Question 2**: How effective are these success indicators in predicting the impact of the entrepreneurship support programmes on the receiving environment?
3. Entrepreneurship support programmes results in positive impact on the SMMEs and cooperatives.
    - **Research Question 3**: How effective are the entrepreneurship support programmes in delivering positive impact on the receiving environment, the SMMEs,

The unit of analysis for this research is the Technology Station in Chemicals at the Mangosuthu University of Technology. The Technology Stations (TS) are centres of the Technology Stations Programme (TSP) and hosted at some South African Universities of Technology and some traditional Universities throughout the country. These centres have a mandate of providing technological support to SMMEs. Each TS focuses on a particular technology in servicing SMMEs, and in the case of the one hosted by the Mangosuthu

University of Technology, the focus is on chemical technology. Technology Stations address the endogenous problems and challenges faced by the SMMEs by providing technological support and facilities for SMMEs in a particular sector. Beneficiaries of these programmes are expected to benefit in the areas of increases revenue, sustainable job creation and advancement of technology usage leading to growth and international competitiveness.

The study focuses on two aspects of environmental factors, namely, the impact on the SMMEs who are beneficiaries and clients of the programme; and the University/ University of Technology that is hosting the programme. This study will also elucidate the difference between the usual monitoring and evaluation that is generally performed by entrepreneurship support programmes from the desired impact evaluation. Monitoring and evaluation assesses the outcomes of the TSC interventions on the targeted SMMEs, while impact evaluation further examine whether the SMMEs experience the interventions of this unit as negative or positive and in case of positive benefits; determine if these benefits were intended or not.

1.4 SIGNIFICANCE OF THE STUDY

From a management and governance perspective it is essential for the organizations implementing the entrepreneurship support programmes to account for funds received from government or other donors and funding agencies. This accountability is also extended to other stakeholders, in this case, the Universities of Technology hosting these programmes. There is also a moral and ethical obligation to demonstrate success in responding to the needs of the SMMEs and quantify the impact of their initiatives. In the case of government funded programmes, all key stakeholders are identified as significant.

Understanding and appreciating the impact of the entrepreneurship support programme on local communities will potentially inform future plans and policy development while ensuring sustainability and increased competitiveness of SMMEs by achieving the following:

- identifying successes and failures to guide future interventions or plans by programme practitioners
- providing opportunities to improve the effectiveness of the programme or its interventions;
- ensuring that the programme initiatives result in a significant and sustained change in people's lives.

Moreover, the findings of the impact evaluation studies are crucial in informing policies and legislation at all levels of government. Policies as they pertain to this study are those that

relate to SMMEs and small business development, in particular those of the Departments of Trade and Industry and Science and Technology. These include, amongst others, dti's Integrated Strategy on the Promotion of Entrepreneurship and Small Enterprises (2006), National Development Plan (2013); and Technology Innovation Agency Act (2008). In addition, the results of this study could assist organizations in understanding and evaluating their unique contribution to the development of the targeted beneficiaries and achievement of policy, programme or project objectives.

1.5 ASSUMPTIONS OF THE STUDY

This research study is underpinned by the following assumptions:

- SA government has the responsibility to address economic development issues and have identified entrepreneurship as a vehicle for economic development.
- The government is also aware that entrepreneurs will need support if they are to be successful and as such has put in place programmes that are planned to support entrepreneurs.
- SMMEs and cooperatives represent the groups that are to be supported through entrepreneurship support programmes, these are the entrepreneurs,
- It is the understanding of government that through entrepreneurship other socio-economic problems like unemployment and shortage of skills can be addressed, hence expectations of employment and training are amongst the key success indicators for entrepreneurship support programmes,
- Implementing agencies of entrepreneurship support programmes understand the intentions of government and have the capacity to deliver on the mandate of their programmes,
- SMMEs and cooperatives are benefitting from entrepreneurship support programmes.

1.6 LIMITATIONS OF THE STUDY

One limitation of the study was in accessing the cooperatives who are also the beneficiaries of entrepreneurship support programmes, and in particular the MUT-TSC. The difficulty in getting sufficient numbers of cooperatives to participate in this study emanates from their very nature and design, which requires collective decision-making and hence a delay in providing responses and feedback. According to the Cooperatives Act (Act 14 of 2005) of South Africa, cooperatives are "an autonomous association of persons united voluntarily to meet their common economic and social needs and aspirations through a jointly-owned and democratically-controlled enterprise organised and operated on co-operative principles".

Cooperatives therefore, operate and manage their businesses in a manner that is different from the usual SMMEs, and would probably experience the interactions with the support centres differently compared to other types of businesses. Hence, the collective decision making presents a challenge in engaging them as entities. As a result, the responses to questionnaires from cooperatives was minimal given the limited time and other resources allocated to the study.

The sample size, (90 entities), was limited to the SMMEs serviced in the 2015/16 financial year of the Technology Station in Chemicals. The current geographic scope of the TS is KwaZulu-Natal and Eastern Cape provinces. Hence, the respondents are residing or operating from these two provinces of South Africa. It is worth noting that these two provinces are amongst the poorest in the country (Statssa, 2009. p.30), and also the fact that due to their non-participation in programmes like the TSC, responses from SMMEs from rural areas of KZN could not be accessed on time for the study. Response from SMMEs who received electronic questionnaires was relatively poor; hence most responses were delivered and subsequently collected from organizations.

CHAPTER 2
LITERATURE REVIEW

2.1. INTRODUCTION

Entrepreneurship is crucial in promoting economic growth and social advancement for South Africa and the entire world. This assertion results from general agreement amongst various researchers that entrepreneurship has the potential to contribute to economic growth, employment creation and other societal troubles faced by humanity. (Mayer-Stamer,2006; Endeavor-FNB;2009, Glaub and Frese,2011. Blignaut and Demana, 2002). According to Cant and Wiid (2013, p.1), the role of SMMEs is particularly important in South Africa as a developing economy marred with problems of "unemployment and income distribution challenges". According to the White Paper on National Strategy for the Development and Promotion of Small Business in South Africa, the goal for supporting SMMEs and the expected outcomes as highlighted in a statement "Small, medium and micro enterprises represent an important vehicle to address the challenges of job creation, economic growth and equity in our country" (SA Government, 1995.p.3).

This assertion is also confirmed by the report based on study by the Global Entrepreneurship Monitor (GEM) (2013) which asserts that countries view entrepreneurship as a vehicle towards economic growth and social development of people. The GEM South Africa 2014 report highlighted that entrepreneurship is also crucial for its contribution to innovation as well as "its welfare effect" (GEM SA, 2014.p.19). Kongolo (2010, p.2288) argues that "one of the significant characteristics of a flourishing and growing economy is the booming and blooming small and medium enterprises (SMEs) sector". Hence, it is expected that South African government, with a developing economy should therefore be interested in the outcomes of the entrepreneurship support organizations it is funding.

SMMEs in South Africa face numerous and diverse challenges in their efforts to navigate the precarious business landscape. According to Olawale and Garwe (2010: p. 731) these challenges can be classified as those pertaining to internal environment and are classified as firm specific and those relating to external environment and hence referred to as systemic factors. Internal environment (or firm-specific) factors include "finance (especially internal finances such as owner's equity contribution and collateral), managerial competency of the owner, location, investment in information technology, cost of production and networking". Ligthelm (2008) describe these firm-specific factors as pertain to resource availability and efficient and effective use of those resources. External environment (or systemic) factors relate to "the contractual and informational frameworks, macroeconomic environment, social factors (crime, corruption and ethics) technology and the regulatory environment". Ligthelm

(2008) describe these factors as exogenous factors and include both economic and industry or sector based factors. Economic factors encompass business cycle phase including employment prospects, economic and business growth policies promulgated by government. Industry factors relates to the supply and demand elements characteristic of a particular sector including the level and degree of competitiveness amongst role-players and inherent entry barriers. To stimulate growth in the SMME sector the government of South Africa developed entrepreneurship support programmes that will nurture these organizations to ensure growth from start-up phases to sustainable enterprises. In spite of the strong political will as demonstrated by various government acts, and the fact that SMME development has received the attention and support of consecutive political administrations over the years, South Africa still needs to evaluate the impact of the SMME development programme.

As noted in the study conducted by the SBP Business Environment Specialist (SBP, 2015), SMME support programmes have produced mixed results. Therefore, it is imperative for the South African government to develop an understanding of which programmes, create substantive results in terms of desirable outcomes and which ones do not, and most important under what conditions were these outcomes achieved. Impact evaluation studies provide a strategic tool for determining the effectiveness of developmental programmes in addressing key developmental challenges. These studies can also provide benchmarks in the entire monitoring and evaluation process. (World Bank, 2008).

The unit of analysis in this impact evaluation study is the Technology Station in Chemicals at Mangosuthu University of Technology. This is an entrepreneurship support programme for SMMEs in the chemical manufacturing sector. The primary intended users of this evaluation are the managers and directors of entrepreneurship support programme. The primary uses of evaluations include policy, programme or project improvement, ensuring accountability, knowledge generation and decision making. (DPME, 2011.p.7.)

2.2. SOUTH AFRICAN ENTREPRENEURSHIP LANDSCAPE

In South Africa, SMMEs are divided into several categories based on the figures or employees, turnover and total value of assets with fixed property excluded. Table 2.1 below provides the summary of the various categories as extracted from the National Small Business Act of 1996 (The Government of South Africa, 1996).

Table 2.1: Categories of SMMEs as applicable to South Africa

Sector or sub-sectors in	Size or Class	Total full-time equivalent of paid employees Less than:	Total annual turnover Less than:	Total gross asset value (fixed property excluded) Less than:
Agriculture	Medium	100	R 4.00 m	R 4.00 m
	Small	50	R 2.00 m	R 2.00 m
	Very small	10	R 0.40 m	R 0.40 m
	Micro	5	R 0.15 m	R 0.10 m
Mining and Quarrying	Medium	200	R30.00 m	R18.00 m
	Small	50	R 7.50 m	R 4.50 m
	Very small	20	R 3.00 m	R 1.80 m
	Micro	5	R 0.15 m	R 0.10 m
Manufacturing	Medium	200	R40.00 m	R15.00 m
	Small	50	R10.00 m	R 3.75 m
	Very small	20	R 4.00 m	R 1.50 m
	Micro	5	R 0.15 m	R 0.10 m
Electricity, Gas and Water	Medium	200	R40.00 m	R15.00 m
	Small	50	R10.00 m	R 3.75 m
	Very small	20	R 4.00 m	R 1.50 m
	Micro	5	R 0.15 m	R 0.10 m
Construction	Medium	200	R20.00 m	R 4.00 m
	Small	50	R 5.00 m	R 1.00 m
	Very small	20	R 2.00 m	R 0.40 m
	Micro	5	R 0.15 m	R 0.10 m
Retail and Motor Trade and Repair Services	Medium	100	R30.00 m	R 5.00 m
	Small	50	R15.00 m	R 2.50 m
	Very small	10	R 3.00 m	R 0.50 m

	Micro	5	R 0.15 m	R 0.10 m
Wholesale Trade, Commercial Agents and Allied Services	Medium	100	R50.00 m	R 8.00 m
	Small	50	R25.00 m	R 4.00 m
	Very small	10	R 5.00 m	R 0.50 m
	Micro	5	R 0.15 m	R 0.10 m
Catering, Accommodation and other Trade	Medium	100	R10.00 m	R 2.00 m
	Small	50	R 5.00 m	R 1.00 m
	Very small	10	R 1.00 m	R 0.20 m
	Micro	5	R 0.15 m	R 0.10 m
Transport, Storage and Communications	Medium	100	R20.00 m	R 5.00 m
	Small	50	R10.00 m	R 2.50 m
	Very small	10	R 2.00 m	R 0.50 m
	Micro	5	R 0.15 m	R 0.10 m
Finance and Business Services	Medium	100	R20.00 m	R 4.00 m
	Small	50	R10.00 m	R 2.00 m
	Very small	10	R 2.00 m	R 0.40 m
	Micro	5	R 0.15 m	R 0.10 m
Community, Social and Personal Services	Medium	100	R10.00 m	R 5.00 m
	Small	50	R 5.00 m	R 2.50 m
	Very small	10	R 1.00 m	R 0.50 m
	Micro	5	R 0.15 m	R 0.10 m

Source: National Small Business Act, 1996. No. 102 of 1996, p.15.

This section aims at profiling the SMME landscape in South Africa. The government of South Africa has been delivering a constant message encouraging South Africans to participate in economy through establishment of small businesses. This message has been supported, over the years, by the establishment of entrepreneurship support institutions through public and private organizations. The role of government departments in supporting entrepreneurship and small businesses will be discussed in the next section.

The entrepreneurship support space in South Africa is characterised by agencies providing funding, training, business advisory support and market developments by promoting international trading. The vision of the SA government regarding SMMEs is entrenched in the National Development Plan (The South African Government, 2013) which projects that by 2030, 90% of jobs will be created by the SMME sector. For this vision to be realised a strong and vibrant SMME sector, that is capable of growth and sustainability is essential. In

order to understand the importance of entrepreneurship support programmes as vehicles to achieve this vision it is essential to revisit the current scenario regarding SMMEs in South Africa. The vision of the National Development Plan stands against the background that 14% of the population planned to start new businesses within a timeline of three years (entrepreneurial intention), (Global Entrepreneurship Monitor Report, 2012). The same GEM (2012) report also noted that in other developing countries like Brazil, Russia, Malaysia and Argentina, had an average of 27% indicating their populations' intention to start small business within the same timelines. By 2014 entrepreneurial intention amongst South African had dropped to 10% (GEM (SA) Report, 2014), and this is in spite of the unemployment rate that was as high as 25.4%, with an absorption ratio (employment/population ratio) of 42.6 for the same year, 2014 (Statssa, 2015.p.5). This high unemployment rate recorded in 2014 is reported to be the highest in the sub-Saharan Africa (GEM SA, 2014. p.19). It is therefore essential to evaluate the impact of these entrepreneurship support programmes and provide input that will drive SMMEs thereby assisting government in achieving the desired outcomes by 2030.

Studies and reports aimed at assessing the impact of entrepreneurship support programmes, especially those supported by government have yielded mixed result regarding their efficacy and effectiveness. Cant and Wiid (2013.p.707) states that "SMEs fail in spite of support from government and private initiatives that support and develop small businesses". According to Roberts (2010), most SMMEs do not survive the first two years of business operations and experience a failure rate peaking at 63%. Olawale and Garwe (2010, p. 730) reported that "the general failure rate in South African SMEs of 75% is amongst the highest in the world". The SBP, through their monthly report stated that "smaller firms in South Africa are showing stagnation in both turnover and employment growth" (SBP, 2015).

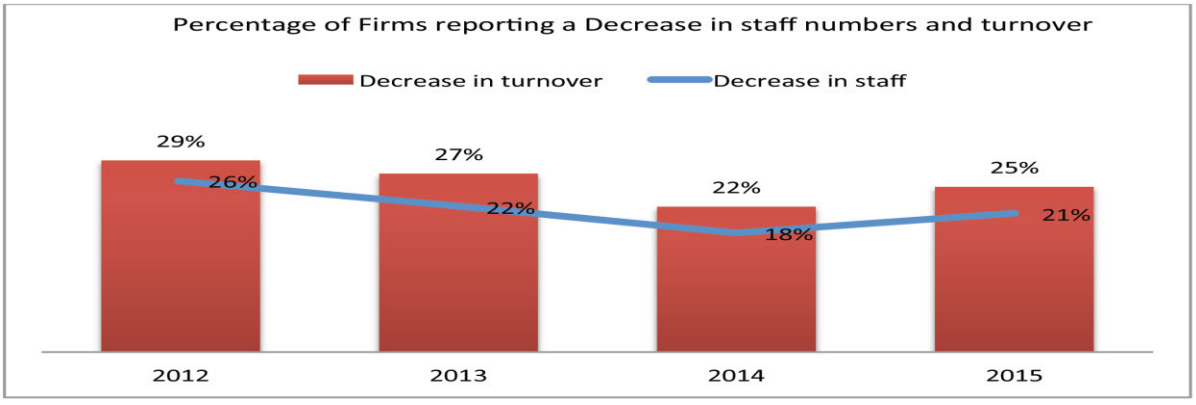

Figure 2.1: Decrease in Turnover and Staff Numbers amongst SMMEs in SA from 2012 to 2015 (Source: SBP, 2015).

The figure above depicts an increase in the percentage of firms (from 22% in 2014 to 25% in 2015) that are experiencing reduction in turnover, while the decrease in staff numbers increased from 18% to 21%, indicating an increase in jobs shed by the SMME sector. The reduction in turnover implies that the SMME's contribution to the GDP will also be reduced.

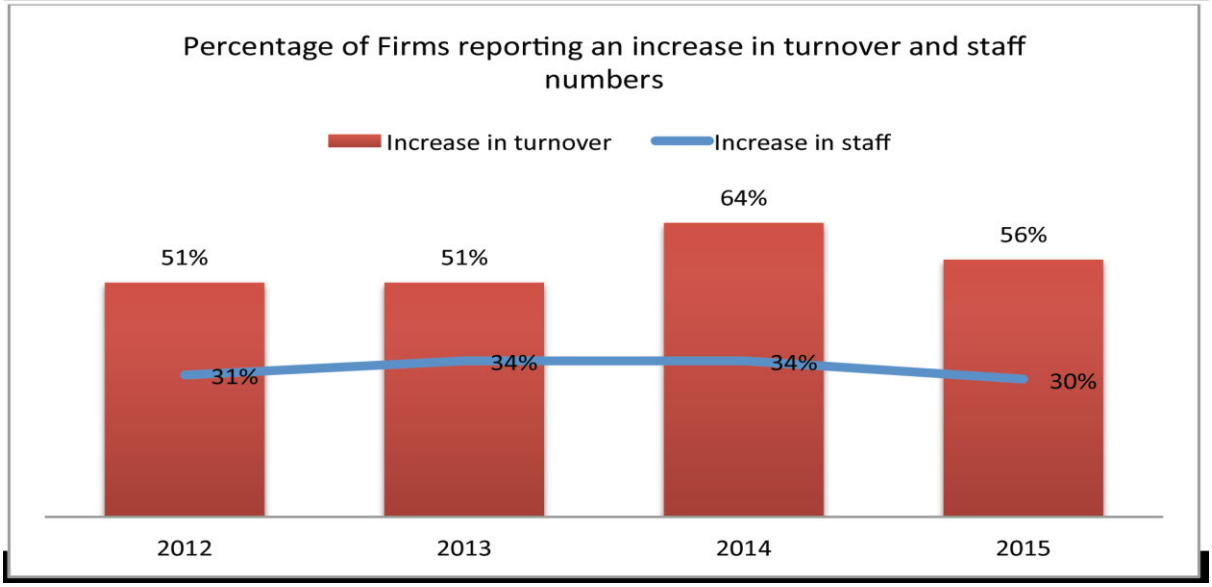

Figure 2.2: Increase in Turnover and Staff Numbers amongst SMMEs in SA from 2012 to 2015 (Source: SBP, 2015).

Figure 2.2 represents percentage of firms that actually reported growth in revenue and employee numbers. Small firms that reported an increase in turnover declined in numbers over the period 2014 to 2015, from 64% to 56%. This is accompanied by a corresponding decline in percentage increase in staff numbers. While SMMEs reported a 34% increase of staff in 2014, staff numbers only increased by 30% in 2015.

This decline in turnover and decrease in staff numbers can be attributed to the fact that SMMEs also experience similar struggles in business operations like big companies and corporations. However, SMMEs lack capacity and resources to meet challenges of a complex and highly competitive business environment.

The GEM South African Report (2014) reported that SA lack of endurance amongst SMMEs in high in comparison to start-ups resulting in net loss in terms of overall small business activity and correspondingly, job losses. Reasons for business exit can be positive (for example those arising from entrepreneurs selling their businesses to pursue other business interests or retirement) or negative (for example those that result from inability of the business to generate profits or sustain itself). According to GEM SA Report (2014), only 9% of businesses in SA exit for positive reasons (GEM (SA), 2014.p.28), which is much lower

when compared to the sub-Saharan Africa average of 16%. Financial reasons of one form or the other were responsible for 62% of South African business closures in 2014.

Government support should therefore be able to target both established businesses through sustained support, while nurturing start-up businesses so that this sector can experience sustainable growth and contribute meaningfully to economic development and national prosperity. Start-up businesses are also important for a thriving economy. Olawale and Garwe (2010) argue that without a consistent effort to develop new SMMEs, South Africa will face the risk of economic stagnation. New SMMEs are the innovation vehicle through which new products, processes and technologies are developed. Vulnerability of these small organizations to the turmoil of hostile economic and highly competitive environments can be minimized through entrepreneurship support programmes that provide various packages of support from business planning, technology transfer and innovation support to funding for growth.

2.3. GOVERNMENT SUPPORT FOR ENTREPRENEURSHIP IN SA

The South African Government has been committed to developing the SMME sector since 1995 as articulated in the introduction of the White Paper on National Strategy for the Development and Promotion of Small Business in South Africa as “with millions of South Africans unemployed or underemployed the government has no option but to give its full attention to the fundamental task of job creation, and to generating sustainable and equitable growth. Small, medium and micro enterprises (SMMEs) represent an important vehicle to address the challenges of job creation, economic growth and equity in our country. Throughout the world, one finds that SMMEs are playing a critical role in absorbing labour, penetrating new markets and generally expanding the economies in creative and innovative ways. We are therefore of the view that with the appropriate enabling environment- SMMEs in this country can follow these examples and make an indelible mark on this economy. The stimulation of SMMEs must be seen as part of an integrated strategy to take this economy onto a higher road-one in which our economy is diversified, productivity is enhanced, investment is stimulated and entrepreneurship flourishes”. *(*The Government of SA, 1995.p.3)

Support for entrepreneurship and SMMEs in South Africa is undertaken by government, through a range of service providers, as a statutory matter as opposed to an interest of government arising out of necessity. Legislation and regulatory policies have been passed with the intention of creating an environment conducive to SMME development and growth, as reflected in the White Paper on the National Strategy for the Development and Promotion of Small Business in South Africa (1995). In spite of this effort and intention, the SA by government, “South Africa scores relatively low on the extent of entrepreneurial activity in the country” (Ligthelm, 2008, p. 367). This study also reported that according to the 2003 survey by Monkman, “various state backed entities have been stablished in the SMME sector, with little apparent success” (Ligthelm, 2008, p. 368).

If SMMEs are seen as a solution to some economic and socio-economic problems facing SA, it is imperative for government to support this sector. This focus on SMME support to promote economic development has been adopted worldwide by governments (Olawale and Garwe, 2010). The South African Government, correspondingly has the responsibility of ensuring economic welfare of all citizens, and has recognized an enabling role that can be played by entrepreneurship. SMMEs are therefore viewed as one of the vehicles for achieving the goal of economic and social development.

Government support is crucial for survival of the SMMEs through different stages of growth, to ensure that they advance to a point where they can make meaningful contribution towards national economic development. Kongolo (2010) even maintains that SMME problems continue to persist even during periods of economic advancement hence the importance of sustained support. As a consequence, the SA Government is providing support to small, medium and micro enterprises through various government departments, notably the Departments of Trade and Industry (DTI) and Science and Technology (DST) to allow for advancement from conceptualisation to sustained growth. To further implement and enforce this notion, a new Department of Small Business Development was established in 2014. In the light of the fact that this ministry is still in its infancy, throughout this document reference will be made to the existing legislations and programmes from the DTI and the DST. The number of programmes that the SA Government has established is an indication that there is awareness that entrepreneurs will need support if they are to be successful. In response to the identified needs, government has put in place programmes that are designed to support entrepreneurship in all sectors of the industry, (DST, 2007 and DTI, 2011).

In South Africa, entrepreneurship is expected not only to increase economic growth but should also address other socio-economic problems like unemployment and shortage of skills. The entrepreneurship support programmes that are funded by government are therefore, expected to not only create employment but also to develop skills through training (Olawale and Garwe, 2010. p.736). It is for this reason that training and employment creation and/or sustainability are generally amongst the key success indicators for entrepreneurship support programmes.

An attempt to understanding the rationale for Government to fund entrepreneurship support programmes requires an analysis of the legislation and plans put forward by various government departments, articulated in their strategic intentions as well as in the missions and visions that are created.

Support for entrepreneurship in South Africa mainly takes place under the auspices of two government departments.

1. The Department of Science and Technology (DST) supports entrepreneurship, through platforms and funding for scientific, innovation and technological support.

2. The Department of Trade and Industry (DTI) support entrepreneurship by supporting platforms for business management advisory and infrastructure development.

Both departments have also introduced various legislations that aim to promote and regulate the entrepreneurship space, with the DTI taking the lead as dictated by the Integrated Strategy on promotion of Entrepreneurship and Small Business (DTI, 2005). Between the two departments, DTI and the DST there is a comprehensive list of entrepreneurship support initiatives that collectively provide holistic support to SMMEs. (DST (2007, 2011); DTI (1995, 2005)).

The case study chosen for this research is one of the Technology Innovation Agency (TIA) technology development and transfer centres. The TIA is the implementing agency of the Technology Innovation Act (2008) promulgated by the DST. It is for this reason that the next section will be focusing primarily on how this department formulated and implemented its entrepreneurship support programmes.

2.3.1. Background to the Technology Stations Programme (TSP)

In order to understand this programme, the Technology Stations Programme, it is necessary to revisit the rationale behind its establishment. The TSP programme was initiated in 1998 by the then Department of Arts, Culture, Science and Technology, (DACST) which was later, in 2004 (Marais and Pienaar (2010)) separated into two independent ministries of Arts and Culture and; Science and Technology. Understandably the TSP moved into the Department of Science and Technology (DST).

The Department of Science and Technology has the vision of creating “a prosperous society that derives enduring and equitable benefits from science and technology.” This vision is coupled with a mission “to develop, coordinate and manage a national system of innovation that will bring about maximum human capital, sustainable economic growth and improved quality of life.” (DST, 2011). The mission and vision of the DST clearly spells out the importance of seeing the exploits of science and technology benefiting the society, leading to prosperity, human capital development and sustainable economic growth.

The Department of Science and Technology in its Ten Year Innovation Plan describes government’s broad socio-economic challenge as the necessity to “accelerate and sustain economic growth” (DST. 2007). It promotes the fact that success in creating a knowledge-based economy will be measured by the extent to which science and technology take a significant role in increasing productivity, improving economic growth and sustain socio-economic development. DST’s Ten Year Innovation Plan further argues that “knowledge-based industries rely heavily on human capital and technological innovation". (DST, 2007.p.4). This plan also stipulates the South African government’s intention to ensure that

“government’s investments in science and technology also help to eliminate poverty” As part of the Ten Year Implementation Plan, the DST legislated the setting up of a Technology Innovation Agency (TIA). This institution was set up as dictated by the Technology Innovation Act, Act 26 of 2008. (DST, 2008).

The TIA Act stipulates the reasons for the formation of the TIA and the objectives that the government of South Africa intends to achieve through this agency. The TIA Act was sanctioned by government “to provide for the promotion of the development and exploitation of in the public interest of discoveries, invention, innovations and improvements, and for that purpose to establish the Technology Innovation Agency; to provide for its powers and full duties and for the manner in which it must be managed and controlled” (Technology Innovation Agency Act, 2008). According to Section (3) of this Act, the “Object of the Agency is to support the State in stimulating and intensifying technological innovation in order to improve economic growth and the quality of life of all South Africans by developing and exploiting technological innovations.”(TIA Act, 2008) It further defines “technological innovations” as “the application in practice of creative new ideas, which may include inventions, discoveries and the processes by which new products and services enter the market and the creation of new businesses.” The TIA has a vision of being “a world-class technology innovation agency that stimulates and supports technological innovation to improve the quality of life for all South Africans.” Its mission is defined as “to facilitate the translation of South Africa’s knowledge resource into sustainable commercial opportunities.” (TIA Act, 2008) This further indicates the consistent intention to uplift the South African society. One of the programmes of the TIA is the Technology Station Programme (TSP). The TSP operates though centres called Technology Stations located at the Universities of Technology and few traditional universities as listed in Table 2.2 below. Each technology station focuses on specific industry, with the intention of improving the competitiveness of the SMMEs in a particular sector.

Table 2.2: Different Technology Transfer Centres under the TSP and their various Technology Focus Areas.

	Host Institution	**Technology Focus**
1	Mangosuthu UoT	Chemicals
2	Durban UoT	Reinforced Materials and Plastics
3	Tshwane UoT	Chemicals
4	Tshwane UoT	Electronics
5	Vaal UoT	Materials Processing
6	Central UoT	Product Development

7	NMMU	Automotive Components (eNtsa)
8	NMMU	Downstream Chemicals
9	University of Johannesburg	Metal Casting
10	University of Limpopo	AgriFood
11	Cape Peninsula UoT	Clothing and Textiles
12	Cape Peninsula UoT	AgriProcessing

NMMU – Nelson Mandela Metropolitan University

The Growth, Employment and Reconstruction Strategy of the South African government (1996) recorded that amongst the challenges facing SMMEs is the shortage of effective supportive institutions. Through the engagement of universities and UoTs, government is coercing higher education institutions to join forces with the government departments in supporting SMMEs.

There are two propositions to this arrangement. Firstly, is that Universities who host the entrepreneurship support programmes through the TSP, do so to meet their strategic objectives and mission of community engagement. Secondly, host institutions will use their knowledge base and technological infrastructure in the defined disciplines to promote entrepreneurship through innovation, technology development and transfer. Hence, these programmes can be viewed as part of the University's contribution to increasing innovation output through technology development and support to SA industries and in particular, the SMMEs. The other spin-offs of these interventions for host institutions are participation in socio-economic development and community service. SMMEs benefit through ease of access to have technological support and infrastructure available at Universities and Universities of Technology through the technology stations. The spread of the various technologies also indicate the government's intention to diversify local technologies and respond to the needs of the various industries.

The Technology Stations at host institutions have to respond to several stakeholders. These include government who provides the funding, host institution who provides infrastructure and physical resources and the SMMEs who are the beneficiaries. Each participating group have their own specific expectations. SMMEs expect appropriate technological solutions delivered within reasonable turnaround times, which will lead to growth and success in their businesses.

The Technology Stations are designed to operate within and in line with the host University or University of Technology system. The host institution provides infrastructure in terms of

providing accommodation for administration and technology transfer functions of the TS. The university's finance and human resources units also play a vital role in supporting the TS through the institutional financial and human resources management systems. The universities' legal departments are also responsible for all contracting that the TS need to undertake during the course of its operation. In 2007 the Higher Education South Africa (HESA) conducted a survey on the capability of higher education institutions in South Africa to undertake technology development and transfer to the benefit of SMMEs and industry. The results of this survey are summarised as follows (HESA, 2007. p.11):

- It is the belief of SA public universities that technological capabilities to transfer technology to industry exist within the institutions and also that technology transfer is considered to be important. However, they indicated that there are only partially persuaded that such activities are financially rewarding to them;
- technology transfer activities did not influence academic promotions;
- The universities declared that they are aware of industry needs and that industry requires their services. However, they declared that they do not have the adequate human and other resources for technology transfer activities;
- Most universities stated that government does not provide enough resources for collaborative research, development and innovation activities between universities and industry;
- Eighty-eight percent (88%) of the universities indicated their conviction that government buying policy is not conducive to the diffusion of technology and knowledge to government departments and other agencies of the state.

The results of this survey led to one of the recommendations for promoting technology transfer and diffusion being that "the Tshumisano Trust (former managing agents of the TSP) and the NRF could request that each benefiting university to harmonise its policies with those advocated by the funding body" (HESA, 2007. p.26). This implied that there should be a notable change in the manner in which the host university views technology transfer and diffusion given the presence of the TSC. Therefore, part of this study aims at establishing how the presence of the TSC has changed the manner in which MUT approached technology transfer and diffusion and why that particular approach was adopted.

2.3.2. **Technology Station in Chemicals**

The unit of analysis for this case study is the Technology Station in Chemicals at Mangosuthu University of Technology, hereinafter referred to as the MUT-TSC. This technology transfer centre is focused on supporting SMMEs in the chemical manufacturing sector. Through the Industrial Policy Action Plan 2 (dti, 2013), the government of SA has

identified chemicals and plastics sector as having potential for SMME development and economic growth potential. This sector is also said to be characterised by high employment multipliers with strong backward linkages. Multipliers are essential in economic growth as the economy developing activities have to be interwoven and mutually supportive (dti, 2013). (IPAP 2013/14 – 2015/16) also puts emphasis on manufacturing as being critical in ensuring long-term and sustainable development through promotion of "exports and labour-intensive, value adding economic activities" (dti, IPAP 2013, p.11). The reasons for manufacturing being described as key for the expansion and development of the South African economy are due to its ability to contribute extensively to "considerable direct employment-generation potential of the country as the driver of the rising per capita income thereby stimulating growth for the entire the economy. Growing per capita incomes are particularly significant for continued economic advancement and employment generation especially in the case of consumption-driven economy which is dominated by service sectors. This economic condition (consumption-driven economy) creates a nation that is critically dependent on unmanageable levels of household debt, in cases where unemployment is high. The dti IPAP (2013) places women particularly from the working class and those who reside in poor and rural communities as the most affected group. Manufacturing is seen as a vehicle that can provide employment opportunities for these vulnerable groups. Manufacturing, due to its labour-intensive nature, provides means of formal employment in both urban and rural environments. It also supports government's export strategy by producing value-added products for trading with other countries. Manufacturing drives innovation through its requirement for inputs and machinery and desire to increased efficiencies and productivity. The much-needed revenues significantly contribute to the country's GDP. The positive impact on the balance of trade; manufacturing plays a critical and indispensable role as a driver of innovation and productivity enhancement. As a developing economy South Africa needs to develop infrastructure and manufacturing provides inputs and machinery in support of SA's growth strategy. The development of the manufacturing sector allows the government to deliver public goods including education, health, transport and housing and reducing the dependency of the country on imported goods. A country that is dependent on imports experiences vulnerabilities, especially on the balance of trade. In spite of these benefits, manufacturing also presents challenges on the areas of energy-efficiency and; adoption and development of environmentally friendly processes. Environmentally friendly processes generate less waste and improve consumption efficiencies (dti, IPAP 2013, p.11).

2.4. THEORY ON IMPACT EVALUATION

According to the TIA Act, 2008, the expected impact of the technology transfer operations should be in improving technology usage and adoption in the manufacturing sector, promoting innovation and alleviation of other socio-economic problems faced by the greater SA society. (TIA Act, 2008). This research study intends evaluating the impact of the entrepreneurship support programmes. This will be achieved by focusing on the technology station at MUT. In this context O' Flynn (2010, p. 2) indicated that "assessment of impact involves understanding the nature of the change that has taken place and to determine its significance". The desired change for the TSP is in the adoption and usage of technology by SMMEs thereby enabling SMMEs and cooperatives to deliver on the socio-economic expectations as set out in government legislation, policies and eventually spelt out in programme objectives.

2.4.1. Theoretical Framework on Impact Evaluation – Theory of Change

Impact is about the change in the receiving environment, the nature of change and its significance. To evaluate the impact of the entrepreneurship support programme the theory of change approach forms the theoretical framework. According to Stein and Valters (2012.p.3) when the concept of a theory of change was introduced in the mid-nineties, Weis described the theory of change as "a theory of how and why an initiative works." It is an attempt at linking the assumptions made during programme inception and the corresponding activities design to achieve the desired outcome.

The International Network on Strategic Philanthropy (INSP) (2005.p.6) defines the Theory of Change as "the articulation of the underlying beliefs and assumptions that guide a service delivery strategy and are believed to be critical for producing change and improvement. Theories of change represent beliefs about what is needed by the target population and what strategies will enable them to meet those needs. They establish a context for considering the connection between a system's mission, strategies and actual outcomes, while creating links between who is being served, the strategies or activities that are being implemented, and the desired outcomes" Underpinning the theory of change are three core frames, classified as the population that is being served; the strategies that are employed in achieving the ideal outcomes and the actual outcomes (INSP, 2005.p.6). The INSP (2005) identified two components of a theory of change and these being firstly the conceptualization of the three core frames and secondly the relationships amongst the frames.

In this study, as the first component of the theory of change, the three core frames were conceptualized as:

- The population that is targeted are the SMMEs and cooperatives,
- The strategies employed are entrepreneurship support programmes, and
- The outcomes are growth and sustainability of SMMEs in SA to point where they have a significant contribution to socio-economic development in the country.

The second component of the theory of change which constitutes the relationship amongst the three core frames was conceptualised and developed into the hypotheses that will be answered in this research study. These hypotheses are:

- **Hypothesis#1:** SMMEs and cooperatives receiving support from entrepreneurship support programmes are productive and competitive thereby contribute to socio-economic development of South Africa measured by increase in revenue, employment creation
- **Hypothesis#2**: Success indicators that are used by entrepreneurship support programmes to conduct monitoring and evaluation exercise are good indicators of the impact of the programme on the receiving environment.
- **Hypothesis#3**: Beneficiaries of entrepreneurship support programme experience increase in revenue, creation and sustainability of jobs and in poverty reduction

A theory of change approach or thinking assists in encouraging critical thinking in the "design, implementation and evaluation of developmental activities, it allows for encourages questioning strategies and activities that impact" on the receiving environment (OECD, 2012.p.80).

2.4.2. Differentiating between Monitoring and Evaluation (M&E); and Impact Evaluation.

This section aims at demonstrating the difference between the usual monitoring and evaluation that is generally performed by managers of the entrepreneurship support programmes from impact evaluation. The National Evaluation Policy Framework (DPME, 2011.p.3) defines monitoring as the process that "…involves the continuous collecting, analysing and reporting of data in a way that supports effective management. Monitoring aims to provide managers with regular (and real-time) feedback on progress in implementation and results and early indicators of problems that need to be corrected. It usually reports on actual performance against what was planned or expected". Monitoring therefore provides the ability required to assess whether the programme is working as

expected. Monitoring alone only tells programme implementers whether they are doing what they set out to do. It does not consider whether the plans and activities are achieving the intended or desired impacts. The unexpected and emergent opportunities and outcomes can also be identified. The entrepreneurship support centres like the MUT-TSC are expected to conduct monitoring exercise on a regular basis as a measure of performance against the set targets. This also allows programme managers to make necessary adjustment in activities such that targets are realised. As part of this study the monitoring data will be sourced to identify the indicators that are used in monitoring performance.

Evaluation involves the periodic analysis of data and information conducted separately from the monitoring process with the intention to learn, improve and assess performance. The evaluation process therefore complements the monitoring process by going further into identifying alignment, if any, of activities and plans with desired impacts. It answers the question of significance and value for money while addressing issues of programme efficiency and effectiveness. Hence the DPME's National Policy Evaluation Framework describes evaluation as "the systematic collection and objective analysis of evidence on public policies, programmes, projects, functions and organisations to assess issues such as relevance, performance (effectiveness and efficiency); value for money, impact and sustainability and recommend ways forward". (DPME, 2011.p.3). The National Evaluation Policy Framework identified four primary purposes for evaluation and these are listed as:

- "improving performance (evaluation and learning);
- Evaluation for improving accountability;
- Evaluation for generating knowledge (for research) about what works and what does not;
- Improving decision making". (DPME, 2011. p.2).

2.4.2.1. Monitoring and Evaluation (M&E) exercises

The M&E process seeks to test the logic and assumptions implicit in the long-term goals highlighting causal linkages in the intervention; in part through the use of indicators derived from changes described in short-term goals and objectives. The benefits of M&E include learning on what works and/or doesn't work for the programme thus allowing for application of adaptive management and implementation of remedial actions. M&E also ensures commitment and accountability to practitioners. Through implementation of corrective measures, practitioners also improve competency in programme management.

According to the TIA-TSP (the Technology Stations Programme), "monitoring and evaluation is a systematic and routine collection of information from the programme (TSP) for four main

purposes, namely, to learn from experiences of TS to improve practices and activities in the future; to have internal and external accountability of the TS resources used and the results obtained; to take informed decisions on the future of the programme and to promote empowerment of beneficiaries (SMEs) of the programme" (TIA-TSP,2013.p.3).

According to Getler *et al* (2011.p.3.), "monitoring and evaluation are at the heart of evidence-based policy making, as they provide a core set of tools that stakeholders can use to verify impact evaluation in practice and improve the quality, efficiency, and effectiveness of interventions at various stages of implementation, or in other words, to focus on results". Hence monitoring and evaluation exercises remain critical in project or programme implementation. Monitoring and evaluation helps in reporting on achievement, of failure thereof of, on achieving results for the intended beneficiaries. While monitoring and evaluation exercises are not sufficient for concluding if the programme had an impact, they are however important in proving that the programme was indeed implemented. For the purpose of this research study understanding M&E indicators employed by the programme are essential in provide evidence that the programme was indeed delivered and therefore it is possible to make responsible statements about causation.

2.4.2.2. Monitoring and Evaluation Success Indicators

Performance indicators are widely used to monitor performance and management of public programme (Centre for Strategy and Evaluation Services, 2010), and they should contribute to the extent to which the programme is achieving its specific objectives. Given that indicators used in performance management should be linked to programme or project objectives, the general guide in generating indicators should be the desire to conform to SMART principle, which is "specific, measurable, achievable, relevant and time-bound", (Centre for Strategy and Evaluation Services, 2010.p.36). Another desirable characteristic of indicators is simplicity which will assist in ensuring common understanding by all parties involved, should not add an unnecessary administrative burden in terms of time and resources necessary to collate data. (Centre for Strategy and Evaluation Services, 2010). Evaluations have the potential of providing feedback to policy developers and implementing agencies thus creating platform to learn from evidence and improving understanding. (DPME, 2011).

Grun (2006) argues that in order to deliver a good diagnosis instrument, it is prudent to "examine the chain of production from beginning to end" (p3). She outlines the different stages of production as:

- "the production stage, looking at how economically inputs were brought;

- the production stage, looking at how efficiently inputs have been employed to produce service outputs, and
- finally, looking at how effective provided services have been at bringing about desired results"

Lyon et. al (2002) elaborated on data that is usually collected for impact evaluation as that which relates to expenditure, inputs, outputs, outcomes and environmental factors. These researchers elaborated on data as follows:

- The expenditure that is considered is that which only relates directly or influence the outputs and outcomes.
- Inputs generally include physical or tangible inputs items like training hours, equipment (not their cost).
- Outputs are generally direct benefits in the form of services or products resulting from the programme and not necessary the envisioned effects of the programme.
- The outcomes are the ultimate variables of interest (for instance, in this case study, it is not the number of SMMEs trained but the number whose skills improved). These are complicated to measure and tend to be of a long term nature.
- Environmental factors that directly impact or influence the programme, its utilization, access and eventually outcomes, including those that are outside the control of the implementing organization also need to be considered. Lyon et al. 2002. p.3

The indicators should also contribute in assessing the relevance and usefulness of the programme; and efficiency and effectiveness of its interventions. When used in this manner they become excellent input data into the refining of policy and future interventions. In the case of government funded entrepreneurship support programmes, it is expected therefore that indicators should also respond to the national imperatives as set out by the respective government department. The other important function of the indicators and the entire monitoring and evaluation systems is in providing means of communication amongst all stakeholders. The greater part of the communication relates to how well does the programme respond to the needs of the beneficiaries. They provide means for accountability for programme implementing agencies.

This research study takes the view that SMMEs are beneficiaries as well as stakeholders in of the entrepreneurship support programmes. In the instance of the MUT-TSC, the existence of this centre is meant to benefit SMMEs and cooperatives through provision of technological solutions. SMMEs and cooperatives are also stakeholders since they are the ones who are expected to adapt their operations by adopting technologies and innovations that will

improve productivity and competitiveness of their businesses and ultimately benefit the whole country. The third stakeholder that will be considered is the University as the host of the TS. Interviews will be held with leadership of the University to determine what they consider to be the success indicators for the TS. As part of this study, a survey will be conducted to establish what the beneficiaries consider to be the success indicators of the programme.

2.4.3. Impact Evaluation

The difference then between M&E and impact assessment process is on the definition of "impact". Impact evaluation seeks to evaluate the consequences of the programme, project or intervention on the intended beneficiaries. The World Bank (2008) describes impact evaluation as assessment of "changes in the well-being of individuals, households, communities or firms that can be attributed to a particular project, programme or policy." Impact therefore, refers to effects arising from a particular intervention on the receiving environment. According to the World Bank (2008, p.1), impact evaluation should respond to the question of "what would have happened to those receiving the intervention if they had not in fact received the programme." These effects may be in the form of immediate short-term outcomes as well as wider and long-term results. Impact evaluation seeks to identify those effects that are positive as well as those that are negative and further elucidate if they were planned or unforeseen. In practice programmes or projects should have a reportable, measurable difference or potential difference that it is making in people's lives. Impact evaluation aims at announcing gains and benefits to the receiving and/or affected community. Impact evaluation studies assist organizations in determining how well their programmes or interventions achieve the intended strategic goals. Hence this study is concerned with change or potential change in one or more key areas of SMME development, that is attributed to entrepreneurship support programmes especially those funded from public funds. Given the unique case of South Africa, these changes can be and are expected to be in the areas of economic development and expansion, responsible care for the environment, social-, and healthy-wellbeing of SMMEs.

According to O'Flynn (2010) the focus of impact evaluations need not be narrowed down to finding and analysing negative or undesirable effects of the programme and its unintended impacts. It should also assume the function of improving and advancement of development outcomes. This aspect of impact evaluation also ensures that practitioners are capacitated to improve their performance and maximise the intended goals. It can therefore be concluded

that impact assessments, when conducted effectively can also assist the organization in identifying other external drivers and factors that influence change processes

2.4.3.1. Uses and Types of Evaluation

According to the World Bank Review (2008), impact evaluation studies can assist by identifying causal effects between the interventions of the programme and the observed changes in the beneficiaries; providing baseline information on the value of the programme thereby allowing for comparisons with related or similar programmes and also in developing an appropriate knowledge base for future developmental interventions. (World Bank, 2008). This allows for the proper attribution of observations and outcomes to a particular programme. The lessons that can be derived from such evaluation would assist in creating a knowledge base from which sound decisions can be taken with the interest of improving service delivery to ordinary citizens in SA. In continuing projects or programmes, impact evaluation also provides a tool for management by results, implying that the results are used in improving the implementation process.

The National Evaluation Policy Framework identifies six types of evaluations; and these are "diagnostic evaluation; design evaluation; implementation evaluation; economic evaluation; impact evaluation and evaluation synthesis". (DPME, 2011. p.9) DPME argues that the type of evaluation used depends on the "object of evaluation (what is to be evaluated); the primary intended user of the evaluation; the purpose of the evaluation; the evaluation approach and methodology including the type of questions being asked." Evaluation can be viewed as "research for informing decision-making" (Vanclay, 2012.p.7) and as such it contributes to all phases of the project or programme.

Table 2.3 - Types of Evaluations as defined in the National Evaluation Policy Framework (DPME, 2011.p.9).

Type of evaluation	Covers	Timing
Diagnostic Evaluation	This is preparatory research (often called ex-ante evaluation) to ascertain the current situation prior to an intervention and to inform intervention design. It identifies what is already known about the issues at hand, the problems and opportunities to be addressed, causes and consequence, including those that the intervention is unlikely to deliver, and the likely effectiveness of different policy options. This enables the drawing up of the theory of change before the intervention is designed.	At key stages prior to design or planning
Design evaluation	Used to analyse the theory of change, inner logic and consistency of the programme, either before a programme starts, or during implementation to see whether the theory of change appears to be working. This is quick to do and uses only secondary information and should be used for all new programmes. It also assesses the quality of the indicators and the assumptions.	After an intervention has been designed, in first year, and possibly later
Implementation evaluation	Aims to evaluate whether an intervention's operational mechanisms support the achievement of the objectives or not and understand why. Looks at activities, outputs, and outcomes, use of resources and the causal links. It builds on existing monitoring systems, and is applied during programme operation to improve the efficiency and efficacy of operational processes. It also assesses the quality of the indicators and assumptions. This can be rapid, primarily using secondary data, or in-depth with extensive field work.	Once or several times during the intervention
Impact evaluation	Seeks to measure changes in outcomes (and the well-being of the target population) that are attributable to a specific intervention. Its purpose is to inform high-level officials on the extent to which an intervention should be continued or not, and if there are any potential	Designed early on, baseline implemented early, impact checked at key stages e.g. 3/5

	modifications needed. This kind of evaluation is implemented on a case-by-case basis.	years
Economic evaluation	Economic evaluation considers whether the costs of a policy or programme have been outweighed by the benefits. Types of economic evaluation include: • cost-effectiveness analysis, which values the costs of implementing and delivering the policy, and relates this amount to the total quantity of outcome generated, to produce a "cost per unit of outcome" estimate (e.g. cost per additional individual placed in employment); and • Cost-benefit analysis (CBA), which goes further in placing a monetary value on the changes in outcomes as well (e.g. the value of placing an additional individual in employment).	At any stage
Evaluation synthesis	Synthesising the results of a range of evaluations to generalise findings across government, e.g. a function such as supply chain management, a sector, or a cross-cutting issue such as capacity. DPME will undertake evaluation synthesis based on the evaluations in the national evaluation plan and do an annual report on evaluation.	After a number of evaluations are completed

According to Vanclay (2012.p.7), "the dominant culture of evaluation is changing". Vanclay (2012) reported that the categories of summative evaluation which determines whether the programme or project was successful and formative evaluation which looks into how the programme or project can be improved still exist. However, evaluation has developed to being "creative, qualitative, participatory, utilization-focused, constructivist (or fourth generation), empowering (or fifth generation) or as a form of action research"

Vanclay (2012) presented Bennet's 1975 model of the hierarchy of steps in project sequence with emphasis on the need to conduct evaluation at all stages (Figure 2.3 below).

7. End results
6. Practice change
5. KASA change (knowledge, attitudes, skills and aspirations)
4. Reactions
3. People involvement
2. Activities
1. Inputs

Figure 2.3 Hierarchy of Steps in the project sequence. (Adapted from *Vanclay (2012.p.4))*

Vanclay (2012) argues that the only change that has occurred over time is the focus on outcomes, as indicated in the sequence below (Vanclay (2012.p.4)):

Inputs → activities →outputs → immediate outcomes →intermediate outcomes →ultimate outcomes

This project or programme sequence is similar to that adopted by the South African DPME in the National Evaluation Policy Framework (DPME, 2011). The DPME has termed this the "result-based management pyramid" and its structure is given in Figure 2.4 below:

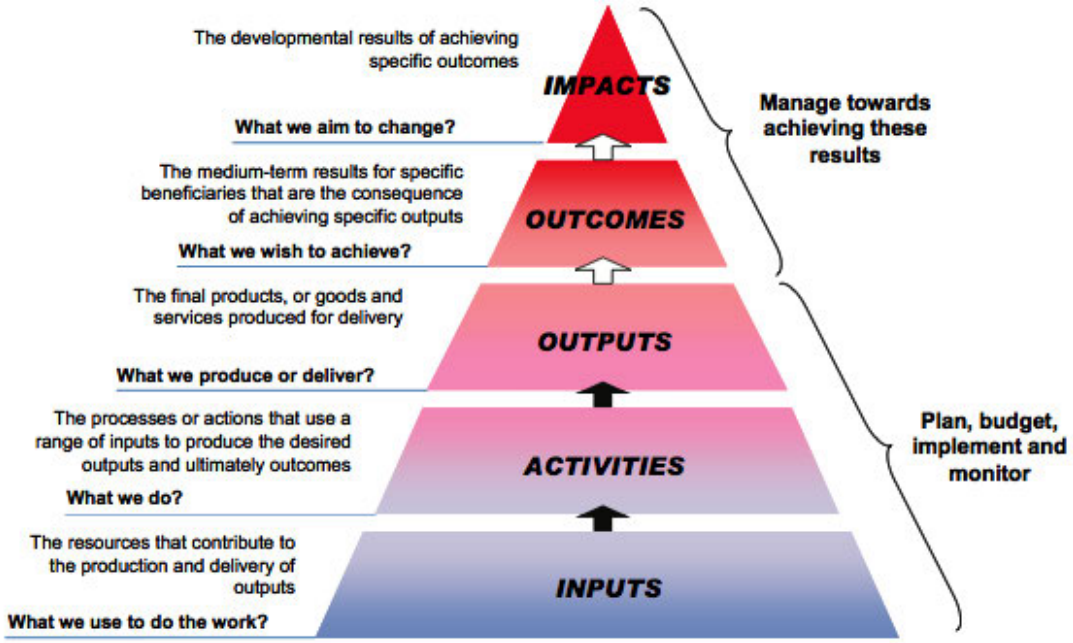

Figure 2.4: The results-based management pyramid (National Treasury 2007) Source: National Evaluation Policy Framework p. 5

Figure 2.4 emphasizes the fact that impacts of the programme should relate to the developmental results associated with specific outcomes.

In conclusion, there is an intertwined relationship between the monitoring and exercise and impact evaluation. Impact assessment tends to build on data and information collected during the monitoring and evaluation exercises. The results of impact assessments or evaluation can also be used to inform the monitoring and evaluation indicators. The table below (Table 2.4 indicates the differences between impact assessment and monitoring and evaluation.

Table 2.4: Comparison of Monitoring, Evaluation and Impact Assessment

"Monitoring	**Evaluation**	**Impact Assessment**
Measures on-going activities	Measures performance against objectives	Assesses the change in people's lives; positive or negative, intended or not
Main work during implementation	Main work in the middle or at the end of the project/programme	Can be included at all stages and/or can be used specifically at the end of the programme/project.
Focus on interventions	Focus on intervention	Focus on affected populations or receiving environment
Focus on outputs (products, goods and/or services delivered)	Focus on outcomes	Focus on impact
What is being done?	What has happened? Did we achieve what we set out to achieve?	What has changed? For whom? How significant is it for them"?

Source: adapted from O' Flynn (2010):

2.5. IMPACT EVALUATION OF ENTREPRENEURSHIP SUPPORT PROGRAMMES

The ultimate aim of this impact evaluation study is to understand the changes that are brought about by the entrepreneurship support programmes to the entrepreneurs whose cause they are designed to advance and promote. This will be explored in the context of an entrepreneurship support programme that provides technological support to SMMEs in the chemical manufacturing sector. This Technology Transfer Centre, the Technology Station in Chemicals, is hosted by the Mangosuthu University of Technology. Agencies managing these programmes, like the TIA are increasingly under pressure to justify their expenditure on projects, human resources, infrastructure development, training and technology transfer activities.

From a management and governance perspective it is essential for the organisations implementing the entrepreneurship support programmes to account for funds received from government or other donors and funding agencies. This accountability is also extended to other stakeholders as well as the intended and unintended beneficiaries of these programmes. There is also a moral and ethical obligation to demonstrate that the organization was successful in responding to the needs of the SMMEs and quantify the impact of their initiatives. In the case of government funded programmes, the general public is one of the stakeholders. Impact evaluation studies should therefore be an integral part of managing and implementing entrepreneurship support programmes. The results of these studies should assist organizations in understanding and evaluating their contribution to the development of the targeted beneficiaries.

2.5.1. Monitoring and Evaluation at the MUT-TSC

This section aims at analysing success indicators that are currently employed by the MUT-TSC, in conducting monitoring and evaluation function. These success measures or indicators are used by this and other similar technology transfer centres and their stakeholders in order to monitor and evaluate their interventions delivered as services to the intended beneficiaries, namely the SMMEs.

The TSC, like most developmental interventions, is guided by policy framework which identifies the developmental goals to be achieve, and these goals have objectives further narrowed down to outcomes and outputs. The monitoring process assesses the effort or work done in relation to activities and corresponding outputs. The evaluation aspect assesses the programme outcomes or results of the said activities. Impact on the other hand is concerned with change in peoples' lives as a result of the programme interventions.

The monitoring function is performed by the Technology Station (TS) through the collection and analysis of data, compilation of reports to the TIA as the managing agency, which in turn

reports to the DST and the TS keeps records. The data collected is measured against the annual targets which are set by individual Technology Station (TS) in agreement with the TSP at TIA. This assessment of TS activities is undertaken quarterly and corrective action is taken continuously to ensure achievement of the annual operational targets. Self-monitoring at the TS level should have positive results in the areas of staff performance, by identifying short-comings in the system in time for remedial actions to be taken. It is a good measure of staff competence and can be used to identify skills gaps and relevant staff development programmes. By monitoring operational efficiencies, the TSC is also in apposition to ensure effective utilization of resources.

The evaluation function is usually conducted by the TSP management by analysing data and evidence compiled during the monitoring stage and the resulting information is used to confirm or amend programme objectives and for provision of financial resources. The evaluation process helps in identifying problems, take meaningful corrective actions and continuously assess TS performance against programme goals. It is also a good tool for risk assessment. To assess the impact of the TS it is imperative to consider the different stakeholders and their expectations from the TS. The government as the investor in the programme is one of the stakeholders who is interested in the impact and outcomes of the TS they are funding. The TS should therefore conduct M&E firstly for the purpose of reporting to government via the TIA. Hence, one of the sources of information that will be considered key in the technology station monitoring and evaluation exercise is the reporting framework provided by the DST through the TIA. The MUT-TSC uses the following indicators, extracted from its Annual Summary of Operations 2014/15 Report:

- SMME Activities – these being the number of new and repeat clients assisted the number of clients that contacted the station including information on gender, and disability and also number of previously disadvantaged individuals.
- Training activities – which monitors the number of generic and tailor-made training programmes,
- Technical activity – this section monitors the kind of technical services received by clients including testing and analytical services manufacturing/prototyping/upscaling; consultation/technology audit; product and process development; applied engineering, design and research development; and technology demonstration.

The Monitoring and evaluation process also determines the following statistics:

- Demographics (Race, gender, youth, women, disabilities)
- Number and type of entities that benefitted from the programme

(Adapted from the TIA Summary of Operations Reporting Template)

2.5.2. The Impact Evaluation Gap

The current success indicators utilized by the TSP in achieving the goals of monitoring and evaluation and performance management are set by the Technology Innovation Agency. However, the question of quantifying the desired change in lives of the SMMEs was identified for further investigation. This research study, therefore aims at addressing impact evaluation as a gap by quantifying the impact of the interventions of the programme on the beneficiaries. Hence, this study also intents identifying the interventions received by beneficiaries, and assessing whether the SMMEs experience these interventions as negative or positive and in case of positive benefits; determine if these benefits were intended or not.

According to the National Evaluation Policy Framework (DPME, 2011) evaluation criteria should be guided by the strategic intent of the programme or project. The TSP programme is a strategic initiative of the Department of Science and Technology designed for SMME development through technology transfer and innovation. The programme possesses the potential of creating and sustaining jobs and because these are amongst the key societal difficulties in South Africa, this programme is worth the impact evaluation. In addition the impact evaluation study ought to assist in testing the validity of the programme and its approach in economic development through promotion of manufacturing amongst SMMEs in identified economic sectors.

In conclusion, this study is addressing the impact evaluation gap of technology-based entrepreneurship support programmes that was identified and evident in the literature. This gap will be addressed through the case study of a technology-based entrepreneurship support programme hosted by the Mangosuthu University of Technology

CHAPTER 3
METHODOLOGY

3.1 INTRODUCTION

This chapter justifies the methodology applied in this study. It describes the research setting and provides the rationale for the selected research design, sampling strategy, data collection and analysis measures both for quantitative and qualitative approaches. The chapter concludes with a discussion on the ethical considerations employed in the study.

As discussed in chapter 2, an evaluation is designed such that it documents “what actually occurred, whether it had an impact, expected or unexpected, and what links exist between a program and its observed impacts” (Balbach, 1999.p.1). Prior to proceeding to the choice of methodology it is vital to restate the research objective and questions as they coherently guided the research processes.

The objective of the study.is to evaluate the impact of entrepreneurship support programmes on SMMEs and Cooperatives, who are the intended beneficiaries.

3.2 RESEARCH QUESTIONS

- **Research Question 1**: How well does the set of services provided by the entrepreneurship support programme meet the developmental needs of the SMMEs?

Entrepreneurship support programmes provide services that are needed by the SMMEs and cooperatives, and through this support SMMEs and cooperatives become productive and competitive thereby contributing to socio economic development in South Africa.

- **Research Question 2**: How effective are the success indicators in predicting the impact of the entrepreneurship support programmes on the receiving environment?

The implementing agencies of entrepreneurship support programmes have a set of indicators that they use to conduct monitoring and evaluation exercises, and these indicators are excellent in predicting the impact of the programme on the beneficiaries

- **Research Question 3**: How effective are the entrepreneurship support programmes in delivering positive impact on the receiving environment, the SMMEs and cooperatives?

Entrepreneurship support programmes results in positive impact on the SMMEs and cooperatives.

3.3 RESEARCH METHOD AND STUDY DESIGN

3.3.1 Case Study : MUT-TSC

The focus and objectives of the research investigation dictates the appropriate methodological research approach (Creswell 2003; Blaxter & Malcolm 2006 and Denzin 2009). The selected research approach further suggests the type of data to be collected, the analyses to be conducted and probable interpretations. The case study approach was selected as the most appropriate methodology for this study within a qualitative and quantitative paradigm (Yin, (2009, 1994); Soy, 1997)

A case study is defined as “an empirical inquiry about a contemporary phenomenon within its real-world life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin,2009.p.13) Babbie and Mouton 2007, p 281 elaborates it “emphasizes an individual unit” It was considered ideal in responding to the research questions of this study as Soy (1997.p.1) noted that “the research object in the case study is often a program, an entity, a person or a group of people, each object is likely to be intricately connected to political, social, historical and personal issues”. This choice was also reinforced by an argument presented by Balbach (1999) that “a case study is particularly useful for evaluating programs when they (programs) are unique, or when a program occurs in an unpredictable environment” (Balbach, 1999.p.4).

Moreover, this research approach acknowledged the context within which entrepreneurship support occurs as critical and is believed to have an influence on the success or failure of these interventions. The intention was to understand the impact of entrepreneurship support programme though an in-depth study of one such programme, the MUT-TSC. Moreover, Babbie and Mouton 2007, p 280 reiterate that case studies of organizations and institutions are located “typically in business and management studies”. This approach afforded the researcher the opportunity to pose questions on “why does the programme work or not work, how does the program achieve its goals, why does it work for some clients (or in some situations) and not others, what are/were the needs of the clients that were not anticipated by program developers?” (Vanclay, 2012.p.7). Soy (1997) further argues that this approach to research is ideal firstly, in investigating contemporary events or set of events, especially in instances where behaviours cannot be influenced and the investigator has minimal or no control over subjects; and secondly if the investigator intends to establish why the decision or decisions were taken, how they were implemented or how they are to be implemented, and what results are expected.

Mills, Europes, and Wieber 2010 describe the case study as a research strategy characterized by inter-relationships that constitute the context of a particular phenomenon, event or entity, with the intention of analyzing how these contextual factors and the entity being studied relate and uses those relationship in generating or contributing to the theory, that can be deduced in other situations where a similar phenomenon is observed or applicable. The United States of America General Accounting Office (GAO 1990.p.15) explains further that the case study is “a method for learning about a complex instance, based on a comprehensive understanding of that instance obtained by extensive description and analysis of that instance taken as a whole and in its context.” The GAO (1990) further defines “a complex instance” as the scenario where there is no direct and accurate relationship between the inputs and outputs. The case study strategy is capable of demonstrating what happened and why, hence providing the ability to create a comprehensive understanding based on extensive description and analysis employed. It is within this context that MUT-TSC, as a case study is regarded as unique amongst the entrepreneurship support programmes. Its emphasis is on technology development and transfer services targeting SMMEs and cooperatives in chemical manufacturing.

The environment within which the programmes operates within the entrepreneurship landscape noted in the previous chapter, has been described as dynamic and hostile, therefore requiring flexibility in programme design and implementation. According to Balbach (1999.p.5), “when the environment is complex and turbulent, the achievement of a pre-established goal may be difficult to predict, or may only be achievable with unacceptably large negative side effects”.

The case study further allows for use of multiple sources of information and possible mix of qualitative and quantitative methods (Yin, (2009, 1994); Soy, 1997), thereby providing rich detail about the object of analysis (Balbach, 1999). Moreover, Babbie and Mouton 2007 p 282, emphasize that the number of interviews depends on the nature of the research questions. Neale, Thapa and Boyce (2006,p.7) also support that multiple sources of information for case studies may include: “project documents (including meeting minutes), project reports, including quarterly reports, midterm reviews, monitoring visits, mystery client reports, facility assessment reports, interviews, questionnaire/survey results, evaluation reports, observation” amongst others.

This allowed for the generation of vital data about the design and implementation of the programme within the context in which it is implemented and serves as an excellent learning tool for future replications of similar programmes or for improvement of existing programmes.

A concomitant strength of the case study methodology is that it is not based on the assumption that program implementation follows a normal, predictable, and pre-determinate path. Instead the implementation of the programme is considered as a sequence of events, individually requiring innovative strategies that may eventually alter the expected outcomes. (Balbach, 1999). Babbie 2013 p149 maintains that is its purpose is to discovery flaws and seeks modification thereafter. This research study is concerned with what works and what changes have been realized by the SMMEs and cooperatives who have received support from the MUT-TSC. The very existence of these entrepreneurship support programmes is in response to social, historical, political, and economic contexts of the various South African governmental departments, notably, the DST and the DTI. Given the diversity of needs of the various stakeholders involved in entrepreneurship support programmes, mixed methods provided the space for different paradigms and assumptions. This methodology afforded drawing liberally from both quantitative and qualitative tools for collecting data in order to provide the best understanding and comprehensive analysis of a research problem. This research study utilized questionnaires to collect data from SMMEs beneficiaries of the entrepreneurship support programmes, and interviews were conducted with practitioners in these centres.

3.3.2 Data Collection Strategy -- Mixed Methods

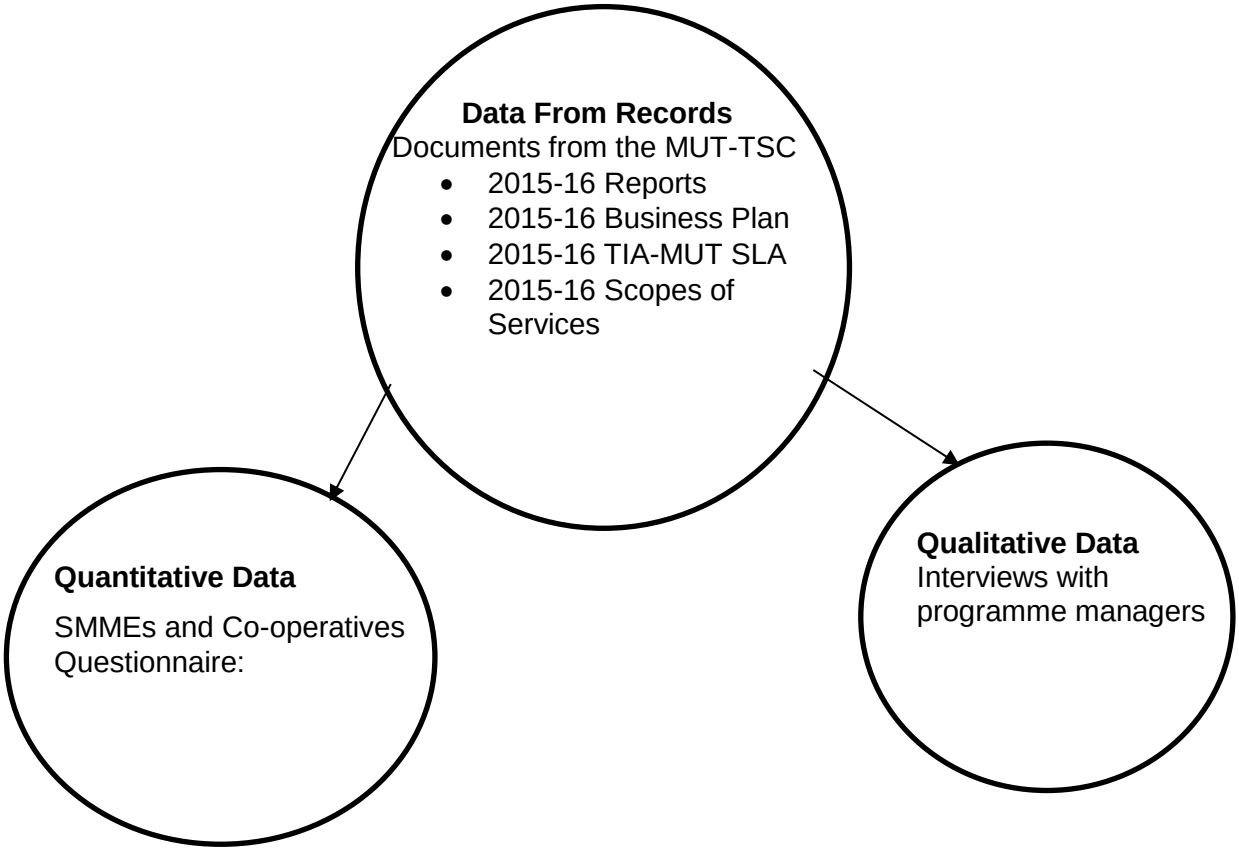

Figure 3.1 – Mixed Methods used in the study

A case study aims at collecting data pertaining to "who was involved in the program, what did they do, in terms of activities, in what context were they working: political, organizational, and cultural, when did the program activities take place, where did the activities take place, why did participants do what they did, and what, if anything, about the actions taken caused the observed changes to take place (if indeed there were changes)" (Balbach, 1999.p.7). In answering these numerous questions, the researcher identified both the implementing practitioners and SMMEs who are beneficiaries; hence data was collected from both groups. The managers of the programme and university representative were interviewed while questionnaires were administered with SMMEs. This ensured demonstrating an understanding of activities undertaken by each of these stakeholders. The questionnaire and the interview schedule focused on eliciting data within an organizational, political and cultural context.

3.3.3 Location:

The geographical location of the activities was inherently defined given that the programme under investigating was servicing SMMEs and cooperatives from KZN and Eastern Cape provinces of South Africa.

3.3.4 Quantitative data a collection

- **Criteria for selection:**

For the quantitative component of the study, the sample population comprised of SMMEs and cooperatives in the chemical manufacturing sector in the Province of KwaZulu-Natal (KZN), who are current and potential clients of the MUT-TSC. Most of the chemical manufacturing SMMEs and cooperatives in KZN are in the detergents manufacturing business. The registered clients serviced by the MUT-TSC during the years 2014 and 2015 were selected.

As noted in Figure 1, Data was collected using the mixed research methods comprising both qualitative and quantitative techniques. Questionnaires collect data in a uniform way to produce the desired data (Royse 2011 p 167) and targeted the SMMEs and cooperatives, who are the beneficiaries of the entrepreneurship support programmes. The questionnaires elicited data from SMMEs and cooperatives who are the clients of the MUT-TSC regarding their experience and perceived benefits from the programme. The questionnaire was also designed to extract data on what SMMEs and cooperatives consider to be the success indicators for comparison with set of indicators used by programme implementing agencies. The questionnaires included open-ended questions to allow for qualitative evaluation of the programme impact from a clients' perspective. The questionnaire was pre-tested with an SMME who was a client of the MUT-TSC in 2012/13.

- **Sample and Sampling Procedure**

According to Balbach (1999) and Morra and Friedlander (1999), case study evaluations generally use purposive samples and these are described as samples identified by the evaluator as having an ability to provide the necessary data needed for the purpose of impact evaluation. Mabry (2009: 223) extends that purposive sample is often chosen for its informativeness and ensures that information about what happened, how and why it happened can be extracted from the units of analysis. Hence in this study the quantitative total sample constituted 90 SMMEs and/or cooperatives, however only 21 SMMEs and one cooperative responded. A singular challenge with clients that were targeted in the sample

was them not being registered entities. According to Peters and Naicker (2013) the reasons for the observed trend of non-registered enterprises is the “lack of desire or capacity to keep detailed records and the erroneous belief that non-registration evades VAT.” This limited the ability to track these individuals and obtain their consent; hence finally all the entities that responded were registered businesses either as close co-operations (CCs), private companies (Pty LTDs) or cooperatives. An example of the questionnaire is attached Appendix A

Letters of invitation to participate in the study together with the questionnaires were either emailed and/or hand delivered to their respective places of employment as noted in table 3.1 below. A covering letter accompanied each questionnaire to explain the aim of the research study, participation terms, anonymity and confidentiality. A copy of the covering letter is attached as Appendix B.

Table: 3. 1 Distribution of Questionnaires

Type of distribution	**Number Issued**	**Number received**
Electronically (email)	10	3
Hand delivered	50	19
Those that could not be reached	30	-
Total	90	22

The questionnaire consisted of five (5) sections. These are: biographical data, educational data, work experience, entrepreneurship data and information regarding the technology station in chemicals. The biographical data section was designed to collect information that will be used to profile SMMEs in terms of age, gender and the kind of area within which the entrepreneur resides and/ or operate. The education section posed related questions to determine the highest level of education of the entrepreneur. The third section collected information relating to an entrepreneurs’ work experience. This section provided information on the kind of experience and exposure, if any, the entrepreneur had prior to starting his or her own business. The fourth section collected information on entrepreneurship, which entails the reasons for going into business, the type of business the entrepreneur own, the annual revenue, whether or not the entrepreneur owns manufacturing facilities, the level of influence they have in the company and determining the vision the entrepreneur has for the

business. The fifth section focused on the kind of services entrepreneurs received from the TSC, the quality of that service and the kind of impact it had on the entrepreneur's' business. It also collected information on the entrepreneur's expectations in terms of the kind of services that the TSC should be offering. Dichotomous, open ended questions and a Likert scale were also included in the questionnaire to standardize responses (Royse 2011:32). .

3.3.5 Qualitative data collection

1.1.1.1. Semi-structured interviews

Interviews form the foundation of case study evaluation, particularly within a multiple method design (Babbie and Mouton 2007). Royse 2011, p264 also maintains that typically interviews are few in number but broad in nature so that they elicit a narrative from the individual being interviewed. Questions therefore within the semi-structured interview are posed to every respondents, while allowing an opportunity for the sourcing less structured information. Balbach (1999) too adds that interviews are at the core of case study evaluations as they provide means of simultaneously understanding what happened based on the viewpoint of persons involved and how they responded to it. Vanclay (2012) also contends that interviewees are selected purposely based on their characteristics as opposed to randomly. He maintains further that qualitative evaluation employ a number of data collection methods and incorporation of innovation is on the increase, and/or in-depth interviews with key informants can be conducted in person, by phone or lately Skype.

A semi-structured interview schedule was designed to collect data that provided information about how the programme sets to meet the needs of the beneficiaries. The interview schedule also aimed at establishing how practitioners determine the success or failure of the programme and what indicators are used in monitoring and evaluation. It also planned to capture the impact that the practitioners believe is experienced by their clients as a result of the programme interventions.

The interview schedule was pre-tested with an employee of the MUT-TSC and subsequently modified. Open-ended questions provided the opportunity to learn from respondents about their experiences and perceptions regarding the programme. Allowing for a certain degree of structure in interview questions ensured that similar information is gathered from all participants. Strength of semi-structured interview protocols is the ability to generate comparable data from all of the participants, while allowing for room to discuss unique perceptions and experience

Questions related to the experience of the participants with the programme, their understanding of the mandate of the technology stations programme, and how the programme should benefit entrepreneurs and promote entrepreneurship. Participants were also questioned on monitoring and evaluation and the envisaged impact of the programme of entrepreneurs and the host institution. In addition questions also addressed challenges encountered within the programme by both cohorts namely entrepreneurs and the host university.

- **Criteria for selection:**

The key informants to be interviewed were identified based on their ability and willingness to reflect on the programme, of which information was critical in providing context of the programme. Hence, the sample population for the qualitative sector comprised of all managers in the MUT-TSC and the head of the Technology Stations Programme.

- **Sample and Sampling Procedure**

Four individuals were identified for the interviews, two of these are practitioners who provide the technological support to SMMEs, one of them is a representative of the host university within the technology station and another the representative of the implementing agency, the Technology Innovation Agency. All members within this sample frame were contacted telephonically and through face to face engagements and invited to participate in the study; and upon consent participated in the interview. Interviews were thereafter conducted either face to face or telephonically. Each interview was conducted at the MUT-TSC offices and lasted for a minimum of 12 and a maximum of 49 minutes. The semi-structured interview schedule is attached Appendix C. The interviews upon consent were recorded and independently transcribed.

3.3.6 Secondary data collection

Case study evaluations also involves document reviews (Balbach, 1999, Neale, Thapa and Boyce,2006, Vanclay, 2012,), as these can be used to guide the development of the data collection protocol as well as assist in identify key informants. Balbach (1999) also argues that these can be viewed as a window through which events (and possible their outcomes)

within the programme can be observed and also for confirmation of responses by participants. Documents review provided secondary sources of data for this research study.

As noted in Figure 3.1, secondary data consisted from multiple sources including service level agreement between the Technology Innovation Agency and the Mangosuthu University of Technology, annual reports, operational plans and client files of the MUT-TSC. This level of triangulation by data sources honours case complexity and helps ascertain accuracy of each datum (Mabry 2009: 222), and further (Rubin and Babbie 2013) validate different sources of evidence.

Data collected informed both the qualitative and quantitative processes and the ensuing steps were followed:

Step 1: Data from Records. These included documents within the MUT-TSC such as annual reports, annual service level agreements between the funding agency (TIA) (Appendix D) and the MUT-TSC Summary of Operations 2015/16 (Appendix E), and scopes of services for SMME projects (Example –Appendix F).

Step 2: Quantitative Data – The questionnaires were developed based on the data obtained from data of Records and administrated to SMMEs and Co-operatives who are clients of the MUT-TSC.

Step 3: Qualitative Data – The interview schedule was developed and informed from data of Records.

3.4 THE UNITS OF ANALYSIS

In case study research the unit or units of analysis are prescribed by the analyses that will be conducted. This study employed the case of Technology Station in Chemicals hosted by Mangosuthu University of Technology and the units of analysis as depicted in illustration 1 are as follows:

- Key informants: Four managers of the entrepreneurship support programmes and one manager from the funding agency,
- 90 SMMEs supported by the Technology Station in Chemicals, of which 22 were finally included in the unit of analysis.

3.5 ANALYSIS CRITERIA FOR INTERPRETING THE FINDINGS

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 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 pattern matching, thematic review and explanation building. Techniques used for the three strategies include: graphical displays of data, tabulations of event frequencies, and time series or chronological orderings. (Yin, 2013). These will be presented in the next chapter.

The following strategies employed in this study are detailed below:

3.5.1 Pattern Matching

According to (Mills, Wieber 2010.p.664), pattern matching remains the “core procedure of theory-testing with cases” and further describes the pattern as “any arrangement of objects or entities,” and further argue that arrangement implies that the “pattern is non-random”. Pattern matching involves comparison of two patterns to establish whether there is a match (implying the patterns are similar) or they do not match (implying that the patterns are different). Theories developed predict some expected pattern of values of variables and these predictions are usually called hypotheses. The term expected pattern is used here for specifications of the hypothesis that allow for a rigorous comparison with an observed pattern of values of variables in a test. Holistic pattern identification, defined as “analyzing the pattern” was used in this research study as opposed to atomistic pattern identification which involves analyzing the “constituents of the pattern” (Mills, Wieber, 2010.p.664). In pattern matching (GAO 1990), the logic or theory stipulates that expected findings need to be developed first then during data analysis actual findings are then compared to expectations. If the findings fit the expectations then the pattern is confirmed, otherwise if there is no fit, expectations are adjusted or elaborated upon to explain the unexpected findings. Hence pattern matching is about matching findings to hypotheses.

Single case is regarded sufficient in providing for robust test of theory if “an entire set of expectations deduced from that theory (which together would constitute an expected pattern) could be shown to be true in that case” (Mills, Wieber, 2010.p.664). In data analyses testing consists of matching an observed pattern (a pattern of measured values) with an expected pattern (a hypothesis) and deciding whether these patterns match (resulting in a confirmation of the hypothesis) or do not match (resulting in a disconfirmation).

In this study, pattern matching will be achieved by matching expected patterns derived through formulated research questions to the observed patterns generated by measured values collected through questionnaires, interviews and data from records. The expected pattern, aligned to research questions, is presented in Table 3.2 below:

Table 3.2 Expected Pattern

Research question	Expected Pattern
• **Research Question 1**: How well does the set of services provided by the entrepreneurship support programme meet the developmental needs of the SMMEs?	Entrepreneurship support programmes provide services that are needed by the SMMEs and cooperatives, and through this support SMMEs and cooperatives become productive and competitive thereby contributing to socio economic development in South Africa
• **Research Question 2**: How effective are the success indicators in predicting the impact of the entrepreneurship support programmes on the receiving environment?	The implementing agencies of entrepreneurship support programmes have a set of indicators that they use to conduct monitoring and evaluation exercises, and these indicators are excellent in predicting the impact of the programme on the beneficiaries
• **Research Question 3**: How effective are the entrepreneurship support programmes in delivering positive impact on the receiving environment, the SMMEs and cooperatives?	Entrepreneurship support programmes results in positive impact on the SMMEs and cooperatives.

The analysis will be conducted in Chapter 4.

1.2. Explanation Building

Explanation building builds on the propositions presented based on what is occurs and why. The data that is collected is then used to complete the initial presentiments, adjust them or elaborate on them. This strategy is therefore about employing data to structure and design propositions. The propositions were developed based on literature review and secondary data collected from the MUT-TSC. Explanations were then developed based on data that was collected to explain the observed trends.

3.5.2 Thematic Reviews or Thematic Analysis

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. p.218). Expectations in pattern matching and explanation in explanation building are expressed as themes and this form of analytical induction allows for identifying patterns rather than merely deciding prior to data collection or analysis what precise data categories will exist (Curtis and Curtis 2011). These themes will be presented in the next chapter.

3.6 ETHICAL CONSIDERATIONS

All stipulated regulations governing ethics in research at UKZN were adhered to. (Letter of consent to participate in the study is attached as Appendix B). The anonymity of the respondents was maintained. Babbie (2013:35) states that anonymity is achieved in a research project when neither the researchers nor the readers of the findings can identify a given response with a given respondent. However, in an interview respondents can never be considered anonymous (Rubin and Babbie 2013) since each participant is identified for example in this study two Project Managers (qualitative semi-structured interviews) will be identified as such. However, in other cohorts like the SMMEs anonymity will be maintained as they will not be identified by name but by pseudonym

Confidentiality, within the confines of the study will be maintained and all reasonable precautions will be taken to ensure unauthorized access to the data. Data will be stored for a prescribed period as dictated by the ethics committee of UKZN and upon expiry of this period will thereafter be destroyed. Data will also be utilized only for the legitimate purpose of the study. Moreover, respondents were assured that their participation in the study was voluntary. The purpose of the research was clearly explained to all cohorts of the sample. Written consent was also sought for access to the client database of the technology station at the MUT.

The benefits of the study were clearly explained to different cohort of participants. Wassenaar (2008) mentions this as essential within the ethical dictates. They were assured of receiving a copy of the study upon completion. In the study all semi-structured interviews were be recorded and transcribed and thereafter a few transcriptions were checked with the participants for accuracy before analysis was conducted. This commitment is also validated by Guba and Lincoln (1989 p.293) as “the single most critical technique for establishing credibility” In conclusion; this case study utilized both the quantitative and qualitative research methods to address the research questions. The mixed methodology allowed the

researcher to elicit responses for both the beneficiaries of the entrepreneurship support programme and the implementing managers.

3.6.1 Validity

Babbie (2013:191) defines validity as a term describing a measure that accurately reflects the concept it is intended to measure. *Construct validity* was guaranteed by using multiple sources of data and also providing the draft report to key informants for review. To ensure face and content validity, in this study, both the draft questionnaire and semi-structured interview guidelines were reviewed by the researcher and supervisor and subsequently to the Research and Ethics Committee of the University of KwaZulu-Natal. Comments at all stages of the development of the questionnaire and interview guideline were duly included in the final instrument s. As suggested by Sandy and Shaw (2012, p. 67) validity checks on the master list of themes were conducted by another researcher to ensure that the themes were relevant and evidenced in the data. Methodological triangulation was used where data collected from different methods was compared for confirmation. (Mabry.2009. p.222).

3.6.2 Reliability

Reliability was ensured through triangulation of data collected from MUT-TSC records, questionnaires (quantitative data) and semi-structured interviews (qualitative data). This will be discussed in the next chapter.

This chapter described and justified the selected research method and techniques used in this study. It also reported on how the integrity, reliability and validity of research findings were maintained and preserved.

CHAPTER 4
RESULTS, ANALYSIS AND DISCUSSIONS

4.1. INTRODUCTION

Chapter 3 detailed the research method employed in this study. This chapter presents the results, analysis and discussion of both the qualitative and quantitative data from SMME questionnaires and individual interviews. The chapter commences with a presentation of the quantitative results followed by the qualitative results. It will also include the sources of data from documents etc. The final section will address the triangulation of the qualitative, quantitative and documentary evidence

4.2. PRESENTATION OF RESULTS

4.2.1. 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 at the Technology Station in Chemicals (TSC)

4.2.1.1. Biographical data

Age

Table 1 below indicates the applicable age groups of respondents in the study.

TABLE 4.1: Age of Respondents

Age Group	Percentage
Under 20	0
21-29	24
30 - 35	10
36 - 39	14
40 - 49	29
50 - 60	10
60+	14
	100

The results revealed that none of the respondents to this case study were younger than 21 years (Table 4.1), although it may not be generalized to imply that this age group is not

involved in other forms of entrepreneurship. 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” hence from the table above a total of 34% of respondents (24% in 21-29 category and 10% in the 30-35 category) fall within the youth category. The second highest category is in the age group 40 to 49 of 29%. Notably, respondents above 60 years of age accounted for 14% of the total respondents.

Gender

Table 4.2: Gender & Race of Respondents

Gender	**Percentage**
Female	43
Male	57
	100

Respondents were predominantly male (57 %,) as noted in Table 4.2. Although the study did not focus on race it should be noted that Clients of the MUT-TSC are predominantly African Blacks Evidently the programme has attracted considerable participation of black females, hence the reflective percentage of 43% of respondents being women.

Residential Profile

The data revealed that 48% of the respondents resided in townships, with 33% living and operating in suburban areas (Table 4.3). 14% of the respondents reside and operate within informal settlements and only 5% reported living and operating in rural areas serviced with both water and electricity.

Table 4.3 – Residence Profile of Respondents

Area	**Percentage**
Township	48
Suburban area	33
Informal settlement	14
Government subsidized house	0
Rural area with running water and electricity	5
Rural area with electricity but no running water	0
Rural area with running water but no electricity	0
Rural area without electricity and running water	0
	100

Evidently, government supports entrepreneurship and SMMEs to redress previous economic imbalances, specifically participation of Black (African) South Africans. The biographical data of this study is indicative of such and engagement in that MUT-TSC is able to appropriately reach this target group of individuals (black, youth and previously disadvantaged). This may be partly attributed to the location (which affords easy access) and mission of the Mangosuthu University of Technology, which reads “Our mission is to provide advanced, technology-based programmes and services that are career- and business-oriented in the broad fields of engineering, natural and management sciences for the uplift of talented but mainly disadvantaged individuals. By so doing, the University shows its commitment to social redress. It contributes to creating an equitable and prosperous Southern Africa in which individuals have the opportunity to achieve their full potential. (MUT Mission statement (2010). Moreover, women constituted 43% of the entire sample population which is evidence of the potential to develop and enhance entrepreneurship amongst blacks, women and youth.

4.2.1.2. Education

Basic Education

Table 4.4 revealed that 76% of the respondents had completed or exited secondary school by 2008, with the remaining 24% having completed or exited secondary school from 2009 to 2014.

Table 4.4: Secondary school final year

Period	Percentage
Before 2003	43
2003 -2008	33
2009	10
2010	5
2011	5
2012	0
2013	0
2014	5
	100

Of the total sample population, (71) % of the respondents completed secondary school and only 29% exited between Grade 7 and 11 as noted on Table 4.5. The second category are those who did not successfully complete grade 12.

Table 4.5: Highest grade/class passed at school

Grades	Percentage
Below Grade 7	0
Grade 7 to 11	29
Grade 12/Matric	71
	100

Postgraduate/ Higher Education

From table 4.6, only 10% of the respondents had a three-year diploma or degree and a further 10% possessed four-year degrees. No postgraduate (masters and PhD qualifications) were recorded amongst respondents. Only 33% reported that they did not have any post-school qualification. 10% of respondents cited academic performance and 14% financial challenges as reasons preventing them from attaining higher tertiary qualifications.

Table 4.6: Highest post-matric qualification

Qualification	**Percentage**
N3/N4/N5 Qualification	19
Matric +1 year certificate	29
Matric +3 year Degree/Diploma	10
Matric +4 year Degree	10
Master's degree	0
PhD	0
Other (no)	33
	100

Table 4.7: Reason for failure to achieve post-matric qualifications

Reasons	**Percentage**
Academic performance	10
Financial constrains	14
Couldn't secure industry placement	0
Other	76
	100

The results revealed that although 71% of respondents completed Grade 12 (Table 4.5), only 20% have either a three or four year qualification. This figure is suggestive of the low

levels of education that impacts on minimum exposure to further research and development. The interventions of the MUT-TSC are focused towards improving the technological know-how of the SMMEs and the results of educational qualification demonstrate that sustained effort to increase and inculcate the need for further postgraduate education. This has implications particularly because of the focal area of new product and process development.

4.2.1.3. Work Experience

Table 4.8: Work experience

	Percentage
Yes	95
No	5
	100

The data demonstrated that 95% of respondents possessed some form of work experience (Table 4.8) and a majority 76% (Table 4.9) reported being in full-time employment.

Table 4.9: Kind of work experience

Work experience	**Percentage**
Temporary/part time work while at school	0
Temporary/part time work after finishing school	24
Full time employment after finishing school	76
Volunteer work while at school	0
Volunteer work after finishing school	0
	100

In respect of possible reasons for engaging in entrepreneurial activity, respondents indicated the number of years they stayed at home after finishing school. Table 4.10 displays that 67 % stayed at home for more than 10 years.

Table 4.10: Length of stay at home after completing Secondary School

	Percentage
1 Year	10
2 Year	14
3-5 Years	5
6-10 Years	5
More than 10 Years	67
No response	0
	100

A total of 19% of those who had been unemployed were supported by both their parents, while the remaining 10% were self-supporting (Table 4.11). There was a non-response of 71% to this question.

Table 4.11: Support system during the period of unemployment

	Percentage
Mother	14
Father	5
Grandmother/Grandfather	0
Aunt / Uncle	0
Sister/Brother	0
Self-supporting	10
No response	71
	100

The data revealed that respondents had some form of income after completing secondary school, although 33% of them possessed no formal post-matric qualification (Table 4.6). The majority of respondents (67%) have not attended any schooling or engaged in academic activities for more than 10 years. This salient factor should be considered when designing training and skills development programmes for entrepreneurs at the MUT-TSC.

4.2.1.4. Entrepreneurship

This section gathered data on the reasons for establishing a business, the type of the business, its core functions, number of people involved in the business and the age and turnover of the company. It also established whether the company possesses manufacturing facilities.

Reasons for establishing a business

In order to determine the entrepreneurial drive of the respondents, they were questioned about the reasons for establishing their own businesses. Table 4.12 below provides a summary of most their responses.

Table 4.12: Reasons for starting a business

	Percentage
Desire to be your own boss	47
Parents/grandparents owned a business	5
Could not afford university	11
Was unemployed after graduating from university	5
Had no matric and was unemployed	0
Retrenchment	11
Retirement	5
Worked for chemical company and was retrenched	5
Retired /retrenched from chemical company	0
Could not continue with academic studies	11
	100

Table 4.12 above indicates that 47% of respondents commenced with their own businesses driven by a desire to be their own bosses. Academic reasons accounted for a total of 22% (could not afford university: 11%: could not continue with academic studies: 11%). Retrenchment featured at 11% and combined with retrenchment from a chemical company (5%) contributed to a total of 16%.

Type of Business

Table 4.13: Type of business

	Percentage
Close Corporation (Cc)	14
Private Company (Pty Ltd)	67
Cooperative	5
Not Registered	5
No Response	10
	100

Most respondents on table 4.13 (67%), owned registered private companies, with 14% owning close corporations and 5% cooperatives. It was noted also that 5% of respondents were still in the process of registering their companies, while 10% did not provide their company type or specify if they were in the process of being registered. This high percentage was expected given that the client capturing forms used by the MUT-TSC also allowed for technopreneurs, who are individuals who may or may not have companies.

Core business of the Organization

Respondents specified that the core business of their organization was predominantly 81% in detergent manufacturing, with only 14% constituting other areas including water and bio-energy.

Table 4.14 – Core Business of organizations

	Percentage
Manufacturing - detergents	81
Other areas: Water, Bio-Energy	14
No response	5
	100

A negligible, (14%) companies were in other areas of chemicals, and have detergent manufacturing operations. Only 10% of these companies were engaged in other “business initiatives” which are not related to chemicals. The MUT-TSC is specially concentrating on chemical manufacturing and should therefore attract SMMEs who are operating or interested in manufacturing of chemical products

Members or employees in the organization

Table 4.15: Members or Employees in the organisation

	Percentage
1>5	81
6>10	19
10>20	0
20>50	0
50>100	0
more than 100	0
	100

A huge percentage (81%) of respondents had companies with less than 5 members in its organizational structure, with the remaining 19% employing between six (6) and ten employees. (Table 4.15)

Years in operation

Table 4.16: Years in Operation

Years	**Percentage**
1	43
2	5
3	24
4	5
5	10
More than 5	14
	100

The results indicated that 43% of respondents had companies that are in their first year of operation (Table 4.16). Notably, 24% of respondents had been in operation for three years and only 14% had been operating for more than five (5) years.

Annual Turnover

Table 4.17: Annual turnover *(based on their latest financials)*

	Percentage
Less than R50 000	76
R51 000 to R100 000	5
R101 000 to R150 000	0
R151 000 to R200 000	0
R251 000 to R300 000	0
R 301 000 to R500 000	0
R1.1 m to R2m	5
R2.1 to R5m	10
R5.1 to R10m	0
More than R10m	0
NO response	5
	100

Table 4.17 illustrates that a vast majority of respondents, 76% earned less than R50 000 per annum and a further five (5%) in the R51 000 to R100 000 category. The highest earners, which constituted only (10% of respondents), were in the R2.1 to R5m category.

The respondents can be classified as generally, micro enterprises on the basis of number of employees (less than 5; Table 4.15) and revenue (less than R150 000; Table 4.17), based on the National Small Business Act of 1996 (The Government of South Africa, 1996). No respondents, (Table 4.16) were categorized as very small (annual turnover between R200 000 and R500 000) and only 15% of the respondents can be categorized as small on the basis of turnover.

Of these companies, 43% are still in their first year of operation (Table 4.16), 43% having been in operation for 2 to 5 years with only 14% have survived beyond the first five years.

Manufacturing facilities

Chemical manufacturing requires companies to own or have access to manufacturing facilities. The results disclosed that a substantial number of respondents, 76% did not own manufacturing facilities.

Table 4.18: Respondents owning manufacturing facilities

Yes	24
No	76
	100

Of the 76 % that owned facilities very few respondents (5%) listed minimal infrastructure which was limited to mixing tanks, Liquid mixers, powder and soap machines, as noted in the table below (4.19)

Table 4.19: Manufacturing facilities owned by respondents

	Percentage of total respondents
Liquid mixers, powder and soap machines	5
Mixing tanks and ribbon blender	5
Small Mixing plant	5
	Total of 15% of the total respondents

The other respondents rely on the MUT-TSC facilities for their production needs. The heavy reliance of beneficiaries on MUT-TSC facilities leads to total dependency on the MUT-TSC. This was also apparent when SMMEs were questioned about their first intervention with the MUT-TSC, which revealed that the oldest client started interacting with MUT-TSC in 2003.

Role (or position) of respondent in the company

In order to ascertain the level of authority and knowledge of the business and organization, respondents their positions they occupied in the company. Results presented in in Table 4.20 below indicated that 71% of respondents occupied management positions.

Table 4.20: Respondent's role in the company

Role	Percentage
Managing Director	71
Finance and procurement	10
Marketing and sales	10
Human Resources management /administration	0
Production	10
	100

Organizational vision

Respondents mentioned organisational vision for their companies as presented in Table 4.21 below. Evidently from table 4.21, exporting beyond the South African borders was envisioned.

Table 4.21: Summary of Organisational vision

	Percentage
Growing the business and expanding to another town/city	18
Growing the business and expanding to another province	27
Making enough money to live comfortable	6
Exporting to other African countries	16
Exporting to Africa and internationally	33
	100

Definition of Success in business

Responses to the sentence "I will consider myself successful when…" are summarised below (Table 4.22). Success for the vast majority was viewed as increase in the human resources and simultaneously generation of profit.

Table 4.22: Summary of Success in business

	Percentage
The business is generating profits	19
The business has access to new markets	10
the business owns manufacturing facilities	14
The business has increased number of employees	19
The business has established a national brand	10
The business is exporting	10
No responses	18
	100

The results have indicated that most companies (76%, Table 4.18) do not own manufacturing facilities. Hence, one of the necessary services provided by the MUT-TSC is to provide access to manufacturing facilities. These were initially conceived to be used during the mentorship programme, where clients are allowed to utilize the facility while developing the financial capital to purchase their own. Interestingly also the data revealed that the large number of enterprises who do not own manufacturing facilities corresponds to the 76% that earns less than R50 000 per annum (Table 4.17). Furthermore, respondents have a vision of developing their businesses to move beyond provincial or national boundaries (Table 4.21), and 71% of these respondents' occupied positions of managing directors within the companies (Table 4.20).

4.2.1.5. Entrepreneurship Support at the Technology Station in Chemicals (TSC)

This section collected data that relates specifically to the Technology Station, starting with an assessment of how SMMEs came to be the clients of the TSC and their reasons for approaching the centre for assistance. The issues relating to the kind of services received and quality perceptions were addressed; including the kind of services that SMMEs believe the TSC should be offering. The results of the data are critical in creating an understanding of how SMMEs view the services provided by entrepreneurship support programmes.

Sources of information

The results indicated that most respondents came to be acquainted about the MUT-TSC through referrals, either through other entrepreneurs (14%) or family and friends (38%). Hence referrals account for 52% in total of the business coming to the MUT-TSC. This can be attributed to the level of satisfaction of clients with MUT-TSC services as noted on table 4.23 below.

Table 4.23: Sources of information about the MUT- TSC

	Percentage
Referral by another MUT-TSC client/entrepreneur	14
Family member/friend	38
Newspaper	5
Business fair	5
SEDA (Small Enterprise Development Agency)	14
Chemin (dti chemical incubator)	10
Internet	0
Other	14
	100

Reasons for interacting with MUT-TSC

The reasons cited for the first visit or interaction with the MUT-TSC presented in Table 4.24 below.

Table 4.24 - Reasons for interacting with TSC

	Percentage
Training and related activities	33
Information/Advise/Support	29
Product Development/ Improvement/ Support	19
Equipment/Facilities	5
No responses	14
	100

Training and related activities ranked the highest 33%, followed by need for information and support. Technology related needs like product development or improvement ranked third in priority of 19% respectively.

Table 4.25 established that the most common reasons where assistance was needed was their technology related requirements. The needs for technology to improve their businesses (17%) or technology to develop new products (17%) ranked the highest. The need for manufacturing and testing facilities came a close second, with 15% each. These results also confirm that training is viewed as vital by SMMEs, and that SMMES do value the technological support that is available within the Centre.

Table: 4.25 – Areas where assistance was needed

	Frequency
Technology to improve your business	17
Technology to improve your existing product/s	7
Wanted to develop a new product	17
Quality of your product	13
Needed production facilities	15
Needed quality testing facilities	15
Information on new product	8
Market for your product	7
Other	2

First Intervention Respondents noted that the nature of the first intervention by the MUT-TSC was related to training 43 % as indicated in Table 4.26 below.

Table 4.26: First intervention

First Intervention	Percentage
Training and related activities	43
Development of detergents products and plant sent up	4
Manufacturing Facility	14
Product Testing	19
No responses	19

The respondents rated the impact of the first service they received as having assisted their business, 84% strongly agreed while 14% agreed (Table 4.27).

Table 4.27: Rating of impact of MUT-TSC services (first intervention) on SMME business

	Strongly disagree	1	2	3	4	5	Strongly agree
Did the first service received assist the business?		0	0	0	14	86	**Percentage**

They also offered a rating of the quality of the service that met their expectations, as noted in Table 4.28 below.

Table 4.28: Rating expectations of quality of service

	Strongly disagree	1	2	3	4	5	Strongly agree
Did the quality of the first service match your expectations?		0	0	5	5	90	**Percentage**

An overwhelming majority 90% of the respondents strongly agreed that their expectations were met, while5% agreed with the remaining 5% indicating that the service quality was satisfactory.

Second intervention

Responses were also elicited if they required a second intervention from the MUT-TSC. The results showed that at least 76% of respondents required second intervention from the MUT-TSC as noted (Table 4.29 below).

Table 4.29: Rating on repeat business - SMMEs requesting second intervention from the MUT-TSC

Needed a second intervention?	Percentage
Yes	76
No	19
No Response	5

Table 4.30: Nature of the second intervention

Area of Support	Percentage
Mentorship	19
Quality Assurance/Control	19
Increase product Range	24
Learning /short courses	10
Did not require second intervention	19
No response	5
Other --- costing	5

Increasing product range appeared to be high (24%) on the reasons for second interventions, followed by mentorship and quality assurance or control (19% each).notable 19% of respondents did not require a second intervention.

In rating the impact of the second intervention 86% of respondents strongly agreed and 5% agreed that even this service benefitted their businesses, while 5% strongly disagreed, as noted in results presented in Table 4.31.

Table: 4. 31: Rating of impact of MUT-TSC services (second intervention) on SMME business

	Strongly disagree	**1**	**2**	**3**	**4**	**5**	**Strongly agree**
Did you benefit from the service		5	0	5	5	86	**Percentage**

The respondents that indicated that they did not engage the MUT-TSC for the second intervention indicated some of the likely reasons, which are presented in Table 4.32. 5% of the respondents were unhappy with initial service, 19% quoted other reasons and a non-response of 76% was recorded.

Table 4.32: Reasons for not accessing/requiring second intervention

	Percentage
Your business no longer required TSC service	0
You were unhappy with the initial service	5
The TSC did not provide the service you needed	0
You were no longer interested in pursuing the business	0
You got employment	0
Other	19
no response	76
	100

This data revealed the trend that SMMEs initiate contact for training then continue operating within the MUT-TSC for production and testing.

Responses of services that the MUT-TSC should be offering

The analysis of responses revealed that facilities and related support) were ranked highest, 25 % and 13 % respectfully. All other MUT-TSC services had a similar rating. All responses arrange in terms of highest frequency for a particular response. The responses are summarized below:

Table 4.33: Services required by respondents

	Percentage
Marketing and related support	25
Sulphonation Plant/Equipment/Laboratory	13
More Research and Development including pilot studies water treatment, mineral processing etc.) and incubation	6
Manufacturing Skills , powder soaps	9
Product testing and improvement	9
More skills development, business skills, computer skills	9
No response	28
	100

The results revealed that technical support (manufacturing skills, research and development, incubation, product testing (including SABS testing), improvement, diversified product range (including powder soaps, packaging) accounted for 62% of the responses.

The responses to what services respondents thought the MUT-TSC should be offering did not generate a conclusive understanding given that 28% of respondents did not respond to this question. However, marketing related activities were cited as a strong feature of 25%.

Service from MUT-TSC that benefitted the business the most?

The data revealed that 84% of responses related to technical support which is the core function of the MUT-TSC, which is providing technological support to SMMEs to increase their competitiveness. Only 16% of responses related to non-technical support.

Table 4.34: Service from MUT-TSC that benefitted the business the most

	Percentage
Training in detergents manufacture	29
Product Testing/Quality testing	12
Business/Business Management skills	14
Production Facilities (Pilot Plant)	24
Pricing and Costing and Financial management	10
Product Improvement and Support	7
Supportive (information sharing & Advice,	5
	100

Training again emerged as the most popular service offered by the MUT-TSC as reflected in the results presented in Table 4.34 above.

When questioned to identify the areas of their businesses that benefitted the most from MUT-TSC interventions, respondents indicated the general benefit in all technological areas of their businesses. The difference in responses for the various areas was quite minimal as indicated in Table 4.35. The ability to secure more customers appeared as one area where some respondents were uncertain whether the MUT-TSC was able to assist.

Table 4.35: Areas of SMMEs' business that benefitted the most from MUT-TSC interventions

	Yes (%)	No (%)	Not Sure (%)
Increase product range	12	1	1
Improvement in quality	14	-	1
Ability to secure more customers	10	1	2
Ability to meet customers' needs	11	-	1
Increase in revenue/profit	11	-	1
Access to technological information	11	-	1
Access to laboratory	12	-	-
Access to production facilities	11	2	-

(44%) noted that production/manufacturing sections of their businesses benefitted the most from MUT-TSC intervention. The other area that was reported was in human resources development (skills development, training, self-confidence) and represent 12% of responses. Also respondents cited being able to market their products better, ability to respond to customer needs has improved resulting in an increase in market share and improved company image (16%). 8% of responses reported benefit in the areas of research and development (development of business idea) and new product development. There is a correlation between the preferred services (Table 4.11) and areas of business that benefitted the most (Table 4.12) in that the most preferred service is training which allows them (SMMEs) to product quality products.

Business achievements as a result of MUT-TSC interventions

Respondents indicated that business achievements as detailed in Table 4.36 that can be attributed to the interventions of the MUT-TSC. The results also indicated that there is benefit in all areas of business, especially producing good quality products and manufacturing.

Table 4.36: Business achievements as a result of MUT-TSC interventions

Area	**Yes**	**No**	**Unsure**
Securing income for yourself	10	0	1
Technological skills development for yourself	10	2	1
Technological skills development for your employees	10	2	0
Creating employment opportunity for other people	10	1	1
New products development	8	2	0
New process development	7	2	2
Quality assurance	11	0	1
Creating wealth for yourself/family	8	1	2
Improving your understanding of the chemical industry	12	0	1

Table 4.37: Areas of your business that benefitted the most from the TSC intervention

	Percentage
Producing good quality products/product testing	24
Manufacturing	20
Marketing	4
Skills Development	4
New product development	4
To be self-confident with my products	4
Meeting customer demands	4
Company image	4
Market share increase	4
Development of business idea	4
Business Management Training	4
Monitoring business	4
Business compliance	4
No responses	12
	100

Suggestions on how the TSC should improve its services

The data also identified areas where the MUT-TSC could improve on its service delivery. The responses indicated that the MUT-TSC should improve on its response rate, engage in more research to improve diversity and scope within the same technological area, provide SABS services and manufacturing facilities. It was noted though that a large percentage of respondents (29%) were unable to identify specific areas where improvement was essential.

Table 4.38: Areas of Improvement for MUT-TSC

	Percentage
On-time delivery	10
Engage with more SMMEs	10
To have more workshop and visiting business e.g. SEDA and Sanoco.org	10
Focus should be more on projects, research and development and running pilot studies for process improvements. We have lots of opportunities in water and sanitation, energy and manufacturing.	5
Provide SABS for companies	5
Marketing (barcoding, labels)	5
Divide the production plant in two section one for the new trainee and the other for the enterprises	5
Because there is more competition when it comes to Chemical product	5
Production	5
Complimentary – all is well	14
No responses	29
	100

Table 4.39 displays a 100% recommendation by respondents to other entrepreneurs.

Table 4.39: would you recommend the MUT- TSC to another entrepreneur?

	Percentage
Yes	100%
No	0%

This initial section collected data that relates specifically to the Technology Station, starting with an assessment of how SMMEs came to be the clients of the TSC and their reasons for approaching the centre for assistance. The issues relating to the type of services received and quality perceptions were addressed; including the kind of services that SMMEs believe the TSC should be offering. The Table 4.34 above reveals that SMMEs receiving assistance in the MUT-TSC are interested in low-end technology services. This finds resonance with the finding by the 2003 report by Pretorius and Van Vuuren, as quoted by Peters and Naicker (2013.p.16), that support is more “relevant to existing businesses than to start-ups”. The satisfaction levels of the SMMES with service delivery and quality of support from the MUT-

TSC was also evaluated. Table 4.39, revealed that all respondents will recommend the MUT-TSC to other SMMEs.

The next section presents the qualitative data collected.

4.2.2. Qualitative Data

The qualitative sample consisted of Four (4) individual interviews, which were conducted with managers who are implementing the technology stations programme. Three (3) managers are at the MUT-TSC and one is the head of the TSP. The interview schedule that guided all interviews is attached as Appendix C

The data will be presented as they relate to the different subsections of the interview schedule. All responses from the respondents will be italicized and indented.

4.2.2.1. SMME Needs – (Research Question 1)

- **Knowledge about the MUT-TSC?**

The interviewees described the MUT-TSC as one of the centres, that are referred to as technology stations, an initiative if the Department of Science and Technology under the auspices of the Technology Innovation Agency. These centres are hosted by the institutions like the Mangosuthu University of Technology.

Interviewee1:

The mandate of the MUT-TSC is to support enterprises for continuous improvement. The portfolio for the Technology Stations which includes universities and the University of Technology particularly the technology station hosted in Mangosuthu University of Technology focusing on Chemistry and *Chemical engineering is one of the portfolios that I support and I see in the mandate to support enterprises for continuous improvement.*

Interviewee 2

The university hosts the technology station and the technology station itself is a program funded by the Department of Science and Technology through a Technology Innovation Agency.

Interviewee3

it stands for the technology station and chemicals. It is a subsidiary of Mangosuthu University of Technology it has a director in charge and 3 other managers and then technologists and technicians and their core business is to transfer technology to SMMEs their core business is to transfer technology to SMMEs.

- **The role and level of engagement in the management of the TSC**

The interviewees were all managers at different levels with the TSP, three of the interviewees were from MUT-TSC and one was from the head office of the programme.

1. **Expectations from the TSC: (definition of the role of the TSC as the entrepreneurship support programme within MUT**

The interviewees describe the role of the MUT-TSC as follows:

Interviewee1

…is to look at the obstacle associated with the science and engineering technology know-how as barriers that technology-based companies face in participating in the main stream economy of manufacturing. We have given priority mainly to small medium enterprises. The stations are positioned mainly to provide a technology based know-how, looking also the university outputs and how those outputs could respond to the gaps in industry particularly.

Interviewee 2

The primary contribution made by the technology station in the development of SMMEs and cooperatives, is primarily technological…,

and further added that

The primary aim of government when the technology station was set up was to develop the SMMEs sector nationally and as a way of improving the economy. And also the way it was set up in such a way that the development of SMMEs is linked to University of Technology or to the then Technikons in such a way that the Technikons which are assumed to be having expertise in certain areas would be providing support to the development of SMMEs in the various sectors like, in the case of this technology station it provides support to SMMEs that are in the chemical and manufacturing sector. We do have sister technology stations that provide support to SMMEs in various areas like electronics, auto motive components and others.

When asked to describe benefits that the SMMEs should derive from interacting with the tech station, the responses were:

Interviewee 1

it is difficult because it is demand driven

Interviewee2

the technology station provides services to SMMEs, but the services it provides are based on the needs of the SMMEs, so the one service that it provides to SMMEs is training either in the area of liquid detergents or solid detergents or in cosmetics and the second service it provides is quality assurance of the products that are produced by the SMMEs, starting off by during the basic training the products that are produced by the SMMEs during the training period are tested by its analytically services to ensure that they meet the standards the acceptable standards.

Also this service that is provided, by analytical services continues onto the mentorship program. Going forward also other services are not necessarily meant for SMMEs that are trained by the technology station, you do get cases of SMMEs that have been trained elsewhere but those SMMEs will come to the technology station seeking for instance, analysis of their products by the station and also we do provide other services for instance like conducting technological audits, in various sites of the SMMEs where they operate if they need to improve the way they operate, so they request the technology station to go to their places of operation and see in what way the technology station can assist them to improve and also others you look at cases of SMMEs that also would like to set up manufacturing facilities and then they request the technology station to assist them provide support in or guide them in setting up manufacturing facilities.

Interviewee 4

I want to believe that TSC is the only vehicle where the university on an ongoing basis makes contact with the community providing the service of upliftment and also entrepreneurship, job creation and basically socio economic development for a simple reason because we run a regular basis our workshops and we do follow up work as well.

- **Training and skills development**

  Interviewee 2

  The MUT-TSC provides skills development in detergents, disinfectant products and also in the field of cosmetics. Most commonly SMMEs and cooperatives approach the technology station with the request, one to be provided with basic training on the production of chemical products that is where most SMMEs start initially wanting to get basic training which is over 5 days and there after the technology station provides a mentorship program where on the SMMEs would once it receives orders from its clients approach the technology station requesting an opportunity to actually produce the product under supervision at the technology station and then supply the clients.

- **Mentorship programme**

  Interviewee 2

  SMMEs are provided with tools to maintain a certain amount of momentum through the products they can take home and also come back gain experience through incubation and support. SMME get an opportunity to produce products under supervision over a period of time and they are able to service their clients even though they do not have manufacturing facilities of their own. Analytical services also continue during the mentorship programme. Therefore SMMEs have access to the facilities of the technology station to produce a product that is required by their market. Over this mentorship period the SMME by continuing to service its market at the same time it is developing a financial muscle.

4.2.2.2. Indicators – (Research Question 2)

Interviewees were asked to indicate how they measure success, responses are provided below. However it transpired that Interviews also revealed that the programme was meant to impact on turnover, job creation and technological innovation that will benefit both Host University and SMMEs.

Interviewee 1

There are four perspectives from the performance perspective. The first one is around human resource development, the second perspective is on institutional learning and development is more on the infrastructure to make sure that the high end infrastructure is in place and efficiently used between university and SMMEs. The third one is about smart industries and making industry more innovative. The fourth perspective is economic value add, promote impact assessments where you want to measure how efficient and effective are the stations taking part in that multi-disciplinary project, for example how well the technology station in chemicals works with other technology stations, maybe in electronics. This also looks at development and commercialization of IP.

Interviewee 3

SMMEs require some form of training so that they can become self-sufficient.

Interviewee 2
One way of measuring success is by considering the number of (a few) successful SMMEs that have entered the market some years ago and are still in the market. Impact is also ensured by monitoring a number of return clients that came to visit and needing more training, and products.

- **Job creation**

Job creation is one of the key priority areas for government, and also an area in which SMMEs are expected to contribute. When the question of the programme contribution to job creation was prosed the responses were:

Interviewee1

one of the things that we hope we are going to meet was job creation but you will see that we find it very difficult to respond to job creation now because it takes a long time to measure how jobs are being created here

Interviewee 2

one is the number of employee that are there. Certainly that is very easy to determine and secondly for an SMME that is busy you can see because there will be no idleness of the employee every one that is there you find that they are busy providing the service that they are supposed to be providing. In other words there is no loitering or employees sitting around you can see that there are clients that do come to buy products or make some procurements you see the vibe basically if I had to put it that way although it is not easy to measure to determine, but you can always see it when you visit the site of the SMME.

- **Turnover**

Interviewee1

what you see is that the top 3 priorities are more around the cost cutting through either reduction of scrap or reduction of input costs, so cost cutting is number 1. The second one is capacitating the enterprises in sales to be able to add productivity improvements to use more innovative ways of doing things and the `fourth one was the quality in the place of competing with the global or international products that are currently on the market.

Interviewee 2

the one indicator that is critical that can be used by any service provider is to look at the first time that that service provider provided support to an SMME, like first intervention and look at how over the years, that intervention has actually impacted on the development of the SMMEs.

The one critical success factor that I am looking at is mainly the one penetration of the market by SMMEs that the technology station is providing and

secondly the growth of the SMME over the years, growth in terms of increasing the number of employees over the years.

There is also growth in the turnover but that has been very difficult to measure over the time because of the reluctance of most business people to divulge the turnover they are making but one factor or one measure in which we measure our success is the penetration of the market and the continued operation of the SMMEs over the years and also its increase of the market of its services.

4.2.2.3. Impact Evaluation – (Research Question 3)

- **Method of programme evaluation**

When the issue of whether the programme is responding to objectives set by the government for the programme and whether impact evaluations have been conducted in the past and the outcomes was raised, interviewees' responses were:

Interviewee1

we have done impact assessment last year we did one looking at the perception rather than the facts that also means that the stations are still responding to the mandate of promoting SMEs. Just recently we completed another one round something that we look at 97% of the SMMEs confirms that we are responding to their needs and priorities. So based on the assessments there seem to be a fair enough acceptance that the programs actually responding and still doing what it were intended to do. we do use the latest tools we have shared ,we virtually develop the tool and I am prepared to share with you because I feel in the past we used different tools and our challenge was to integrate all these different tools into one, so the recent one we have done was to look at the chemical industry, look at the tooling industry and look at the electronic industry ,so we felt that there was a need to combine the industry tools that are used into one but how far that could be extended into e chemistry and chemical engineering is yet to be seen we are looking at doing this next year maybe again and see how it affects or impacts the chemical industry

Interviewee 2

we evaluate that service over the years by conducting surveys to the SMMEs that received assistance from the technology station. We evaluate also by noting that

over the years they keep coming back to the technology station for additional technological support in the form of analysis of their products also wanting to be assisted with the development of other formulations. So we keep in constant contact with our SMMEs and by so doing we get a clear indication of what the station or how successful the services provided by the technology station are to the SMMEs.

Interviewee3

we have made quite an impact because there has been quite a number of return clients that came to visit. They needed more training, and products;

at this point in time we still need to introduce measures, I think our measures is currently based on numbers and I think that is what we are chasing. At the moment it is just to get numbers rather than to make sure of the quality that you get.

- **Strategic influence: Benefits as the host to the TSC**

Interviewee1

One of the expectations or original concepts was that the academic outputs have in the past moved away from responding to industry needs. The technology stations are responding to the needs of industry hence they are positioned in the institutions and should promote new curriculum that will be more directed to the technology industry. The curriculum should make sure that university graduates are more acquainted with industry expectations, providing graduates that are deemed as quality to the industry. Graduates should be to join industry with fair enough understanding of the technology in industry. The future curriculum of the university should address the industry gaps.

Through the programme, host universities have access to high-end equipment which supports research and development.

Interviewee 2

The university benefits by hosting the technology station in a number of ways. One of the most important programs is running a program called internship program funded by the Department of Science and Technology which is meant to provide students from the Chemistry and Chemical Engineering departments with an opportunity for work integrated learning. The university benefits in two ways; financially once the students complete the work integrated learning and graduates (university gets its subsidy) and secondly the university benefits in the sense that the technology station provides an opportunity of the university to clear its backlog of un-graduated students from its system (improve efficiency and effectiveness). The technology station has actually made a very strong contribution to the university in ensuring that the University of Technology stands up to its name by having a unit which is meant develop technology and transfer the technology.

- **Community Engagement**

  Interviewee 4

  The TSC is a vehicle through which the university on an ongoing basis makes contact with the community providing the service of upliftment and also entrepreneurship, job creation and basically socio-economic development.

CHALLENGES –

- **Third Stream Income**

  Interviewee 2

  The management of the university have developed what they called key performance indicators, which they want to use to measure the success of the technology station. The main one that they are making use of is the generation of 3rd stream and they want to use that as the main indicator for the success of the technology station.

- **Participation by university Staff**

  Interviewee 2

  One of the major challenges that the technology station is having is the participation by the university staff on the projects of the technology station that are meant to

provide support to SMMEs. The ability of the technology station to attract academics in large numbers to participate in technology station projects is still one major challenge

Interviewee 4

The need to develop tools to extract information is another factor that needs improvement. One key area that we often think of making use of is employing retired professors to replace those academics that are keen to come and work in technology stations and projects and that can happen over a period of 6 months so by the technology station funding the replacement of academic over a period of time so that that academic is pleased to come and work on the technology station project. That would be one way of attracting them. Also developing programmes of geared towards increasing the interest of academics to work on the technology station project and one way of achieving that is through aggressive market of the technology station to academics.

- **Sustainability**

Interviewee 2

one question would be about the viability or sustainability of the technology station program as you understand over the years ever since the government set up the technology stations program the technology station program depends entirely on government funding and without that government funding then there is no question of sustainability of the program. So I would perhaps would have thought that you would ask how sustainable is this program going forward or is the measures that are being put in place to ensure that if the government were to stop its funding of the program would it be possible for the program to continue providing the support to the SMMEs

Interviewee 3

The issue of finance also affects available infrastructure, notably pilot production facilities which could improve service delivery is they were to be constantly upgraded

and modernized. Once the station becomes self-sufficient it will probably provide better service because it will have to compete with other institutions as well.

we need to become self-supportive economically. Any institution that is subsidised is more or less not being 100 % efficient or as efficient as they could be. Once we become self-sufficient then we will probably be able to provide a better service because then we will have to compete with other institutions as well.

Interviewee 2

There is still a case to be made for government to continue providing support to all service providers that make a contribution to the development of SMMEs. Because by so doing government is also assisting in the development of the economy and the growth of the economy in the country. But governments supports programs for a period of time and after some time, there is no longer support. So it is advisable for any program especially like the technology station program to as it continues to operate to ensure that it puts in place measures of ensuring its sustainability because going forward it cannot be assumed that the government will provide support to the technology station forever.

Interviewee 3

Start-up companies can also benefit from continued support, perhaps a bit longer so that the MUT-TSC can monitor and evaluate what happened with the SMMEs after training. The centre should also consider e-learning taking advantage of the developments in information technology.

- **Accessibility to beneficiaries**

Interviewee3

The centre is distant for the greater part of the intended beneficiaries.

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4.2.3. Data from Records

Data was also sourced from documents within the MUT-TSC. These included reports, service level agreements and scopes of services.

4.2.3.1. Data from MUT-TSC Business Plan

According to the MUT-TSC Business Plan 2015/16 the centre offers services in the following areas:

Product and Process Consulting which involves providing advice on productivity improvements including process layout, optimizing manufacturing methods, work-study; advice on acquisition of new or improved technology and advice on maintenance and setting of equipment.

Quality and Product Testing provides analytical services to the chemicals and related industries; providing advice on raw material storage, usage and legal compliant disposal and analyses, development and implementation of quality systems for companies.

Demonstration and Training which involves presenting workshops and seminars on issues of strategic importance to the technological development of the industry; demonstrating the correct use and maintenance of technology; stimulating technology transfer projects and offering accredited short course to the chemicals industry to improve and support their skills development programmes thereby enhancing their productivity and competitiveness.

Product and Technology Development which involves consulting on product development issues viz. formulation chemistry, costing, preparing materials safety data sheets; providing access to highly specialized analytical equipment; developing low cost standard operating procedures for SMMEs to improve their productivity and conducting research for and on behalf of SMMEs.

4.2.3.2. Data from Scopes of service at the MUT-TSC

This includes a document that is used by the MUT-TSC to capture client needs when they approach the centre. This document is completed by the client and signed by both the client and the MUT-TSC staff member. It also serves as a contract on what services were agreed upon by these two parties.

The scopes of services revealed that the most frequently requested service is training followed by production or manufacturing facilities usage, then product development and lastly analytical services. During the period under investigation (one financial year) only one engineering project involving plant design and commissioning was identified.

Information collected from the scopes of services is provided in Table 4.1 below.

Table 4.40 Clients' needs from Scope of Services

Service	Frequency
Training	38
Product Development	7
Manufacturing/production Facilities	53
Analytical Services	212
Engineering Design and Development	1

Adapted from Summary of Scope of Services 2015/16

4.2.3.3. Data from Service Level Agreement 2015/16

The researcher consulted the MUT-TSC documents to identify success indicators used in the programme. These success indicators are measureable outputs that are decided and agreed upon annually and are indicative of the critical success factors of the programme. The key success indicators are spelt out in the service level agreement that is signed at the beginning of each financial year (TIA-MUT SLA, 2015). The performance targets and expected outputs for the financial year 2015-16 were agreed to as follows:

- Applied Research & Technology Innovation
    - Percentage Ratio of usage of equipment by TS (technology station) between SME related projects and university research.
    - Number of knowledge innovation products supported: prototypes, technology demonstrators, technology transfer packages and diffusion of local IP through TS.
    - Number of clients assisted in short learning programs, tailor-made demonstration and individuals receiving knowledge transfer from TS activities.
- Technology Transfer and Industry Support

These indicators are divided into sectors, the first four are monitored for SMMEs benefit and indicate achieving the primary objectives of the technology station, and the remaining four indicators pertain to value-adding, collaborations and sustainability.

- Number of Products & Processes Designs, developed improved and manufactured with station's technical support.
- Number of functional prototypes completed on behalf of enterprises and complying with applicable standards.

- Number of Technology transfer Packages offered (i.e. Technical support and tooling).
- Number of Small and Medium Size Enterprises (SME's) receiving technological support from TS.
- *Number of SMEs Projects implemented in collaboration with at least one stakeholder and/or agency in the NSI (National System of Innovation)*
- *Number of large Enterprises paying a full cost for technological support from TS & IATs (Institutes of Advanced Tooling).*
- *Number of SME's projects supported whose activities relate to the green Economy.*
- *Number of Youth Technology Innovation Fund (YTIF) projects supported by TS.*

The above success factors focuses on the number of services and service areas expected of the MUT-TSC per annum. The SLA sets out to monitor performance and evaluate the achievement of targets. A summary of expectations are listed below:

Table: 4. 41

Service	**SLA Planned Targets**	
Training	Number of clients assisted in Short Learning Programs, Tailor-Made Demonstration and individuals receiving Knowledge Transfer from TS activities.	40
Product Development	Number of Product &Processes Designs, developed improved and Manufactured with station`s technical support	5
Manufacturing/production Facilities	Number of Small and Medium Size Enterprises (SMEs) receiving technological support from TS.	50
Analytical Services	Number of functional Prototypes completed on behalf of enterprises and complying with applicable standards.	100
Engineering Design and Development	Number of Technology transfer Packages offered (i.e. Technical support and Tooling)	2

Adapted from MUT-TIA Service Level Agreement 2015/16

4.3. ANALYSIS OF RESULTS

Triangulation method of data analysis was used to determine if there is any correlation between the services provided by the centre and those required by the SMMEs. The results from Tables 4.1 to 4.3 provide a distinct indication that SMMEs indeed need the services of the MUT-TSC, and these are in line with the mandate of the programme. Amongst the services that the respondents mentioned is marketing which is not part of the MUT-TSC's list of services. To determine the degree of closeness of results from planned activities, the researcher consulted with the Service Level Agreement 2015/16 (SLA 2015/16) entered into by the MUT as host institution and TIA as the implementing agency. Comparing the SLA 2015/16 with actual service requests based on scope of services the following results were
This case study included the following research questions

	Research Questions
1.	How well does the set of services provided by the entrepreneurship support programme meet the developmental needs of the SMMEs and/or cooperatives? To address this question, the researcher developed the following sub-questions: • What services are provided by the MUT-TSC? • What services are required by the SMMEs? • Is there a match between the services provided and services required?
2.	How effective are the success indicators in predicting the impact of the entrepreneurship support programmes on the receiving environment? To address this question, the researcher developed the following sub-questions: • What does the Technology Station regard as success indicators? • What do SMMEs and Cooperatives regard as success indicators? • Is there a correlation between success indicators?
3.	How effective are the entrepreneurship support programmes in delivering positive impact on the receiving environment, the SMMEs and cooperatives? To address this question, the researcher developed the following sub-questions: • What does the Technology Station regard as desired impact of the programme? • What do SMMEs and Cooperatives regard as desired impact of the programme? • Is there an agreement on desired impact of the programme?

What services are provided by the MUT-TSC?

To respond to this question, two sources of data were used, and these are the MUT-TSC Records as well as interviews with managers.

What services are required by the SMMEs?

To respond to this question, data collected from SMMEs through questionnaires was used.

Is there a match between the services provided and services required?

To respond to this question, Triangulation of data was employed and results depicted in Figure 4.1

Figure 4.1 – Triangulation of data from records, qualitative and quantitative data

Interviews revealed that role of the centres like the MUT-TSC is to identify obstacle associated with the science and engineering technology know-how that act as barriers technology-based SMMEs face in participating in the main stream economy of manufacturing. The technology stations are providing technology based know-how by matching university outputs to the gaps in industry. The interviewees also provided what they believe are SMME needs based on previous experience over the years and these are

presented in Figure 4.1 under qualitative results. There is a close relationship between records and qualitative results since records entail reports, service level agreements and business plans. As presented in Figure 4.1 the two sets of data (records and data from interviews correlate with data gathered from SMMEs. The results collated indicate that there is match between the services offered by the MUT-TSC and those required by the SMMEs and Cooperatives.

4.3.1.4. Thematic analysis based on Research Question 1

The following 2 themes were identified during data analysis through triangulation:

- Training
- Technology support facilities**.**

These themes are reviewed in the sections below.

Training

In order to understand why training seem to be most popular service required by the SMMEs and cooperatives a summary of the research findings on SMME needs is revisited. Amongst SMME problems highlighted in South Africa, is the low level of skills. (Republic of South Africa, 1996). This problem is however not unique to South Africa as noted by Glaub and Frese in that most developing countries have the propensity of employing training programmes as a vehicle for promoting entrepreneurship (Glaub and Frese, 2011). The need for training was also confirmed by this study which revealed that 43% of respondents needed training during their first intervention (Table 4.26).Training and skills development is also identified an important success indicator for the MUT-TSC. The 2015/16 annual target for training SMMEs is 40/90 which translates to 44% of activities and SMMEs engagement which should result in knowledge generation through “short learning programmes, tailor made demonstrations and individuals receiving knowledge transfer” (TIA-MUT SLA, 2015). From the Interviews it was also revealed that human resources development is the first perspective considered in evaluating performance of the technology stations Ligthelm (2008) noted that failure on part of second economy participants to conform to regulations and quality standards is borne out of ignorance rather than an intentional misconduct. Narratives of the Interviews also suggested that the training provided by the MUT-TSC focuses on issues of compliance with regard to safety, health and quality. The survivalist nature of the SMMEs, as indicated by the low levels of revenue (Table 4.17) and being micro in terms size based on employees and turnover (Table 4.15), underscores the need for continued training for these enterprises

Technological support: Facilities

One of the support functions of the MUT-TSC is providing access to laboratories for analytical services support, including testing and product development and improvement. From interview 1 it was also apparent ensuring "that the high end infrastructure is in place and efficiently used between university and SMMEs", which is one of the concerns of the programme and performance measure

Clearly, from the study 76% of respondent did not have manufacturing facilities (Table 4.18). From those who had indicated that they do have facilities, which were mixing tanks and blenders, and none of the respondents had facilities for testing and analytical support (Table 4.19). Table 4.26 above also revealed that respondents ranked access to facilities, both production and testing facilities, as the third most popular reason for first interactions with the MUT-TSC. SMMEs also ranked access to laboratories second together with increase in product range as the most salient benefits. This is evidence of the MUT-TSC is providing essential service to beneficiaries.

Research Question 2

How effective are the success indicators in predicting the impact of the entrepreneurship support programmes on the receiving environment?

To address this question, the researcher developed the following sub-questions:

- What does the Technology Station regard as success indicators?
- What do SMMEs and Cooperatives regard as success indicators?
- Is there a correlation between success indicators?

What does the Technology Station regard as success indicators?

To respond to this question, two sources of data were used, and these are the MUT-TSC Records as well as interviews with managers.

What do SMMEs and Cooperatives regard as success indicators?

To respond to this question, data collected from SMMEs through questionnaires was used.

Is there a correlation between success indicators?

To respond to this question, Triangulation of data was employed and results depicted in Figure 4.

Is there a correlation between success indicators?

Triangulation was used to analyses data

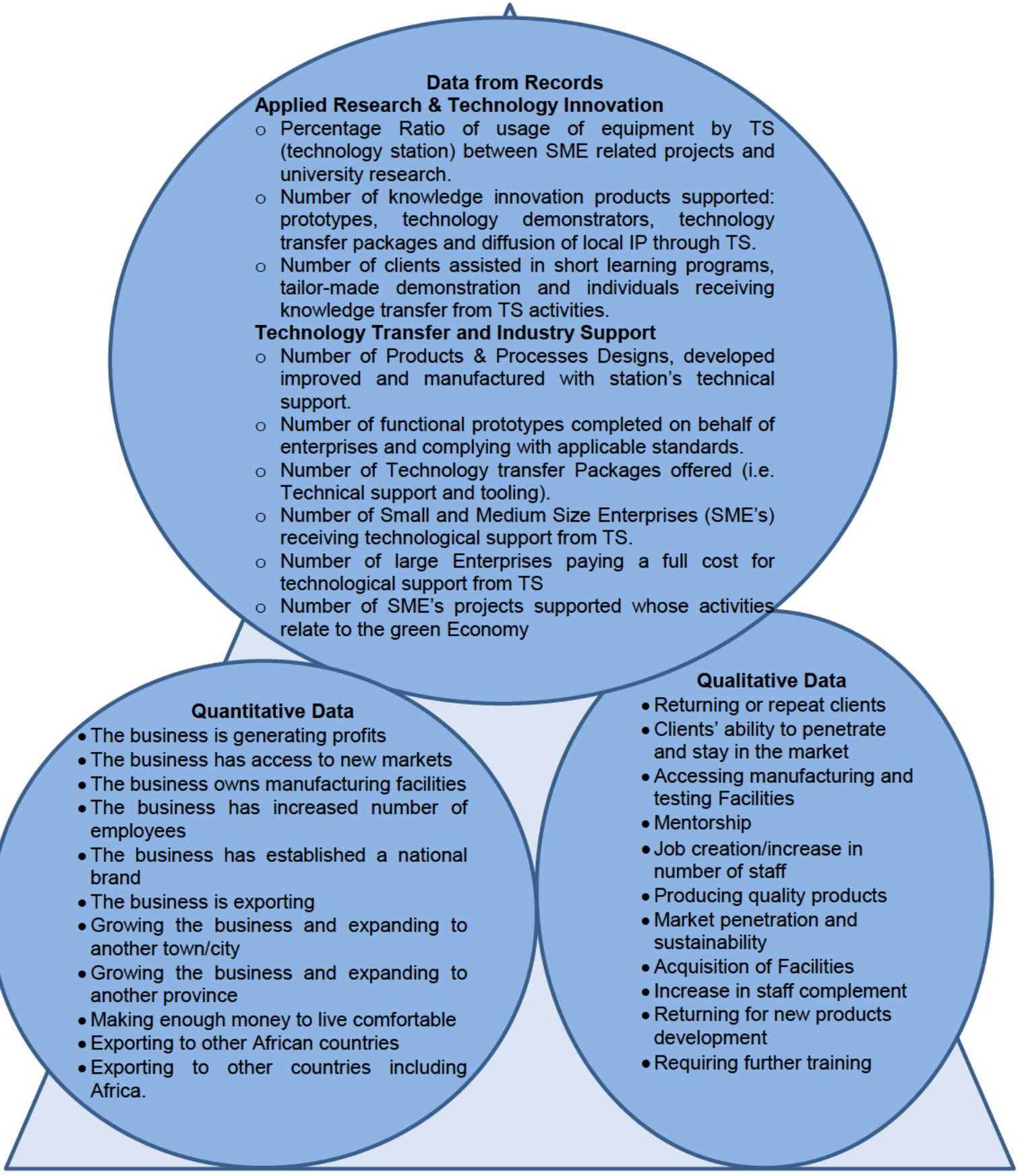

Fig 4.2 Triangulation of Results for Success Indicators

The South African government supported SMMEs with the intention of nurturing “a culture of entrepreneurship particularly amongst African Blacks, the success of which could be measured by improved competitiveness in terms of turnover growth and employment creation” (Peters and Naicker, 2013. p.14). Economic approaches to assessing involve the use of “quantifiable indicators such as jobs created, increases in income and turnover of businesses” (Lyon et al. (2002) p.3). Interviewees with managers revealed that the primary aim of government when the technology station as set up was to develop the SMMEs sector nationally and as a way of improving the economy. Job creation and increase in turnover are some of the indicators of success. It also transpired that managers measure success by monitoring the number of SMMEs that have entered the market and survived over the years, as well as the number of the number of clients returning to the station requiring further services. Figure 4.2 presents the triangulation results of indicators as they were collated from all three sources of data.

The monitoring and evaluation (M&E) indicators of the technology stations were analysed for “intended benefit” and compared to similar and related responses from interviews and questionnaires and themes were identified and are presented below in Table 4.42.

Table 4.42: THEMATIC ANALYSIS OF INDICATORS

M&E Indicators	**Intended Benefit**	**Questionnaire Responses**	**Interview Responses**
Equipment Utilization by the TS (Technology station) between SME related projects and university research.	To provide access to technological equipment to SMMEs	Access to production and testing facilities was rated as second priority to technology development (Table 4.3 above)	*Interview 1*: SMMEs and co-operatives enter the mentorship programme involving using production facilities under supervision; also need new product development and analyses

Knowledge innovation products supported: prototypes, technology demonstrations, technology transfer packages and diffusion of local IP through TS.	Introduce SMMEs to new developments in technology (To support Innovation in the sector)	Technology to improve your business New product development was rated as first priority when SMMEs interact with MUT-TSC(Table 4.3 above)	*Interview 2*: SMMEs come back for more training and more products
Training Number of clients assisted in short learning programs, tailor-made demonstration and individuals receiving knowledge transfer from TS activities.			*Interview 1*: The TSC provides service according to their needs (SMMEs) most commonly training.
Number of **Products & Processes Designs, developed improved** and manufactured with station's technical support.	To undertake product and process development for and on behalf of SMMEs. provide Research and Development function to SMMEs	New product development was rated as first priority when SMMEs interact with MUT-TSC(Table 4.3 above)	
Number of **functional prototypes** completed on behalf of enterprises and complying with applicable standards.			*Interview:* SMMEs always come back for product analyses and product development.

Number of **Technology transfer Packages offered** (i.e. Technical support and tooling).			*Interview1:* Technical support entails training on solid and liquid detergents or cosmetics followed by quality assurance on products manufactured through TSC laboratories, conducting technology audits and assisting in setting up manufacturing facilities.
Number of Small and Medium Size Enterprises (SME's) receiving technological support from TS.	Facilitate access to technology for SMMEs	Not relevant for individual SMME success hence not part of questionnaire	From interviews and business plan 2015/16: The mandate of the MUT-TSC to reach-out to SMMEs and co-operatives, and to increase the geographic reach of the TSP.

Table 4.42 indicates that there is strong correlation between indicators used by the TSP to monitor success of the programme to what the SMMEs believe to be the success of the programme. The first six (6) indicators in Table 4.42 relates directly to SMMEs while the last one, is relevant to the programme objective of reaching out to the all potential South African entrepreneurs.

According to Fatoki and Garwe (2010), business owners accord great value to sales as an indicator for business performance and growth. Based on responses presented in Table 4.22, generating profits, access to new markets, owning manufacturing facilities, increased in the number of employees, establishing a national brand and exporting are main indicators of success. There is a clear relation between the indicators being monitored by the managers and the implementing agency and what SMMEs believe to be indicators of success. Hence, the conclusion is that what the technology station is measuring has direct impact on success of the SMMEs.

Research Question 3

How effective are the entrepreneurship support programmes in delivering positive impact on the receiving environment, the SMMEs?

A programme is said to have an impact if it achieved its objectives and had desired effects on the intended beneficiaries or environment. For the purpose of this study, the inherent

understanding of impact; whether positive or negative, is the resultant change in the performance, practice and/or positioning of the enterprise in the economic development continuum.

To address this question, the researcher developed the following sub-questions:

- What does the Technology Station regard as desired impact of the programme?
- What do SMMEs and Cooperatives regard as desired impact of the programme?
- Is there an agreement on desired impact of the programme?

What does the Technology Station regard as desired impact of the programme?

To respond to this question, two sources of data were used, and these are the MUT-TSC Records as well as interviews with managers.

What do SMMEs and Cooperatives regard as desired impact of the programme?

To respond to this question, data collected from SMMEs through questionnaires was used.

Is there an agreement on desired impact of the programme?

To respond to this question, Triangulation of data was employed and results depicted in Figure 4.3

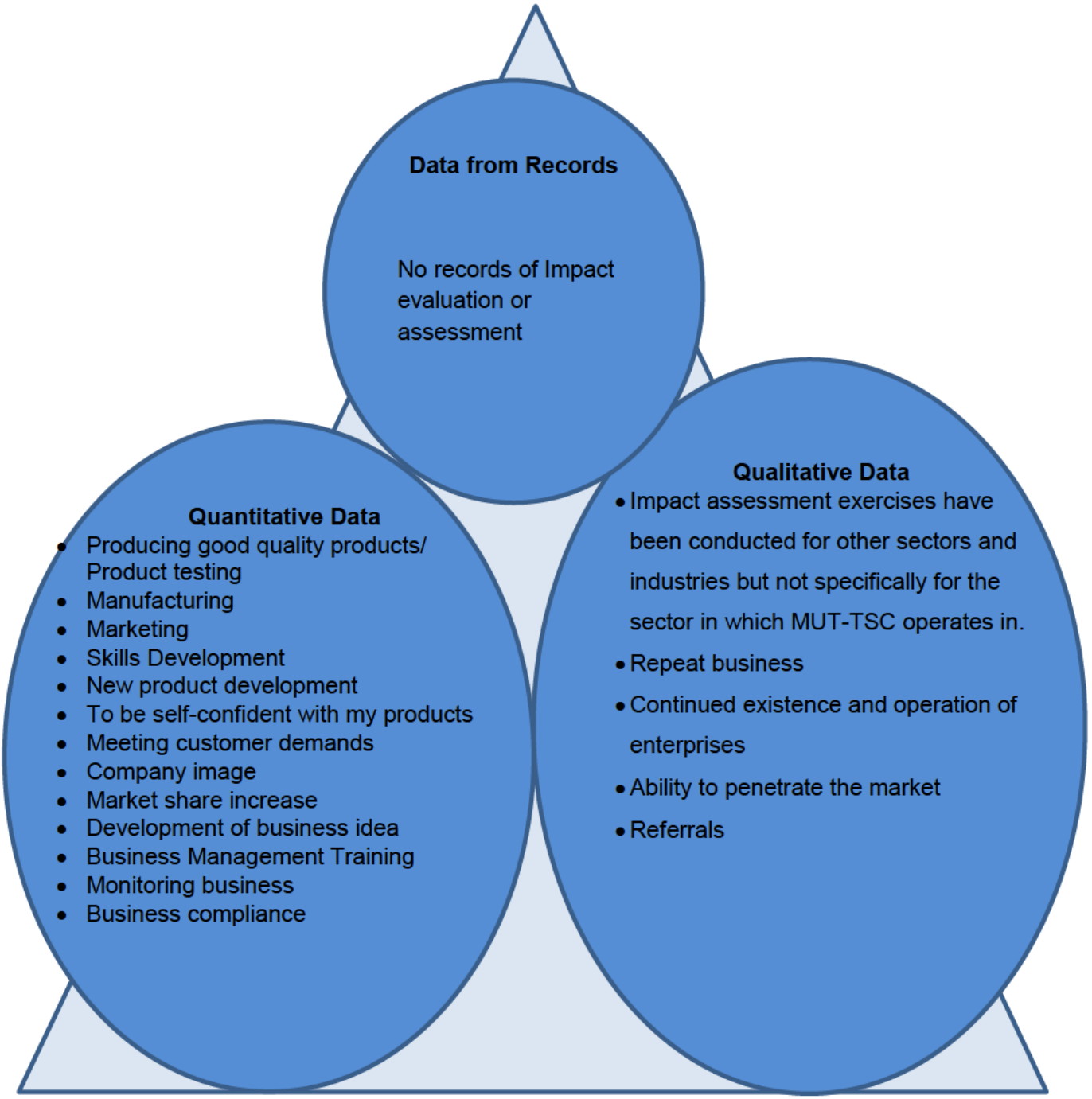

Fig 4.3 – Triangulation of Results for Impact of the MUT-TSC on beneficiaries

The four areas of desirable impact for SMMEs receiving support from technology stations highlighted by the TIA are the number of facilitated exports, number of SMEs that secured employment, number of SMEs accessing New Markets and number of technical innovations. These are the areas where the TSP programme through its technology stations is expected to make impact on SMMEs. These areas of desired impact will be analyzed together as they interrelated. Interviews revealed that impact assessment were conducted at national level; however none has specifically targeted the chemicals sector. This is also evident from lack of records on impact evaluations. There was general agreement amongst interviewees that

the programme needs to do more in terms of impact evaluation. The proposed solutions ranged from designing a single tool for impact evaluation that will accommodate all industries and basing impact evaluation exercises on facts rather than perceptions. SMME responses provided a number of areas that can be studied and explored for impact evaluation. These areas listed in Figure 4.3 will provide tangible evidence of impact whether positive (desirable impact) or negative (undesirable impact). The interviews revealed that there is some form of impact assessment that is conducted nationally based on the different industry sectors but none of these have been conducted for the sector in which the MUT-TSC operates in. One interviewee expressed that he doesn't believe that impact is actually being measured, although he believes that it should done so that the center can improve failure rate and increase success rate. Visits are also performed and the levels of activity monitored and through these the center believes it is responding and supporting the government's incentives for entrepreneurship.

THEMATIC REVIEW OF IMPACT

4 Themes of Impact

The following 4 themes emanated from the data on impact

a) Evaluation of Impact on Exporting

SMMEs are seen as instruments capable of activating the domestic markets and expanding from these through identification of new niche areas. Exporting is also another form of expansion to new markets, which should results in business growth and increase in revenue with opportunity for job creation and poverty reduction. These are the key developmental areas in South Africa as discussed in Chapter 2. This study suggested that SMMEs are currently focusing on local markets and most of the respondents do not have sufficient financial capital to engage in exportation (Table 4.17). SMMEs are in the position of creating changes in market demand through innovation and technology adoption by capitalizing on their flexibility due to their relatively small size and lean structures compared to corporations (Kongolo, 2010). For SMMEs in the chemical manufacturing industry business expansion needs to be sustained through technical innovation. This will guarantee that they remain locally relevant and internationally competitive. The 2013 study commissioned by SEDA (Underhill Consulting Services, 2013), reported that South Africa is experiencing an increase in imports, with China being on top of the list. This research study revealed that total of 49% of respondents (Table 4.21) explicitly desired exporting their products, while all respondents envisioned increasing their geographic reach either regionally or nationally. Table 4.22 also revealed that respondents believe that exporting and

access to new markets should be amongst the success indicators land so is establishment of a national brand as a measure of success. The records of the MUT-TSC indicated that exporting is one of the indicators that are monitored; however there is no record of SMMEs who are exporting.

b) Evaluation of Impact on Technical Innovation

Interviews revealed that the core business of the technology stations, including the one at the MUT, is to transfer technology to SMMEs and priority is given to small and medium enterprises. Through interviews it was also disclosed that there are four performance perspectives that are important for technology stations programme. One of these is the development of smart industries and making industry more innovative. When respondents were asked to identify areas in which their businesses benefitted the most through MUT-TSC interventions, they identified quality of products and manufacturing as key areas (Table 4.37). The records of the MUT-TSC also revealed that there is minimum activity on research and development (2015/16 SLA). This indicates low innovation capacity amongst SMMEs supported. According to Booysen (2011) not all SMMEs have limited capacity to innovate since innovation usually happens during the early product life cycle stages hence SMMEs coming in at the later stage of product development; it is unlikely that they will innovate. SMMEs tend to adopt technologies rather than innovate, in this case study this became evident through respondents' high preference for improving product quality, and product range as opposed to developing new ones (Table 4.37). Booysen (2011) quoted lack of strong ties with big firms and thereby limiting their chances of technology diffusion. It is for these reasons that some researchers argue that most support should focus on SMMEs with high growth potential as these can achieve accelerated growth (Booysen, 2011, Kesper, 2000). Interviews also revealed the three areas where SMMEs are expected to benefit from the programme. These areas were identified as cost-cutting through either reduction of scrap or reduction of input costs, capacitating the enterprises in sales to be able to add productivity improvements to use more innovative ways of doing things and lastly the ability to compete with the global or international products that are currently on the market. All these areas are linked to innovation either in product or in process development and improvement. As a technology transfer centre, this area needs to be focused on to ensure that the programme achieves its objectives.

c) Business Growth

Behind governmental support is the desire to help small businesses to grow. SMMEs growth is associated with increased productivity, jobs creation and contribution towards economic growth. Fatoki and Garwe (2010) define business growth as “absolute or relative changes in sales, assets, employment, productivity, profits and profit margins” (Fatoki and Garwe, 2010. p. 730). Kesper (2000) believes that the lack of growth and subsequently failure of SMMEs can be attributed to government indiscriminately supporting both “survivalist” and “non-survivalist” SMMEs.

Kongolo (2010) advocates that successful enterprises are those that continuously introduce new/improved products and services and this is based on the “small is smart” principle. Ligthelm (2008) suggests that the solution to limited growth in SMME sector is a “dual approach” to SMME development. This, he argues, will allow the state to provide generic training programmes and support for “survivalist” and separate interventions for SMMEs with high growth potential which is intensive while flexible enough to offer comprehensive tailored-to-company services. The financial position of a company is another determinant of growth and sustainability factor. Most SMMEs in this study fall in the micro enterprise category in terms of revenue (Table 4.17) and human capital (Table 4.15). With regards to the number of employees the results indicated that 81% of respondents had no more than 5 employees, and none of the respondents employed more than 10 employees (Table 4.15).These results, as displayed in Table 4.16 should be understood in the context that 43% of the respondents have been in operation for 1 year. Interviewees agree that increases in the number of employees as well as increase in revenue are some of the success factors to be monitored for both impact and business growth. However, these are the two areas which were also presented as challenging to monitor. One reasons is the SMMEs’ reluctance to share their financial positions

d) Evaluation of Impact on Employment Creation

Using employment creation as major impact for SMMEs in South Africa, tends to present problems given the hostile labour supply environment. The SMME environment is generally regarded as labour intensive (Berry et al, 2002) since they have a “propensity to employ more labour-intensive production processes than large enterprises” (Kongolo, 2010. p.2291). As a result SMMEs are affected by high labour–costs dictated by the SA labour legislation (Berry et al, 2002). The minimum wages and compliance with regulations therefore limits the absorption of labour into the SMME sector. Fatoki and Garwe (2010) pointed out that the formal and public sectors in South Africa have failed to accommodate the ever increasing of employment seekers hence the attention is now focused on the SMME sector to create

employment opportunities and contribute to economic prosperity of the nation. Nedlac (2005) report indicated that “SMMEs in the chemicals industry are a major provider of employment, contribute significantly to the country’s GDP, and are the source of the most innovative and new products.” According to Ligthelm (2008) the second economy does not solve the challenges of poverty and unemployment. This study proved that employment created by SMMEs mainly relates to owners of the business and does not translate to the entire community. This problem if further exacerbated by limited income as indicated by low reported revenues (Table 4.17). The recorded levels of income cannot sustain the financial burden of hiring employees while remaining compliant to regulatory financial implications like skills levy and unemployment insurance fund (UIF) payments (SARS SDL, 2015). It also emerged during the interviews that one of the areas that programme hoped to impact on was job creation. The programme has so experienced difficulties in determining its impact on this aspect of economic growth. One factor highlighted is that it takes particularly longer to respond as it takes a long time to measure.

4.4. DISCUSSION

According to Ligthelm (2008, p.376) entrepreneurs can be classified as those individuals who are capable of identifying opportunities and exploit these opportunities thereby creating businesses. The other type of entrepreneurs constitutes those individuals who become entrepreneurs out of pure necessity and desire to improve their economic and social situations. This category, the author refers to, as “necessity or survivalist entrepreneurs”. Ligthelm (2008, p.376) reported that the South African entrepreneurial population is characterized by 58% opportunity driven entrepreneurs and 42 % necessity driven entrepreneurs. This study revealed that 42% were opportunity driven while 47% were necessity entrepreneurs. This can be understood from the basis of the economic activity within the province, their geographic location is general from township and semi-urban settings and the population group which is predominantly black and belonging to the previously disadvantaged communities. Ligthelm (2008) discussed the dichotomy of the South African economy which harbours both formal and informal (but legal) economic sectors. The co-existence of both levels of economy also present another dilemma for entrepreneurship support programmes, more so those funded by government, where it is difficult to deprive assistance those who do not have registered company. According to Peters and Naicker (2013), as means of addressing social issues, the South African government included micro-enterprises (hence SMMEs and not SMEs) as beneficiaries of its programmes even those who can be classified as “survivalist” (Peters and Naicker, 2013. p.

16). It transpired during the interviews that programmes like the MUT-TSC accommodate these groups under the banner of “aspiring entrepreneurs or technopreneurs”.

The high failure rate of SMMEs presents a challenge when considering what constitutes established SMMEs. To assist in this regard, Fatoki and Garwe (2010 p.730) describes an established SME as the firm that “has successfully existed for more than 42 months”). This study also found that “about 75% of new SMMEs do not become established firms. SMMEs utilize the services of the entrepreneurship support programmes only if these are easily accessible and are free or heavily subsidized, otherwise they would not engage the technology stations if they have to pay fully for the services they receive. Hence, there still remains a question of whether these SMMEs would have accessed support services. Most SMMEs surveyed (76%, Table 4.17) recorded a less than R50 000 turnover hence the assertion that had they been required to pay fully for services, they would not have come to MUT-TSC. Hence subsidies are essential for SMMEs to access services from entrepreneurship support programmes.

Previous studies have identified lack of or inadequate communication as one of the barriers to SMMEs accessing services of entrepreneurship support programmes. (Peters and Naicker, 2013). The study revealed that the most common sources of information about the MUT-TSC programmes is through referrals by clients, friends and family (52%, Table 4.23). There is also evidence of collaborations with other SMME support programmes, notably the Small Enterprise Development Agency (SEDA) and the chemical incubator (Chemin), with 24% of clients having being referrals from these organizations (Table 4.23).

The 2005 NEDLAC report found that one of the hindrances to sustainability of SMEs is the local procurement systems requirements of large companies and government departments which SMMEs cannot meet or do not understand. However, this study revealed that SMMEs regarded markets as lowest in terms of their support requirements.

In response to rate the services of the MUT-TSC in terms of level of satisfaction with the impact and quality of the first and second interventions. The results revealed that 86% of respondents strongly agreed that the service they received from the MUT-TSC assisted their businesses (Table 4. 27). 90% of the respondents strongly agreed that the quality of the service received matched their expectations. As a measure of determining their level of satisfaction, SMMEs were also asked on whether or not they went back to the MUT-TSC for second intervention, to which 76% of them responded that they did request further assistance from the MUT-TSC (Table 4.29) and 86% of these indicated that they benefitted from the second intervention as well (Table 4.31. For those who did not seek second intervention, only 5% indicated that they were not happy with the first intervention. This is evidence that the MUT-TSC as an entrepreneurship support programme is providing

relevant support to SMMEs. These findings of this study confirm those of the 2005 NEDLAC report that the success of these enterprises depends on their ability to gain access to funding for research and development and technology transfer. This report also indicated that government support in chemical sector is inadequate in addressing sector-specific needs and it specifically quotes the inability to meet the capital intensive nature of the chemical industry. Other factors quoted in this report include inadequate incentives to assist chemical industries in general in accessing international markets through exports; arduous regulatory compliance requirements in the areas of health, safety and environment; a shortage of technical skills and increasing competition (NEDLAC, 2005).

This research study presented adequate evidence that the MUT-TSC is making the desired impact on targeted areas of chemicals manufacturing SMMEs. Previous studies have identified lack of or inadequate communication as one of the barriers to SMMEs accessing services of entrepreneurship support programmes. (Peters and Naicker, 2013). Looking at the areas that respondents declared benefitted their businesses the most from MUT-TSC interventions is evidence that the MUT-TSC is making impact in desired or targeted areas of SMMEs' businesses.

The programme is also benefitting the host institutions through the internship programme which assist in providing workplace learning for students thereby increasing the graduation through-put rate for the university. Other benefits include access to infrastructure and high-end equipment and achieving university objectives of community engagement. Universities who host the entrepreneurship support programmes through the TSP also benefit from the programme in meeting their strategic objectives and mission of community engagement. These programmes are viewed as part of the University's contribution to socio-economic development and community service.

This chapter presented the results of this research study and also the analyses and discussion of the data collected.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. INTRODUCTION

In the previous chapter, the results were presented and an analysis provided. This chapter commences with a summary of findings and reports on the limitations of the study. Framed within the key research questions, the conclusions and the associated recommendations will be offered.

5.2. SUMMARY OF THE FINDINGS

This study aimed at determining the impact of the entrepreneurship support programmes on the SMMEs. It established the efficacy of these programmes in delivering on their mandate and has identified four (4) distinct methods in which these programmes are positively impacting on SMME development. These include:

- **Implementing Government SMME support policies**

In South Africa presently the dichotomy of survivalist vs sustainable businesses is evident in the entrepreneurial environment. In implementing governments SMME support there exists space for support programmes catering for technological needs of both survivalist and established enterprises. As described in the literature review (Chapter2) survivalists engage in entrepreneurship to escape unemployment and poverty. The study revealed that some enterprises do not grow in spite of the intervention; this is indicated by low level of income and inability to generate jobs for the general public. The study also revealed that there are SMMEs who require high-end technology to grow their businesses and need support to venture into sophisticated sectors of the chemical industry. Using the case of the MUT-TSC the centre is able to address these technologically diverse needs of its clients. Catering for the needs of survivalist and micro-enterprises, as it also emerged from interviews, requires sustained government support. Several researchers too have demonstrated the need to provide a distinction between these two forms of business activities (Ligthelm, 2008, Peters and Naicker, 2013). Rogerson (2004) also suggested that government support programmes targeting SMMES, tend to cater for medium and small enterprises to the detriment of micro enterprises. This study has revealed micro enterprises are also benefiting from government support. Ligthelm (2008) maintains that entrepreneurship support should only target

businesses where there is evidence of growth and development; however this approach could potentially exclude the previously disadvantaged population from economic participation. Others like Peters and Naicker 2013 differ and emphasize that if the government's approach to use the SMMEs to achieve developmental goals is to realize any noteworthy success, attention should be devoted to developing capable entrepreneurs, particularly amongst those categorized as previously disadvantaged persons. Hence it is imperative that government creates an enabling environment conducive to innovation and productivity. In the case of technological, an enabling environment constitutes access to technological facilities to perform demonstration of good manufacturing practices, testing and research and development. With the introduction of the new Ministry of Small Business this function may be centralized and supported by other departments like the dti and the DST.

- **Contribution to job creation and alleviation of unemployment**

In South Africa it is the expectation of government that SMMEs will contribute to achievement of relief from poverty, creation of employment and global competitiveness of the whole country. (South African Government, 2016) These policy objectives are not only very different, but also the policy instruments presented to addresses these national imperatives are correspondingly different, moving from literacy skills development to technological guidance and support. (Nedlac 2005). This study revealed, through interviews with managers, that monitoring and evaluating the impact of entrepreneurship support programmes has proven to be difficult. However through self-employment it can be argued that SMMEs assist government through self-employment, albeit to a limited extent, thereby contributing to government’s objectives of job creation and alleviation of unemployment.

- **Providing networking platforms for SMMEs and cooperatives**

Booysen (2011) offers a possible solution to limited or lack of innovation amongst firms as the facilitation of “knowledge networks” that will provide information sharing platform between SMMEs and large businesses and corporations. This study demonstrated that most SMMEs were either referred to the TSC or learnt of it though platforms designed for marketing and networking amongst one another. Moreover, this study emphasized the pivotal role played by other support centres like the SEDA and Chemin, in establishment of such networks.

- **Providing technological support to beneficiaries within the second economy**

Some of the beneficiaries of the government support programmes can be classified as those operating in the second economy. In defining second economy, Ligthelm (2008, p.371) maintains that it includes manufacturing entities that operate from home, usually employing family members. Evidently, in South Africa it has been observed that most of these entities operate in infringement of regulations especially those pertaining to safety and general fail to manufacture products of consistent quality. This study revealed that most SMMEs do not have manufacturing facilities and are utilizing those at the MUT-TSC. Without having access to the MUT-TSC these SMMEs would have been classified as second economy based on Ligthelm's description above. The study also revealed that because of the MUT-TSC they businesses benefitted in terms of product quality, product development and information the general industry. This is evidence that the centre is able to meet their technological needs.

Limitation of the study

MUT_TSC was identified as the case in this study, and is can be peculiar to KZN, it nonetheless can be useful in informing similar setting across the country (Rubin and Babbie 2013: 250)

In addition to demonstrate extend validity and reliability, theoretical triangulation was employed that facilitated interpretation by offering views of data through different explanatory lenses (Mabry 2009: 224)

It must be acknowledged that the researcher is employed at the MUT-TSC and conducted the interviews of the managers, but to ensure that "subjective and intuitive judgments" (Monette, Sullivan & DeJong2011: 443) were minimized beyond the research supervisor an independent researcher supervised the data and analysis collection processes.

In this study rural SMMEs were not included due to financial and time implications. It also transpired from the analysis that managers affirmed that the centre (MUT-TSC) is inaccessible to rural SMMEs due to distance and other economic factors. Ideally, rural SMMEs will benefit substantially if they are able to access entrepreneurship support programmes.

5.3. CONCLUSIONS AND ASSOCIATED RECOMMENDATIONS

Research Question 1

This research study revealed that the services provided by the MUT-TSC correspond to the requirements of the SMMEs. Evidently, the two major themes that emanated from the data were training and needs for technological support and facilities.

Training will continue to be a major need for SMMEs and cooperatives as long as the level of education, in particular technical and higher education, in the country is relatively low. In particular, SMMEs in industries where a high level of technological expertise is essential requires constant training and support.

It is recommended that:

Training is an indispensable component for entrepreneurship development in South Africa. , Undoubtedly, potential entrepreneurs from previously under-developed population groups require sustained and continued governmental supported. The culture of entrepreneurship should continue to be inculcated in South Africa and this cannot be achieved without substantial government support both technical and financial. Institutions like the MUT-TSC may continue provide technological support, however as it is evident from this study, SMMEs cannot afford to fully pay for services. This support invariably will translate into positioning SMMEs contributing meaningfully to economic development and social upliftment goals of poverty alleviation, reduction in employment and ultimately contribution the country's GDP. While there is a valid argument for the introduction of entrepreneurship at the school level, time and resources will have to be allocated to this process. Hence, training programmes, like those offered by MUT-TSC therefore are a viable and probable source of information and skills for existing and potential SMMEs.

Secondly, it is also recommended that government supported programmes commit to providing financial means for SMMEs to access technological facilities, for example, for demonstration of technological excellence in manufacturing and testing.

In addition, the specific needs of rural SMMEs cannot be ignored. Considering the geographical location of entrepreneurship support programmes and socio-economic factors that implicate themselves in rural areas, there is a dire need for government to devise strategies to establish and meet their specific needs. It is also recommended that future studies ought focus on establishing particular technological needs of rural SMMEs and recommend strategies that can be employed in addressing such needs.

Government, through various ministries, notably Small Business Development, dti and DST, provide resources to increase the geographic footprint of these programmes to rural areas and small towns. The beneficiaries of the government support programmes seem to be a clustered around major economic hubs like cities. The existing entrepreneurship support programmes are not capacitated enough to deal with challenges of reaching out and assisting rural and small town SMMEs. This is particularly the case for technological support as it centres on technological infrastructure that only existing in and around major cities.

Research Question 2

This case study demonstrated that what programme managers establish as success indicators directly correlate to what SMMEs regard as success. There however existed a difference is that the managers monitor the input aspect (for example utilization of equipment) while SMMEs are interested on the output aspect (for example new products and process development). Data from the interviews also reported that managers focus on "numbers" as indicators of success, which does not necessarily assist in translating to impact on SMMEs, for example monitoring the number of persons making contact with centre. While this is a measure for how well people know the centre it does not translate into impact for SMMEs. Success indicators such as employment creation, access to markets and increase in turnover were common amongst all participants however; these have proven to be difficult to measure. The study revealed that SMMEs are not eager to divulge information relating to their financial position

This is therefore an area that requires attention for restructuring to ensure that success indicators can be closely linked to enterprise or business success.

It is therefore recommended that:

The programme managers should ensure that they have access and prior knowledge of SMME turnover and number of employees so that they provide more deliberate support to the SMME. This will ensure that they are in an informative position to determine impact after the intervention. Monitoring of company sales and customers will assist in identifying whether the business is attracting more customers or venturing into new markets. However, it must be acknowledged that such exercises will require resources of both time and personnel thereby placing an added strain on what managers describe as "limited financial support for the programme". One of the managers indicated that "the challenge is financial support, it is also infrastructure, if we have more facilities we could probably service the field quite a lot better."

Research Question 3

This study illustrated that the MUT-TSC does positively impact on the targeted SMMEs.
It can be concluded from the case study that the MUT-TSC is targeting micro-enterprises in chemical manufacturing and the services that the center provides makes a positive impact on these beneficiaries. The contribution that the MUT-TSC is making is also critical for economic development. Although there is no evidence to suggest there is an increase in number of employees, however it can be argued that self-employment of business owners invariably contributes to job creation and poverty reduction.

The areas, as suggested by the data that benefitted the SMMEs greatly are in training, information support and through technical demonstrations. These are the areas that increase the SMMEs understanding of the chemical industry in its entirety. According to managers, through interviews, positive impact is also experienced in the areas of quality assurance and compliance with standards especially with product quality. This was also confirmed by results from SMMEs. This is achieved through the technological station providing SMMEs with access to laboratories and production facilities. Through revenues generated from their businesses, SMMEs have secured income for themselves and their employees. This impact is however restricted due to limited revenues. Some of the beneficiaries have also assisted in addressing unemployment challenges through job creation.

The study also endorses that the MUT-TSC needs to specifically improve its impact on the areas of innovation and technology development through development of new products and processes

It is recommended that:

On the issue of sustainability, it is recommended that that longitudinal study be conducted on the impact of entrepreneurship support programmes. This is especially critical in entrepreneurship support programmes where beneficiaries are start-up entities. Empirical data collected on these subjects over time will be valuable in informing future entrepreneurship support programmes.

It is also recommended that programme managers should conduct impact evaluations periodically, as agreed upon by all managers in this study. Moreover, this will ensure that t operations and plans are adapted accordingly to offer an innovative and learning and teaching environment within the organization.

5.4. OVERALL CONCLUSION

This study has revealed that the entrepreneurship support programmes do demonstrate a positive impact on the SMMEs development. As government initiatives these programmes are effective in providing the vehicle for the implementation of government policies relating to SMMEs and economic development. Through self-employment of company owners and entrepreneurs, these programmes have a positive impact on job creation and alleviation of unemployment. In addition, the study established that SMMEs operating within the second economy are in need of technological support as they cannot afford the technological infrastructure and services necessary to support their businesses. Entrepreneurship support programmes that provide technological support are the only means of accessing technology for these small companies. Entrepreneurship support programmes tend to bring together SMMEs and therefore plays a positive role in creating networking platforms for these businesses.

There is a further need for government and implementing agencies to review monitoring and evaluation indicators and continue to conduct impact evaluations that will assist in improving service delivery. Undoubtedly, these studies will also assist entrepreneurship support programme managers to re-design their service offerings to address the needs of SMMEs.

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APPENDICES

APPENDIX A
UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS & LEADERSHIP

MBA Research Project
Researcher: Veronica Xolile Ngubane (082 312 4640)
Supervisor: Prof S. Cassim (031 260 1479)

Research Office: Ms. P Ximba 031-2603587

Impact Evaluation of Entrepreneurial Support programmes: A case study of the MUT-Technology Station in Chemicals.

The purpose of this survey is to solicit information from your company regarding the impact of the interventions of the Technology Station in Chemicals on your company. The information and ratings you provide us will go a long way in helping us evaluate the impact of the TSC and will also assist the station in improving its services in future. The questionnaire should only take 15 minutes to complete. In this questionnaire, you are asked to indicate what is true for you, so there are no "right" or "wrong" answers to any question. Work as rapidly as you can. If you wish to make a comment please write it directly on the booklet itself. Make sure not to skip any questions. Thank you for participating.

(Please tick (√) the box corresponding to your response, where appropriate)

1. BIOGRAPHICAL DATA

For office use

1.1 Your age

1	Under 20	
2	21-29	
3	30 - 35	
4	35 - 39	
5	40 - 49	
6	50 - 60	
7	60+	

1.2 Your gender

1	Female	
2	Male	

1.3 The area you live in can be best described as:
(Only tick applicable boxes)

1	Township	
2	Suburban area	
3	Informal settlement	
4	Government subsidized house	
5	Rural area with running water and electricity	
6	Rural area with electricity but no running water	
7	Rural area with running water but no electricity	
8	Rural area without electricity and running water	

2 EDUCATION

2.1 The last time you were in high school

	Before 2003	
1	2003 -2008	
2	2009	
3	2010	
4	2011	
5	2012	
6	2013	
7	2014	

2.2 What is the highest grade/class you passed at school?

1	Below Grade 7	
2	Grade 7 to 11	
3	Grade 12 / Matric	

For office

2.3 Indicate the highest post-matric qualification you achieved at the Tertiary Institution

1	N3/N4/N5 Qualification	
2	Matric + 1 year certificate	
3	Matric + 3 Year Degree/Diploma	
4	Matric + 4 Year degree	
5	Master's degree	
6	PhD	

2.4 If your answer to 2.3 above was No, the reasons were:

1	Academic Performance, (i.e. did not qualify for tertiary education)	
2	Financial	
3	Couldn't find industry placement	
4	Other	

3 WORK EXPERIENCE

3.1 Were you ever employed at any stage in your life?

1	Yes	
2	No	

3.2 If Yes, at what stage in your life?

1	Temporary/part time work while at school	
2	Temporary/part time work after finishing school	
3	Full time employment after finishing school	
4	Volunteer work while at school	
5	Volunteer work after finishing school	

3.3 If you have never worked, how long have you stayed at home after finishing school?

1	1 year	
2	2 years	
3	3-5 years	
4	6-10 years	
5	More than 10 years	

3.4 If you have never employed after finishing school, how did you survive or who supported you?

1	Mother	
2	Father	
3	Grandmother/Grandfather	
4	Aunt/Uncle	
5	Brother/Sister	
6	Self-supporting	
7	If you were supporting yourself please specify how?	

4 ENTREPRENEURSHIP

For office use

4.1 What influenced you into starting your own business?

		Yes (a)	No (b)
1	Desire to be your own boss		
2	Parents/grandparents owned a business		
3	Could not afford University		
4	Was unemployed after passing matric		
5	Was unemployed after graduating from university		
6	Had no matric and was unemployed		
7	Retrenchment		
8	Retirement		
9	Worked for chemical company and was retrenched		
10	Retired/retrenched from chemical company		
11	Could not continue with academic studies		

4.1 What type of a business do you have?

1	Close Corporation (CC)	
2	Private Company (Pty) Ltd	
3	Cooperative	
4	Not registered	

4.2 What is the core function of your business?

4.3 How many members do you have in your organization, including yourself?

1	1-5	
2	6-10	
3	10 -20	
4	20-50	
5	50 -100	
6	More than 100	

For office use

4.4 For how many years has the organization been in operation?

1	1	
2	2	
3	3	
4	4	
5	5	
6	More than 5	

4.5 What is your annual turnover?

1	Less than R50 0000	
2	R51 000 to R100 000	
3	R101 000 to R150 000	
4	R151 000 to R200 000	
5	R251 000 to R300 000	
6	R301 000 to R500 000	
7	R501 000 to R1m	
8	R1.1 m to R2m	
9	R2.1 m to R5m	
10	R5.1m to R10m	
11	More than R10m	

4.6 Does your company have manufacturing facilities?

Yes	
No	

4.7 If yes, what facilities do you have? If no please proceed to 4.8

4.8 What is your role in the company?

1	Managing Director	
2	Finance and Procurement	
3	Marketing and sales	
4	Human Resources Management/Administration	
5	Production	

4.9 What is your dream for your company?

		Yes (a)	No (b)
1	Growing the business and expanding to another town/city		
2	Growing the business and expanding to another province		
3	Making enough money to live comfortable		
4	Exporting to other African countries		
5	Exporting to the other countries including Africa		

For office use

4.10 Please complete this sentence:

I will consider myself successful

when.....

.....
.....
.....
.....
.....
.....
.....
.....

5 TECHNOLOGY STATION IN CHEMICALS (TSC)

5.1 How did you get to know about the TSC?

1	Referral by another TSC client /entrepreneur	
2	Family member/Friend	
3	Newspaper	
4	Business fair	
5	SEDA	
6	Chemin	
7	Internet	
8	Other	

If other please specify

For office use
use

5.2 What interested you into interacting with the TSC?

5.3 Your reason/s for interacting with the TSC was/were because you needed assistance with *(Please tick an area or areas you needed assistance with when you first came to the TSC)*

1	Technology to improve your business	
2	Technology to improve your existing product/s	
3	Wanted to develop a new product	
4	Quality of your product	
5	Needed production facilities	
6	Needed quality testing facilities	
7	Information on new product	
8	Market for your product	
9	Other	

If other, please specify

5.4 What was the first intervention/service you received from the TSC?

5.5 When was this first intervention?

5.6 The first service that you received assisted your business.

Strongly disagree	1	2	3	4	5	Strongly agree

5.7 The quality of the first service matched your expectations.

Strongly disagree	1	2	3	4	5	Strongly agree

5.8 Did you go back to the TSC for other services?

1	Yes	
2	No	

(If Yes please go to 5.9 and if No please go to 5.11)

5.9 What service /s did you require?

5.10 Was the TSC able to assist you? *(Please proceed to 5.12)*

Strongly disagree	1	2	3	4	5	Strongly agree

5.11 The reason you did not go back to the TSC is because

1	Your business no longer required TSC services	
2	You were unhappy with the initial service	
3	The TSC did not provide the service you needed	
4	You were no longer interested in pursuing the business	
5	You got employment	
6	Other	

If other please specify

5.12 What services do you think the TSC should be providing?

1.
2.
3.
4.
5.

5.13 What service/support did you receive from the TSC that benefitted your business the most?

1.
2.
3.
4.
5.

5.14 Would you say your business benefitted from the TSC intervention in these areas?

(Tick as many areas as applicable to your company)

	Area	Yes (a)	No (b)	Not sure (c)
1	Increase product range			
2	Improvement in quality			
3	Ability to secure more customers			
45	Ability to meet customer needs			
6	Increase in revenue/profits			
7	Access to technological information			
8	Access to laboratory facilities			
9	Access to production facilities			

For office use

5.14 Would you say your interaction with the TSC assisted you in achieve the following?

(Tick as many areas as applicable to your company)

	Area	Yes (a)	No (b)	Not sure (c)
1	Securing income for yourself			
2	Technological skills development for yourself			
3	Technological skills development for your employees			
24	Creating employment opportunity for other people			
5	New products development			
6	New process development			
7	Quality Assurance			
8	Creating wealth for yourself/family			
9	Improving your understanding of the chemical industry			

5.15 Which area of your business benefitted the most from the TSC intervention?

5.16 How do you think the TSC should improve its services?

5.17 Would you recommend the TSC to another entrepreneur?

Yes	
No	

Thank you for taking the time to complete this questionnaire

APPENDIX B

Informed Consent Letter 3C – Questionnaire Respondents

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

Dear Respondent,

MBA Research Project
Researcher: Ngubane Veronica Xolile (082 312 4640)
Supervisor: Prof S. Cassim (031 260 1479)
Research Office: Ms P Ximba 031-2603587

I, Veronica Xolile Ngubane, am an MBA student at the Graduate School of Business and Leadership, of the University of KwaZulu-Natal. You are invited to participate in a research project entitled Impact Evaluation of Entrepreneurship Support programmes: A case study of the Mangosuthu University of Technology-Technology Station in Chemicals.

The purpose of this study is to undertake an examination of impact evaluation of entrepreneurship support programmes. This will be achieved by assessing the interventions of the Technology Station in Chemicals (TSC) situated at Mangosuthu University of Technology (MUT) in Durban South Africa.

Through your participation I hope to understand whether or not the entrepreneurship support programmes are having any impact on the SMMEs who are the targeted beneficiaries of these programmes. The study aims at identifying the change/s brought about by these programmes and further assess if these are positive and desirable and whether they promote entrepreneurship and SMMEs development. The findings of this study will contribute to the management and implementation of the entrepreneurship support programmes and also assist in informing future policy development and improvements.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey/focus group. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you about 10 minutes to complete. I hope you will take the time to complete this survey.

Sincerely

Investigator's signature : _____ Date : 22December 2014

This page is to be retained by participant

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP

MBA Research Project
Researcher: Ngubane Veronica Xolile (082 312 4640)
Supervisor: Prof S. Cassim (031 260 1479)
Research Office: Ms P Ximba 031-2603587

CONSENT

I.....(full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

SIGNATURE OF PARTICIPANT DATE

.....

This page is to be retained by researcher

APPENDIX C

UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS & LEADERSHIP

MBA Research Project
Researcher: Veronica Xolile Ngubane (082 312 4640)
Supervisor: Prof S. Cassim (031 260 1479)

Research Office: Ms P Ximba 031-2603587

TITLE: IMPACT EVALUATION OF ENTREPRENEURIAL SUPPORT PROGRAMMES: A CASE STUDY OF THE MUT-TECHNOLOGY STATION IN CHEMICALS.

INTERVIEW SCHEDULE:

i. Introduction

This research study aims at understanding the impact of entrepreneurship support programmes on SMMEs. It seeks to answer the question of what impact these programmes have on SMMEs, whether that impact is positive or negative, and whether it was intended or not. To understand and evaluate the impact of entrepreneurship support programmes requires engaging the SMMEs as the intended beneficiaries as well the practitioners who are implementing the programme. Programme practitioners will be engaged through interviews and SMMEs will receive a questionnaire. The results of this study will inform the future use of the evaluation indicators, which may be used in determining how the programme has contributed to the change in the entrepreneurial landscape in country or region.

ii. Participants:

- MUT- TSC
  - Technology & Innovation Manager
  - SHERQ Manager
- MUT
  - TSC Director
- TIA
  - Head – TSP

iii. Interviews

Interviews will be conducted to determine the change that has been brought about by the TSC, and determine the extent or the significance of the change and whether this change is sustainable or not. Through these interviews it will be established whether the TSC initiative contributed to positive or negative change and in what way did it contribute to these changes.

To help formulate the nature of the change and its significance, the following key issues need to be addressed:

- Individuals and institutions involved in the change;
- How success of the entrepreneurship support programme is interpreted by the different stakeholders based on what they view as success indicators.
- The strategies that were employed to bring about the change, in order to identify the pathway or the process of change;
- The context/s that affected how change happened
- The connection between the efforts of the TSC and this change.

iv. Interview Process

OPENING

- Introductions
- Outline the purpose of the interview
  - Motivation why the
- interview is essential
- Time line: an indication of how long the interview is going to take : 10 minutes

BODY: Interview questions

- What do you know about the TSC?
- What role do you play in the management of the TSC? Or what is your engagement with the TSC?
- Expectations from the TSC: (How would you define the role of the TSC as the entrepreneurship support programme within MUT?) Seeking reasons for the establishment of the TSC?

- Strategic influence: How has MUT changed as the host to the TSC? In what way has the TSC benefitted the MUT?
- How has SMMEs changed as beneficiaries of the TSC? In what way has the TSC benefitted the SMMEs? How do SMMEs benefit from the TSC interventions? Why are these benefits important for the SMMEs?
- What would you describe as successes (highlights) for TSC? How does the TSC measure/determine its success? Why these success indicators are considered important?
- What would you describe as challenges for TSC
- What lessons has MUT/SMME learnt from the interactions with the TSC?
- What it is that the TSC should consider changing to improve its service delivery?

CLOSING

- Action to be taken

The interviewees will be advised that the results will be published in the MBA dissertation, and how they can access these if they wish to do so.

- Thanking the interviewee for his/her time.

APPENDIX D

TIA-MUT Service Level Agreement 2015/16

Annexure A:

ISSUED BY
TECHNOLOGY INNOVATION AGENCY
("TIA")

TO

Mangosuthu University of Technology
("the Host Institution")

For the

Technology Station in Chemicals
("the Technology Station")

[redacted]

Table 2: PERFOMANCE TARGETS & EXPECTED OUTPUTS

Performance Indicator	Targets FY 2015/16	Quarterly Targets				Audible Evidence (√)
Applied Research & Technology Innovation		Q1	Q2	Q3	Q4	
Percentage Ratio of **usage of equipment** by TS between SME related projects and University Research.	90%:10%	90:10	90:10	90:10	90:10	X
Number of knowledge innovation products supported: prototypes, **technology demonstrators, technology transfer packages** and diffusion of local IP through TS.	2	0	1	0	1	√
Number of clients assisted in Short Learning Programs, Tailor-Made Demonstration and individuals receiving Knowledge Transfer from TS activities.	40	10	10	10	10	√
Technology Transfer and Industry Support		Q1	Q2	Q3	Q4	
Number of **Product &Processes Designs, developed improved and Manufactured** with station`s technical support	5	1	2	1	1	√
Number of functional **Prototypes** completed on behalf of enterprises and complying with applicable standards.	100	25	25	25	25	√
Number of **Technology transfer Packages offered** (i.e. Technical support and Tooling)	2	0	1	0	1	X
Number of **Small and Medium Size Enterprises (SMEs)** receiving technological support from TS.	50	10	15	10	15	√
Number of SMEs Projects implemented in collaboration with at least one stakeholder and/or agency in the NSI	1	0	0	0	1	X
Number of Large Enterprises paying a full cost for technological support from TS & IATs	4	1	1	1	1	X
Number of SME's projects supported whose activities relate to the Green Economy	3	0	1	1	1	X
Number of Youth Technology Innovation Fund (YTIF) projects supported by TS.	2	0	1	0	1	X

non accumulative target

APPENDICES

Appendix 1: Key terminology of products and services offered by the Technology Stations Program (TSP)

Appendix 2: Standard Operating Procedure (SOP)

[redacted]

APPENDIX E

Summary of Operations 2015/16 – Attached

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Operational Activities for the Financial Year 2015/2016

		Target	Quarter 1 Apr-Jun 2015	Quarter 2 Jul-Sep 15	Quarter 3 Oct-Dec 15	Quarter 4 Jan - Mar 16	Total	Variance
SME Activities	SME Contacts	100					0	100
	New SMEs assisted	30					0	30
	Repeat SMEs assisted	20					0	20
	Black	40					0	40
	Female	25					0	25
	Disabled SME	2					0	2
	Total Number of SMEs	50	0	0	0	0	0	50
	Hit Rate (%)	50%	#DIV/0!				#DIV/0!	50%
Training Activities	For one client	5					0	5
	Open to group of SMEs	10					0	10
	New clients trained	30					0	30
	Repeat Clients trained	20					0	20

	Target	Actual
Total SMEs Assisted	50	0
Total SMEs Trained	40	0
Total Hit Rate (%)	50%	#DIV/0!

Notes:

Yellow Area: Targets for the Financial Year 2015/2016 and must be filled once

Blue Area: Formulas and must not be filled

White Area: White area must be filled when reporting

Please write notes if necessary

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Operational Activities for the Financial Year 2015/2016

		Target	Quarter 1 Apr-Jun 2015	Quarter 2 Jul-Sep 15	Quarter 3 Oct-Dec 15	Quarter 4 Jan-Mar 16	Total	Variance
Technical Activities	Testing & Analysis Services	100					0	100
	Manufacturing/Prototyping	100					0	100
	Consultation/Technology Audit	30					0	30
	Product & Process Development	5					0	5
	Applied Engineering,Design & Developement	2					0	2
	Research and Development	2					0	2
	Technology Demostration	30					0	30

Total	0

Impact on Clients	Number of facilited export	2				
	Number of SMEs that secured Employment	10				
	Number of SMEs accessing New Markets	10				
	Technical Innovation	5				

Notes:

Yellow Area: Targets for the Financial Year 2015/2016 and must be filled once

Blue Area: Formulas and must not be filled

White Area: White area must be filled when reporting

Please write notes if necessary

APPENDIX F

Ethical Clearance Letter - attached

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

18 March 2015

Ms Veronica Xolile Ngubane (891160209)
Graduate School of Business & Leadership
Westville Campus

Dear Ms Ngubane,

Protocol reference number: HSS/0113/015M
Project title: Impact Evaluation of Entrepreneurship Support Programmes: A case study of the Mangosuthu University of Technology – Technology Station in Chemicals

Full Approval – Expedited Approval

With regards to your application received on 28 February 2015. The documents submitted have been accepted by the Humanities & Social Sciences Research Ethics Committee and **FULL APPROVAL** for the protocol has been granted.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the 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 a period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

[redacted]

.....

Dr Shenuka Singh (Chair)

/ms

Cc Supervisor: Professor S Cassim
Cc Academic Leader Research: Dr E Munapo
Cc School Administrator: Ms Zarina Bullyraj / Ms Gina Mshengu

APPENDIX G

Turnitin Report – First Page – attached

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